



CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE &
PLANNING

DUBLIN AIRPORT

2021 - 2023 ENVIRONMENTAL MONITORING REPORT

Prepared for:

daa plc



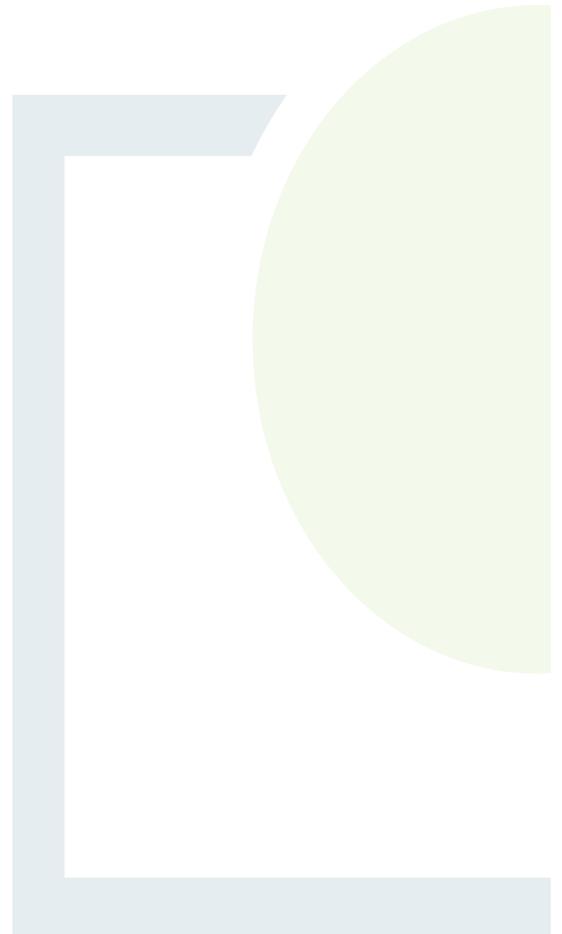
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2021 - 2023 ENVIRONMENTAL MONITORING REPORT

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Abstract: Fehily Timoney (FT) was retained by daa plc (daa) to prepare an environmental monitoring report for the airport site. This report has been produced following the completion of environmental monitoring within the curtilage of the airport and its environs.

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1. INTRODUCTION

1.1 Introduction

In 2021, Fehily Timoney (FT) was retained by daa plc (daa) to conduct surface water monitoring, groundwater monitoring and site investigations, and prepare an environmental monitoring report for the Dublin Airport site. This report has been produced to interpret and report on an environmental monitoring programme conducted within the curtilage of the airport and its environs for per- and poly-fluoroalkylated substances (herein referred to as PFAS).

The site location is shown on Figure 1-1.

1.2 Background

1.2.1 PFAS

PFAS are an extremely large group of long-lasting, synthetic chemicals containing multiple fluorine atoms attached to a carbon chain¹. To date, c. 4,700 + PFAS compounds have been identified globally but may be in the millions depending on which definition of PFAS is used².

PFAS are present in almost every country across the world in water, soil, air and biota. Further detail on the global extent of PFAS is detailed in Section 1.2.2.

PFAS have a number of physical and chemical properties including water and oil resistance, and chemical and heat stability, which made them ideal for industrial, commercial and consumer products. They have been used in many different industries, including aerospace, automotive, food processes, pharmaceutical, the manufacture of clothing, construction, household products, and firefighting since the 1950s. Some typical sources of PFAS contamination include textiles and paper and painting/printing facilities³, oil extraction and mining facilities and facilities which produce medical devices, pharmaceuticals and pesticides⁴. PFAS chemicals can be found in many everyday products, including textiles, furniture, paints, food packaging, non-stick coatings on cookware, and polishing and cleaning agents and creams.

¹ <https://www.epa.ie/our-services/monitoring--assessment/waste/chemicals/pfas/>

² Emma L. Schymanski, Jian Zhang, Paul A. Thiessen, Parviel Chirsir, Todor Kondic, and Evan E. Bolton. Environmental Science & Technology 2023 57 (44), 16918-16928. <https://pubs.acs.org/doi/10.1021/acs.est.3c04855?ref=pdf>

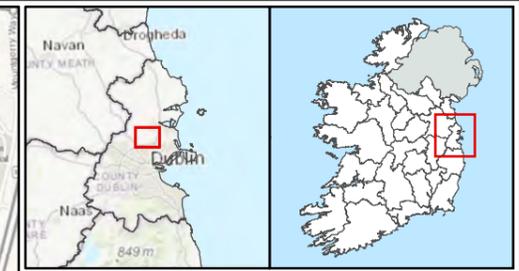
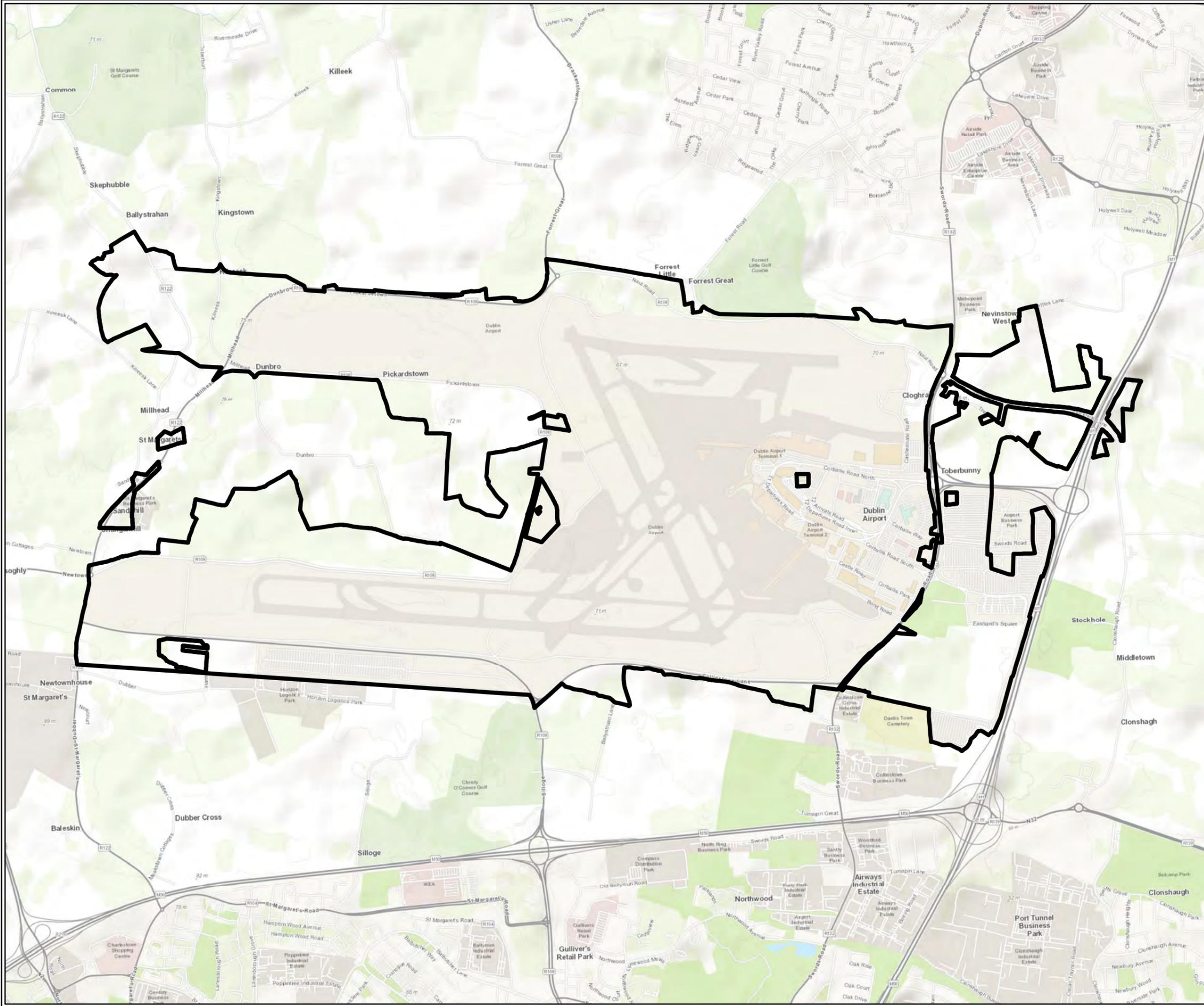
³ Danish EPA, 2014, [Screeningsundersøgelse af udvalgte PFAS forbindelser som jord- og grundvandsforurening i forbindelse med punktkilder](#), Miljøprojekt No 1600

⁴ Krafft, M. P. and Riess, J. G., 2015, 'Per- and polyfluorinated substances (PFASs): Environmental challenges', Current Opinion in Colloid & Interface Science 20(3), pp. 192-212 (DOI: 10.1016/j.cocis.2015.07.004)



Historically, PFAS chemicals were used globally in firefighting foams since the initial development of aqueous film-forming foam (AFFF) materials in the mid-1960's⁵. Specifically, Class B AFFF was used to combat flammable fuel fires. The main function and advantage of the use of PFAS in AFFF is their spreading and sealability properties. These foams are stored and used in automated and handheld fire suppression systems, as well as in flammable vapour suppression. These types of foams were used in fire training at sites including refineries, bulk storage facilities, chemical manufacturing plants and airports. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are among the PFAS components mostly commonly found in AFFF. Many of the PFAS substances present in AFFF are water soluble and can be easily transported offsite via surface water and groundwater discharges.

⁵ Place, Benjamin J.; Field, Jennifer A. (3 July 2012). "Identification of Novel Fluorochemicals in Aqueous Film-Forming Foams (AFFF) Used by the US Military". *Environmental Science and Technology*. 46 (13): 7120–7127. doi:10.1021/es301465n. ISSN 0013-936X.



Legend
Dublin Airport Boundary

TITLE:	Site Location (Environmental Monitoring/Site Investigation Locations)	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	1.1	
CLIENT:	daa	
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1.2.2 Emerging Pollutant on a Global Scale

PFAS chemicals are categorised as Persistent Organic Pollutants (POPs) which are organic substances that persist in the environment and are bioaccumulative⁶. PFAS are globally ubiquitous in the aquatic environment and organisms⁷, and have been detected in air, soil, plants and biota across industrialised areas of North America, Europe and Asia⁸.

In 2019, the Nordic Council of Ministers, the official body for inter-governmental co-operation in the Nordic Region (which involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland) have estimated there are potentially 100,000 sites in Europe which have emitted PFAS into the environment⁹.

Le Monde, a French daily newspaper, along with 17 cross-border investigation partners has contributed towards The Forever Pollution Project¹⁰ and the creation of an interactive map to demonstrate the extent of PFAS within Europe. The interactive map includes users, and known and presumptive PFAS contaminated sites. Figure 1-2 shows known PFAS contamination locations within Europe and demonstrates the issue is continent-wide.

Le Monde¹¹/The Forever Pollution Project report there are:

- 20 PFAS producers, facilities which synthesise PFAS for use in many sectors.
- Nearly 23,000 sites across Europe with PFAS contamination. Contamination is defined as PFAS reported at concentrations equal or greater than 10ng/l in waste, soil or living organisms between 2003 and 2023.
- 232 PFAS users/industrial sites which use PFAS to manufacture products such as pesticides, waterproof textiles, paints, plastics and other chemicals.
- Over 21,500 locations classified as “presumptive contamination sites”, where there is documented historical or current activity of both using and emitting PFAS but environmental sampling has not been undertaken to confirm PFAS contamination.
- Over 2,100 estimated hotspots, defined where PFAS concentrations at a site are equal to or greater than 100ng/l.

The project identifies 67 locations across Ireland with either known PFAS users, or with known or presumptive PFAS contamination.

⁶ A progressive increase in the amount of a substance in an organism or part of an organism that occurs because the rate of intake exceeds the organism's ability to remove the substance. Source:

<https://www.oxfordreference.com/display/10.1093/oi/authority.20110803095506729>

⁷ Valsecchi, S., et al., 2013, 'Determination of perfluorinated compounds in aquatic organisms: a review', Analytical and Bioanalytical Chemistry 405(1), pp. 143-157 (DOI: 10.1007/s00216-012-6492-7)

⁸ Houde, M., et al., 2006, 'Biological Monitoring of Polyfluoroalkyl Substances: A Review', Environmental Science & Technology 40(11), pp. 3463-3473 (DOI: 10.1021/es052580b)

⁹ Nordic Council of Ministers, 2019, [The cost of inaction - A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS](#), TemaNord No 516.

¹⁰ The Forever Pollution Project – Journalists tracking PFAS across Europe. <https://foreverpollution.eu/>

¹¹ https://www.lemonde.fr/en/les-decodeurs/article/2023/02/23/forever-pollution-explore-the-map-of-europe-s-pfas-contamination_6016905_8.html

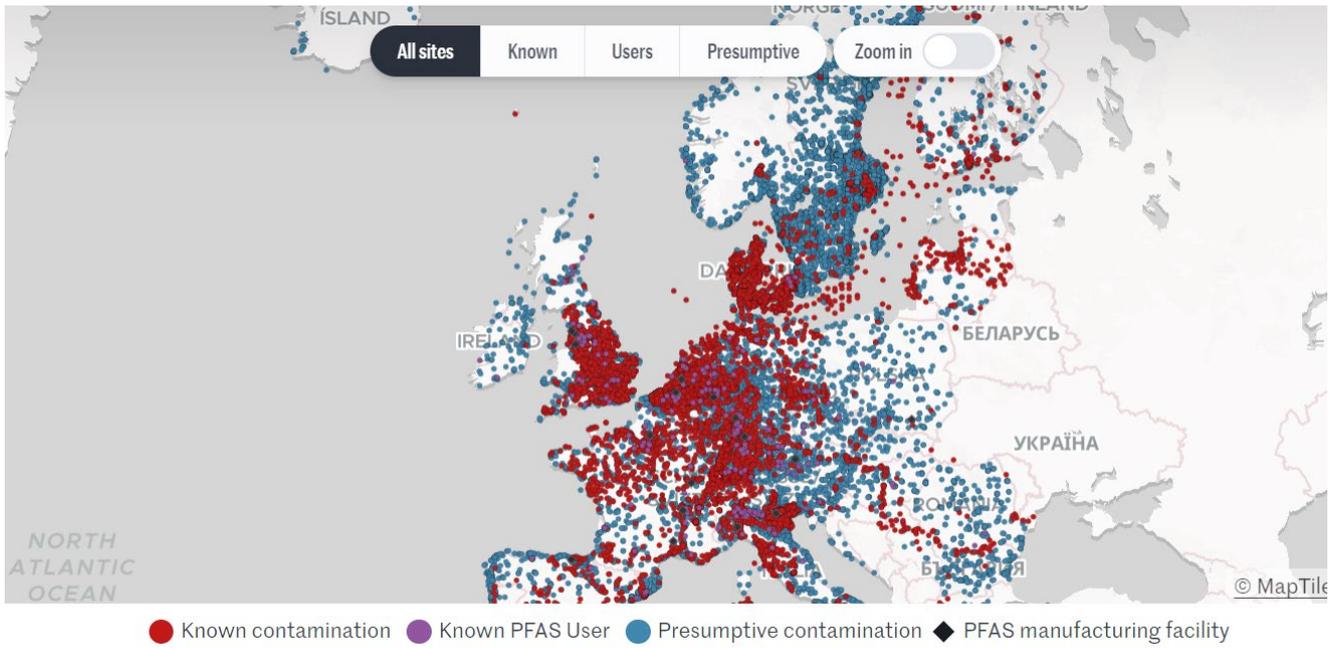


Figure 1-2: Known and Presumptive PFAS Contamination Locations in Europe¹¹

The United States EPA has also created an interactive map to demonstrate the extent of PFAS contamination. To date PFAS contamination has been identified in 5,021 sites in 50 states, the District of Columbia and four territories¹². This includes 1,245 public water systems which were reported in February 2024. The interactive map includes military and other known PFAS user sites and sites above and below the proposed drinking water limits of 4ng/l for both PFOA and PFOS. Figure 1-3 shows known PFAS users and locations above the proposed drinking water limits.

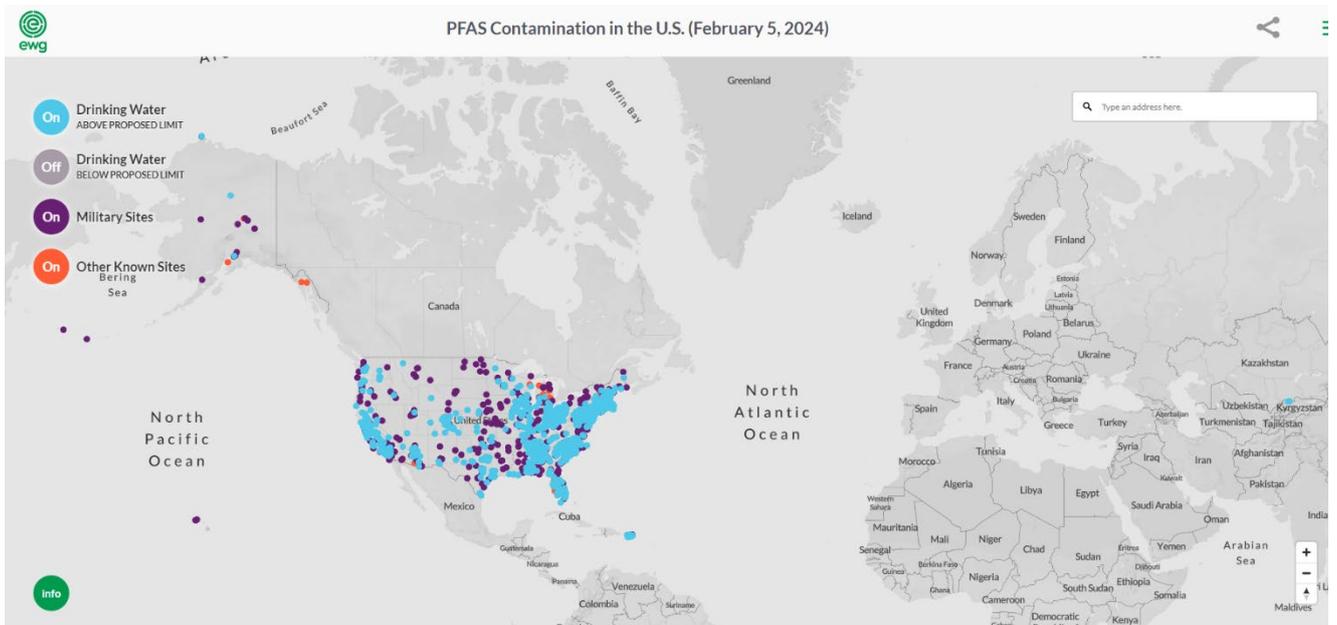


Figure 1-3: Known Sources of PFAS in the United States, District of Columbia and Territories¹²

¹² https://www.ewg.org/interactive-maps/pfas_contamination/



1.2.3 PFAS at Dublin Airport

In 2017, PFAS was detected at Dublin Airport during previous site investigations. In response daa commissioned an environmental monitoring programme.

In June 2021 daa collected surface water samples in 4 No. manholes at the North Apron, refer to Section 4.3.3.5 and Figure 4-5. The samples reported detectable concentrations of PFAS in the drainage network. This formed the initial basis for the PFAS monitoring programme to be completed by FT. In August 2021, FT commenced an environmental monitoring programme which will continue during 2024.

This report presents and interprets monitoring data from August 2021 to November 2023.

The environmental monitoring programme conducted during this period included:

- Monitoring groundwater and surface water within and external to the curtilage of the airport over a period of 28 months.
 - Monitoring was completed at four suspected PFAS source locations within the airport, namely the North Apron, the North Runway, Castlemoate House, and current fire station and associated firefighting training ground.
 - Groundwater monitoring was completed in existing monitoring infrastructure, no new monitoring infrastructure was installed during the reporting period.
 - Information on all of the monitoring locations is provided in Section 2.
 - Figures illustrating the monitoring locations are presented in Section 4.
- Soil samples were collected and analysis from site investigations associated with current or planned construction projects.
 - Information on these projects is provided in Section 2.
 - Figures illustrating site investigation locations are presented in Section 4.

The source of PFAS on site is indicated to be from the historical use of firefighting foams. From the mid-1960's, AFFF containing PFAS was globally used and recommended for fire-fighting. Similarly to airports and other comparable sites worldwide, this product was used in firefighting exercises over the following period at Dublin Airport:

- Between the early 1990's and 2013, Petroseal Foam was used at the Former Fire Station on the North Apron, the Former Firefighting Training Ground (Area No. 5 of Potential Concern or APEC 5) within the North Runway, and the existing Fire Station and Firefighting Training Ground at Dublin Airport. Petroseal manufactured up until 2015 contained PFAS.
- Between 2013 and 2021 Moussol®-FF 3/6 f-5, a fluorine and PFAS free fire extinguishing foam concentrate was used at Dublin Airport.
- Since 2021, Angus Fire JetFoam 3% is used as a fire-fighting suppressant and is PFAS free.

1.2.4 Thresholds for PFAS in Groundwater, Surface Water and Soils in Ireland

This section outlines the applicable thresholds for PFAS in groundwater and surface water in Ireland. The results discussed in this report will make reference to these thresholds.



1.2.4.1 Groundwater Generic Assessment Criteria (GAC)

There are currently no limits for PFAS in groundwater in Ireland. The Groundwater Directive (2006/118/EC) did not include limits for various parameters, instead it required Member States to set their own limits by 2008. There are provisions in the Directive for Member States to set local or national Environmental Quality Standards (EQS) for substances of concern, and in this regard both Germany and Sweden have established limits for groundwater where it is used for drinking water. They have set the same limits for groundwater as those set for drinking water (Sweden for the sum of 11 PFAS 90ng/L and Germany sum of 13 PFAS 100ng/L).

The EU Drinking Water Directive (EU 2020/2184) includes limits for PFAS total of 500ng/l and the sum of 20 PFAS of most concern of 100ng/l. This Directive entered into force on 12 January 2021, with EU Member States having a two-year transitional period to develop national laws, by 12 January 2023. On 10 March 2023, the Government of Ireland published the European Union (Drinking Water) Regulations 2023 (S.I. No. 99 of 2023). These Regulations set out the limits of the 2020 Directive for PFAS total (500ng/l) and Sum of 20 PFAS (100ng/l). The Regulations will become effective on 11 January 2026, with water suppliers not obligated to monitor water intended for human consumption until this date.

The Sum of 20 PFAS refers to the total concentrations of PFAS calculated from the list of 20 PFAS compounds included in Annex III Part B of Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the Quality of Water Intended for Human Consumption (recast). The list is included in Appendix 1.

In October 2022, the European Commission proposed amendments to the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive where the threshold for a sum of 24 PFAS would be 4.4ng/l in both groundwater and surface water, with the aim of achieving good water chemical status at the latest by 22 December 2033. However, these remain to be enacted in Ireland.

Although not effective in Ireland until 11 January 2026, the drinking water limit (100ng/L for Sum of 20 PFAS) is used as the groundwater Generic Assessment Criteria (GAC) for this report. The GAC is used to indicate the threshold of PFAS concentrations at which there is no unacceptable risk to environmental receptors or for human consumption. In the absence of groundwater limits and in consideration of the precautionary principle¹³, it is considered appropriate to apply the drinking water limit if they exist as the GAC.

¹³ "The "precautionary principle" is a risk assessment strategy which supports taking "protective actions" before there is complete scientific proof of a genuine risk". Science Direct, <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/precautionary-principle>



1.2.4.2 Surface Water Generic Assessment Criteria

The Water Framework Directive (WFD) (Directive 2000/60/EC) as amended by Directive 2013/39/EC and the European Union Environmental Objectives (Surface Waters) Regulations (S.I. No. 77, as amended) include limits for PFOS in surface water in Europe, including Ireland. PFOS is a PFAS. The limits referred to as Environmental Quality Standards (EQS) are set for water to meet a 'Good' status under the WFD:

- 0.65ng/L PFOS Annual Average (AA)¹⁴
- 36,000ng/L PFOS MAC¹⁵ (maximum admissible concentration)

The EQS is used as the surface water GAC in this report. The GAC represents the threshold at which PFOS concentrations are highly unlikely to cause impacts to receptors.

The WFD requires member states to monitor and categorise waters based on results with the aim of ensuring all waterbodies are protected and that measures are put in place to ensure the quality of these waters is restored to at least 'good' status or good potential by 2027. Waterbodies can be assigned as 'At risk', meaning they are at risk of not achieving 'Good' status by 2027. They can be assigned as 'Review', where more information is required to assign status. The annual average limit is very low having been based on the risk of fish consumption by humans.

Like groundwater, in Germany, the same standard for sum of 13 PFAS is applicable to surface water where it is a drinking water resource. It will need to be confirmed if any surface waters downstream of Dublin Airport are used for drinking water abstractions.

A review of European and international limits and guidelines did not suggest that many jurisdictions have set limits with respect of PFAS in surface water.

As outlined in Section 1.2.2.1, the proposed amendments to the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive remain to be enacted.

1.2.4.3 Soils Generic Assessment Criteria

Soil GAC represents the threshold at which PFAS concentrations are highly unlikely to cause impacts to receptors.

There are currently no limit values present for PFAS in soil in Ireland, therefore soil GAC are not proposed. In this report, PFAS in soils is reported as detected or below the laboratory Limit of Detection (LOD).

¹⁴ The AA-EQS of 0.65 ng/L is based on the potential for secondary poisoning in humans due to fish consumption. It is a guideline limit and defined as "the level at which no harmful effects are expected, based on annual average concentrations". The limit is often criticized for being very low. Several researchers across the EU (e.g., Cousins et al, 2022; Ahrens 2013; MacLachlan et al 2007) have noted that concentrations of PFOS in freshwaters regularly exceed the EQS, even in rainwater in urban environments.

¹⁵ The maximum for any single measurement, i.e. peak concentration.



1.3 Purpose of Report

The purpose of this report is interpret environmental monitoring completed for PFAS during the period of June 2021 to November 2023 and provide recommendations based on the findings.

The scope of this study includes:

- Presentation of environmental data (from monitoring and site investigations) collected between June 2021 and November 2023.
- Comparative review of surface and groundwater monitoring data against the GAC identified in Section 1.2.4.
- Identification of trends in the monitoring data.
- Provide recommendations.

This report is structured as follows:

- Section 2 – Historic, Current and Future Site Operations at Dublin Airport.
- Section 3 – Environmental Characteristics Within and External to Dublin Airport.
- Section 4 – Environmental Monitoring Programme, Site Investigation and Results; and
- Section 5 – Summary, Conclusion and Recommendations.



2. HISTORICAL USE AND STORAGE OF PFAS AT DUBLIN AIRPORT

2.1 Introduction

This section describes historic, current and future operations at Dublin Airport where the historic use of PFAS containing products may:

- Have environment effects within or external to the airport site boundary.
- Affect future development with the airport campus.

For clarity, two fire stations and two fire-fighting training grounds (FFTG) have been identified at Dublin Airport (Figure 2-1). The original fire station (Section 2.2.2) and original FFTG (Section 2.2.4) have been decommissioned and replaced by the current fire station and FFTG (Section 2.3.1).

Known locations of historical use of PFAS containing products and/or storage of PFAS chemicals are outlined in Section 2.2. These locations have been identified as some of the potential sources of PFAS in groundwater and surface water within the airport campus based on a review of available information at this time.

2.2 Historic Site Operations

2.2.1 Brief History of Dublin Airport

In 1940, airfield operations commenced with the development of Dublin Airport. In 1948 and 1950, new concrete runways were completed. In 1959, a new terminal building was opened with new departure gate piers added to the terminal to facilitate larger aircraft. A new terminal building was opened in 1972 and was subsequently extended. Since 1972 a new terminal, new departure gate piers, a new runway and taxiways were opened. A stormwater drainage network which flows to various open drains and local watercourses was constructed and remains in operation. In 2010, Terminal 2 and its connected boarding gate pier were opened. Construction of the North Runway Development is complete, and the runway is operational as of August 2022. The North Runway Development has constructed a new surface drainage system with outfalls to local streams and rivers.

In 1941, hangar development in the North Apron commenced with the construction of Hangar 1. Construction continued with the development of Hangars 2, 4 and 5 through the 1950's and 1960's. In 1972, the Garage was constructed. In 1990 and 1992, Hangar 6 and Hangar 3 were respectively constructed.

The former fire station, as detailed in the next section, was developed to provide firefighting services to the airport.

2.2.2 Former Fire Station within the North Apron

The original fire station (herein referred to as the Former Fire Station) likely operated from the opening of Dublin Airport in 1940. Operations at the former fire station ceased c. 2000. This fire station was located within the North Apron. It is understood PFAS containing AFFF may have been stored at the original fire station. PFAS may have been released to ground during fire training or fire suppression activities.

The location of the North Apron and Former Fire Station is shown on Figure 2-1.



2.2.3 East Area of North Apron

Environmental monitoring undertaken by FT during the monitoring programme indicates there is a potential second source of PFAS within the eastern area of the North Apron. This is further discussed in Section 4.2.3.1.

2.2.4 North Runway Development /Former Firefighting Training Ground – APEC 5

The original FFTG site, also referred to as APEC 5 likely operated from the opening of Dublin Airport until ceasing use in c. 2000. It was built and operated in accordance with common practice at the time. According to a report prepared on behalf of the EPA¹⁶, the FFTG site was a similar standard to other firefighting training grounds in Ireland. In 2017, PFAS was identified at this location during the North Runway Development. Following the cessation of firefighting training at APEC 5 no other activity prior to the construction of the North Runway Development was undertaken at this location.

The location of the North Runway Development and APEC 5 are shown on Figure 2-1.

2.2.5 Castlemoate House – Historic Unregulated Waste Disposal Site

Environmental monitoring identified PFAS in groundwater at a historic unregulated waste disposal site at Castlemoate House. PFAS is commonly present in leachate from waste disposal sites in Ireland¹⁷. The results of the environmental monitoring are discussed in Section 4.2.3.5.

In 2008, buried waste material was encountered during the excavation of a foul sewer connection on the grounds of Castlemoate House¹⁸. The Regulators, consisting of Fingal County Council (FCC), Environmental Protection Agency and Dept of Agriculture were notified. Intrusive investigations were undertaken in consultation with Fingal County Council as the lead Regulator.

The intrusive investigations determined the buried material comprised a mix of historical general waste and historical aircraft catering waste. It was estimated the waste was emplaced at the site between 1975 and 1984.

No waste has been buried at the site since the mid-1980's.

An environmental risk assessment undertaken by RPS¹⁸ determined there was a low to moderate¹⁹ risk to groundwater quality from ammonia in leachate. In consultation with FCC, it was recommended to undertake a groundwater monitoring programme to monitor groundwater quality. daa continue to undertake groundwater monitoring twice yearly.

The location of Castlemoate House is shown on Figure 2-1.

¹⁶ <https://www.epa.ie/publications/monitoring--assessment/waste/PFAS-in-fire-fighting-foam-report-web-version.pdf>

¹⁷ https://www.epa.ie/publications/research/environment--health/Research_Report_345.pdf

¹⁸ RPS. 2010. Investigation at Unregulated Waste Disposal Site at Castlemoate House Dublin Airport.

¹⁹ As defined in EPA. 2007. Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites.



2.3 Current Site Operations

2.3.1 Current Fire Station and FFTG

daa plc developed the current fire station and an engineered FFTG in the early 2000's at a new location within the airport complex. It is located adjacent to the West Apron and south of the Control Tower Building. The current FFTG can be accessed via gated entrance off the R108 road and internal access road within the airport from the West Apron. It provides the location for training to the Fire and Rescue Services crew at Dublin Airport.

It is understood AFFF for emergency events was stored in IBC tanks in a chemical bunded area. Intrinsic testing of the tanks is carried out every 3 years. Firefighting training commenced at the current FFTG at Dublin Airport in the early 2000's. Current fire-fighting training practices are carried out on an impermeable concrete base surrounded by ACO open channel grating. Typically, firefighting events were and are designed to target fire using water only. The water is supplied from overhead tanks and from hydrants.

Combustion is generated using kerosene. Runoff from respective fire-fighting exercises is directed off the impermeable concrete slab to ACO drains and to underground tanks prior to release via sewer.

As outlined in Section 1.2.1, as AFFF was used at this location it is a potential source of PFAS.

Tanks where AFFF was stored may still contain residual PFAS.

The location of the Current Fire Station and FFTG is shown on Figure 2-1.

2.4 Future Site Operations

Where present within future site developments at Dublin Airport, PFAS containing soils and water will require management during the construction and operational phases. This may include on site management, remediation or removal to an approved facility.

FT recommended site investigations undertaken for the below projects include for the sampling of PFAS in soils to identify if PFAS was present. In the event PFAS is identified, the design options for those developments must consider the presence of PFAS and that management techniques/remediation measures are integral to the design. Results of these site investigations are discussed in Section 4.4.1.

2.4.1 Proposed Apron 5H Development Area

Due to the historic placement of soils and concrete generated from across the airport and the presence of PFAS in surface and sub-surface soils, the proposed Apron 5H Development Area has been identified as a source of PFAS. In the Source-Pathway-Receptor (SPR) model used for contaminated site assessments and detailed further in Section 4.6, the source is defined as the location of a contaminant, i.e. in this instance PFAS in soils/concrete within Apron 5H. The results of the site investigations undertaken are discussed in Section 4.4.2.3 below.

Works are currently underway at this site The location of the proposed Apron 5H Development Area is shown on Figure 2-1.



2.4.2 Departures Road Project

The Departures Road upgrade works included signage, road upgrades and EV charging points to facilitate continued passenger growth through the airport. We understand this project is not proceeding at present.

The location of the Departures Road Project is shown on Figure 2-1.

2.4.3 West Apron Underpass Project

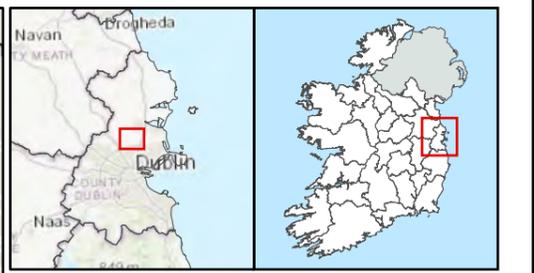
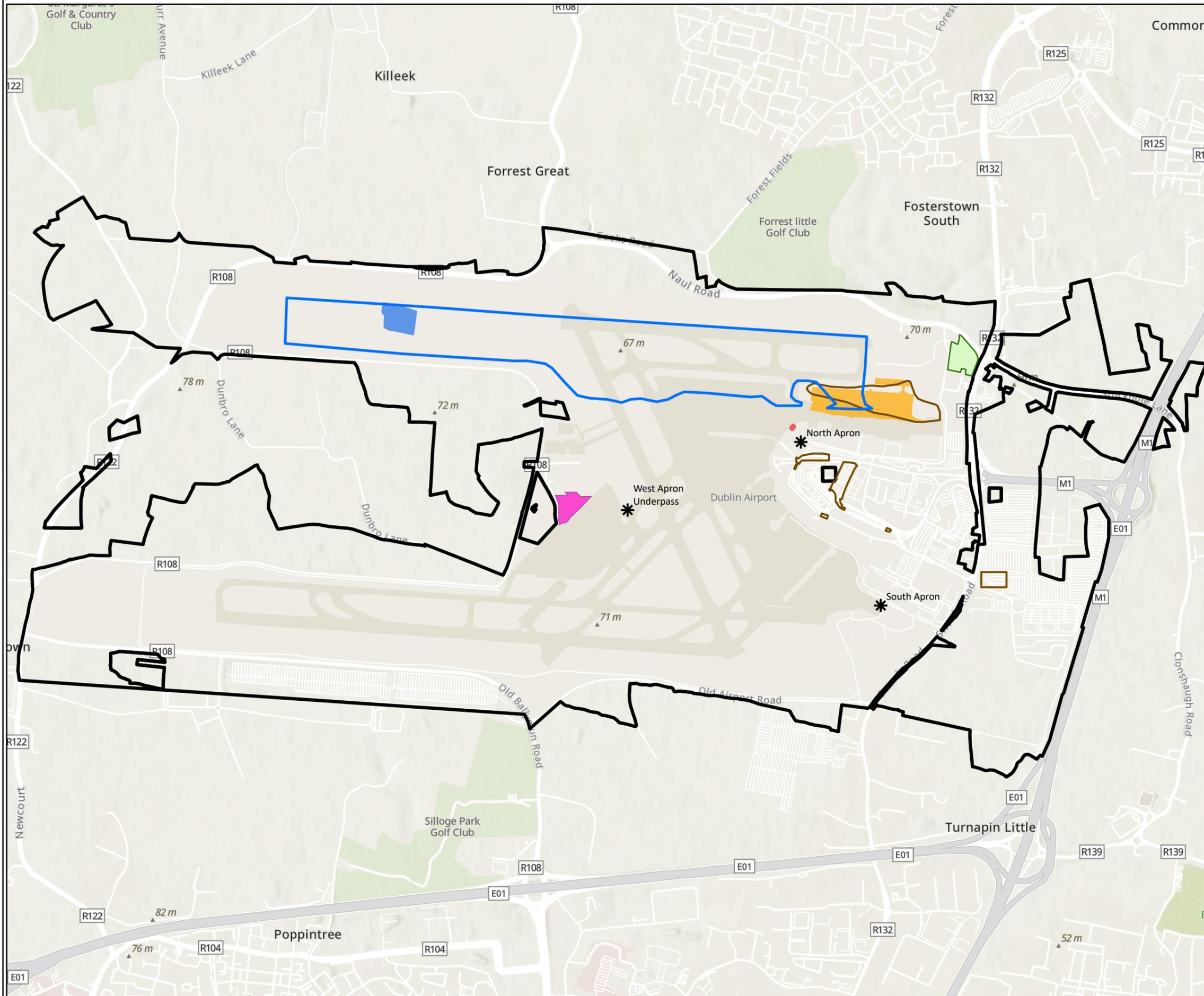
daa have submitted for planning consent to develop the West Apron Underpass Project. The project will consist of a 1.1km subterranean tunnel under the airport's crosswind runway to enable airport vehicles to shuttle between the eastern and western campus following the commencement of operations at the North Runway. An appeal to the planning permission was made to An Bord Pleanála and a decision is currently awaited.

The location of the West Apron Underpass Project is shown on Figure 2-1.

2.4.4 North Apron South Apron Hub

The North Apron South Apron Hub (NASAH) Project comprises a series of transformation projects at both the North Apron and South Apron to facilitate operational efficiency improvements and capacity enhancement at Dublin Airport.

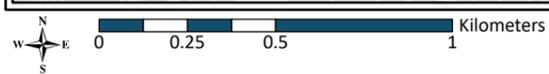
The locations of the NASAH Project is shown on Figure 2-1.



Legend

- Apron Locations
- Dublin Airport Boundary
- North Runway
- Departures Road Project
- Castlemoate House Boundary
- Proposed Apron 5H Development Area
- Current Fire Station & FFTG
- Former Fire Station
- APEC5 - Former Fire Fighting Training Ground

TITLE:	Site Layout	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	2.1	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	26/02/2024	PAGE SIZE: A3





3. ENVIRONMENTAL CHARACTERISTICS WITHIN AND EXTERNAL TO DUBLIN AIRPORT

This section describes the site setting of the environmental monitoring programme study area including its location, the regional geology, hydrogeology and hydrology.

3.1 Site Location

Dublin Airport campus is located approximately 7km north of Dublin City centre, between the M50, M1 and M2 roads. The airport complex is located within 19 townlands, namely Kingstown, Barberstown, Forrest Great, Forrest Little, Cloghran, Millhead, Sandyhill, Dunbro, Pickardstown, Shanganhill, Harristown, Portmellick, Coultrey, Ballymun, Hunstown, Collinstown, Rock, Corballis and Commons.

The airport complex is located at an elevation of between approximately 55m OD and 80m OD, orientating in a west to east direction. On a regional scale, elevation generally decreases to the east towards the Irish Sea and south towards the River Liffey.

Outside of Dublin Airport, the predominant land use in the area is agricultural, with pastures and arable land being the primary land uses in the region according to the COPERNICUS pan-European (Corine) 2018 landcover mapping. Other land use under Corine mapping includes:

- Discontinuous urban fabric referring to Dublin City, Swords and Malahide.
- Construction sites, referring to the North Runway Development.
- Industrial and commercial units, referring surrounding business parks.
- Airports, referring to Dublin Airport.
- Sport and leisure facilities, referring to golf courses and parks.
- Broad-leaved forests.

There is a historic unregulated waste disposal site in the north-eastern area of the airport, at Castlemoate House.

Dublin Airport is served by a mains water supply which provides drinking water for the campus. A groundwater abstraction well, referred to as Gardener's Well is located at Corballis Avenue and is used for watering plants and flowers.

There are numerous streams, rivers and artificial land drains at and surrounding Dublin Airport. As the topography surrounding Dublin Airport falls predominantly from west to east surface water features generally flow in an easterly direction.

The existing hydrogeological environment is discussed in greater detail in Section 3.2.

3.2 Hydrogeology

This section includes descriptions of the aquifer classification, wells and springs in the area, aquifer vulnerability, aquifer recharge and groundwater flow direction as determined from published sources.



3.2.1 Ground Water Body Description

Dublin Airport is located within three groundwater bodies (GWBs):

- Industrial Facility (P0480-02)
- Swords
- Dublin

The descriptions of the GWBs for Swords and Dublin have been taken from the 'Summary of Initial Characterisation' draft reports for each defined GWB published by the GSI in accordance with the Groundwater Working Group Publication: Guidance Document GW2 (2003). The GWB Characterisation Reports are available from the GSI Public Data Viewer. A description is not available for the Industrial Facility (P0480-02) GWB, but as the GWB is bounded by both the Swords and Dublin GWBs the description is expected to be similar.

According to classification work carried out as part of the Water Framework Directive and published by the EPA, the Dublin and Swords GWB's are classified as having 'Good' status in terms of quality and quantity for the period of 2016-2021. Industrial Facility (P0480-02) GWB is classified as having 'Poor' status in terms of quality (for Trichloroethene - all isomers) and 'Good' in terms of quantity. The overall risk result of 'Not At Risk' is applied to the Swords GWB and 'At Risk' is applied to the Industrial Facility (P0480-02) GWB likely due to its current 'Poor' status. The Dublin GWB risk status is under review at the time of writing.

The Groundwater Body locations are shown on Figure 3-1.

3.2.1.1 *Industrial Facility (P0480-02)*

The Industrial Facility (P0480-02) GWB area is associated with Industrial Emissions (IE) Licence P0480-02, where two historical contamination plume areas were identified²⁰. This licence is not issued to daa. The contaminants of concern identified in these areas include:

- Chlorinated hydrocarbons
- Total petroleum hydrocarbons
- Sulphate, manganese, nitrite, ammoniacal nitrogen and methane

3.2.1.2 *Swords Groundwater Body*

The Swords GWB is located in north County Dublin with elevations ranging from 100m OD in the west of the GWB to sea level along the coast. The GWB is within a low-lying area with regional elevations reducing in an easterly direction towards the coast and towards streams on a local scale.

The Swords GWB is predominantly comprised of Dinantian Upper Impure Limestones with smaller amounts of Dinantian Lower Impure Limestones, Dinantian mixed sandstone, shales and limestones, Dinantian Sandstones and Ordovician volcanics and metasediments.

²⁰ Groundwater Monitoring Report 2021 available at:
https://epawebapp.epa.ie/licences/lic_eDMS/090151b280820b5e.pdf



The predominant aquifer type within the Swords GWB is classified as LI - Locally important bedrock aquifer, which is moderately productive only in local zones, with some PI - Poor aquifer which is generally unproductive except for local zones and small amounts (2% of GWB) of Lm - Locally important aquifer, which is generally moderately productive.

According to the 'Summary of Initial Characterisation' report for the Swords GWB (GSI, n.d.a), the majority of groundwater flow within this GWB is considered to occur within the upper weathered bedrock and in conduits at depths of 30 to 50m below ground level (BGL). The groundwater flow direction in the GWB is generally towards the coast and overlying rivers. Groundwater flow paths within the aquifer are not expected on a regional level, with common flow lengths of less than a kilometre.

Information provided by the GSI indicates that the main recharge mechanism to the GWB is via diffuse recharge percolating through the subsoil. The amount of effective rainfall which will recharge the GWB is determined by the thickness and permeability of the soil, and the slope. Due to the low permeability of the GWB, a high proportion of the recharge will discharge rapidly to surface watercourses from the upper layers of the aquifer.

The main discharge mechanism from the Swords GWB is directly to the Irish Sea along the coast. Discharge to overlying rivers will also occur if they are in hydraulic conductivity with the aquifer.

3.2.1.3 *Dublin Groundwater Body*

The Dublin GWB is located in the Greater Dublin City area and extends southwest towards Kildare. The GWB is generally low lying, with higher elevations to the south at the foothills of the Dublin Mountains and to the northwest. Elevations decrease towards river estuaries.

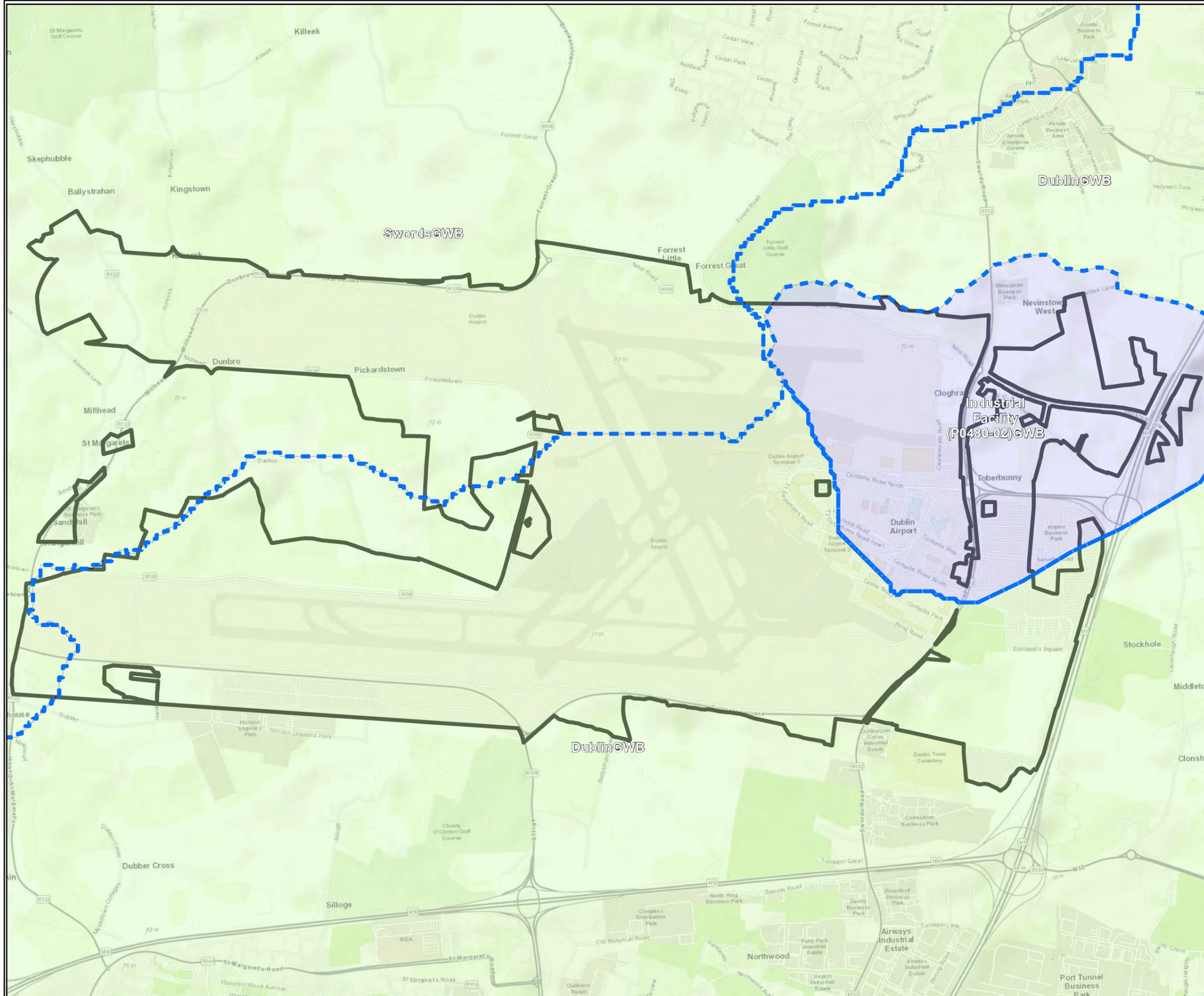
The Dublin GWB is comprised of Dinantian Upper Impure Limestones, Dinantian Lower Impure Limestones, Dinantian Pure Unbedded Limestones, Dinantian Mixed Sandstones, Shales and Limestones and Namurian Undifferentiated rock.

The aquifer types within the Dublin GWB are classified as LI - Locally important bedrock aquifer which is moderately productive only in local zones and PI - Poor aquifer which is generally unproductive except for local zones.

According to the 'Summary of Initial Characterisation' report for the Dublin GWB (GSI, n.d.a), the majority of groundwater flow within this GWB is considered to occur within the upper weathered bedrock and in conduits at depths of 30 to 50m BGL. The groundwater flow direction in the GWB is generally towards the coast and also towards the River Liffey and Dublin City. Groundwater flow paths within the aquifer are not expected on a regional level, with common flow lengths of less than a kilometre.

Information provided by the GSI indicates that the main recharge mechanism to the GWB outside of Dublin City locally is via diffuse recharge percolating through the subsoil. The amount of effective rainfall which will recharge the GWB is determined by the thickness and permeability of the soil, and the slope. Due to the low permeability of the GWB, a high proportion of the recharge will discharge rapidly to surface watercourses from the upper layers of the aquifer. Beneath Dublin City, it is conservatively estimated that on 10% of the city area is available for recharge as the remainder is an impermeable layer.

The main discharge mechanism from the Dublin GWB is directly to the Irish Sea along the coast. Discharge to overlying gravel aquifers and to overlying rivers will also occur if they are in hydraulic conductivity with the aquifer.



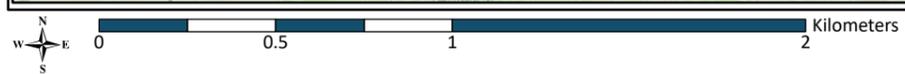
Legend

- Dublin Airport Boundary
- Groundwater Bodies

Groundwater Bodies Risk Categories (as assigned by EPA)

- At Risk
- Not at Risk

TITLE:	Groundwater Bodies	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	3-1	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	27/02/2024	PAGE SIZE: A3



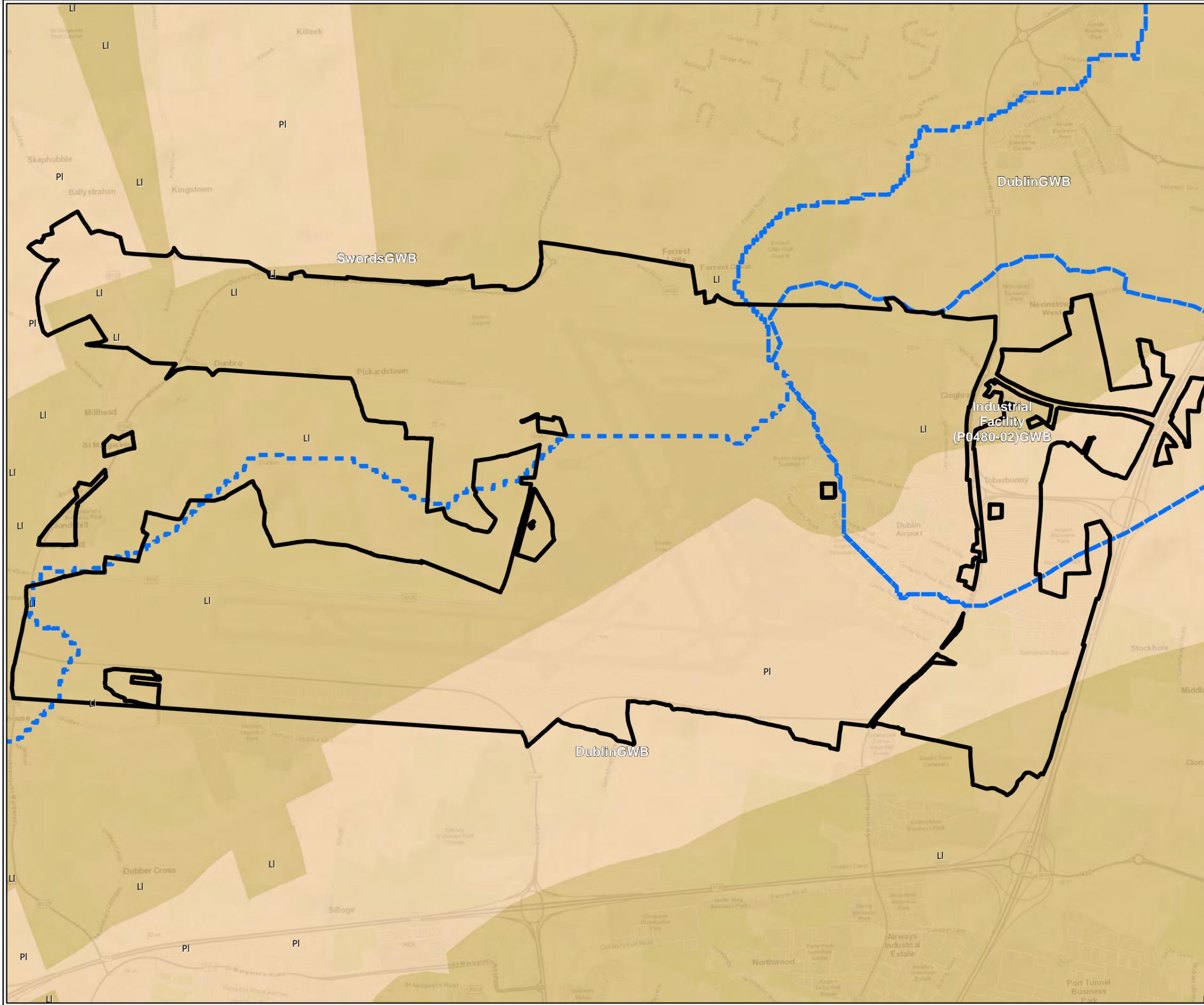


3.2.2 Aquifer Classification

The GSI mapping describes the Swords, Dublin and Industrial Facility (P0480-02) GWBs as poorly productive bedrock aquifers.

Dublin Airport and surrounding lands sit on two aquifer classifications. The GSI classify the aquifer beneath the northwest area of Dublin Airport as a 'Locally important aquifer - bedrock which is Moderately Productive only in Local Zones', with the southeast area described as a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones'.

The aquifer classification mapping is shown on Figure 3-2.



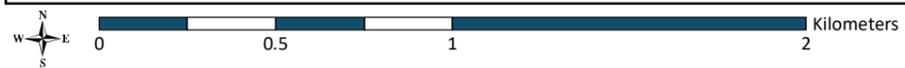
Legend

- Dublin Airport Boundary
- Groundwater Bodies

Bedrock Aquifers

- LI: Locally Important Aquifer - Bedrock Mod Productive Locally
- PI: Poor Aquifer Bedrock Generally Unproductive Except Locally

TITLE:	Aquifer Classification		
PROJECT:	Environmental Monitoring Report		
FIGURE NO:	3-2		
CLIENT:	daa		
SCALE:	1:20000	REVISION:	0
DATE:	23/02/2024	PAGE SIZE:	A3





3.2.3 Aquifer Vulnerability

Groundwater vulnerability, as defined by the GSI, is the term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities.

The factors used in assessing groundwater vulnerability include subsoil type and thickness and recharge type as indicated in Table 3-1. The GSI procedure whereby groundwater protection is assessed is outlined in the EPA-GSI publication Groundwater Protection Schemes (DELG/EPA/GSI, 1999).

Table 3-1: GSI Guidelines – Aquifer Mapping

Vulnerability Rating	Hydrogeological Conditions		
	Subsoil Permeability (Type) and Thickness		
	High Permeability (Shallow Bedrock)	Moderate Permeability (e.g., Sandy soil)	Low Permeability (e.g., Clayey subsoil, clay, peat)
Extreme (E)	0 - 3.0 m	0 - 3.0 m	0 - 3.0 m
High (H)	>3.0 m	3.0 -10.0 m	3.0 - 5.0 m
Moderate (M)	N/A	>10.0 m	5.0 - 10.0 m
Low (L)	N/A	N/A	>10 m

Notes:

N/A = Not Applicable

Precise permeability values cannot be given at present.

Text in bold relates to hydrogeological conditions across Dublin Airport

GSI classifies the aquifer vulnerability in the region as varying from ‘Low’ to ‘X - Rock at or near surface’ (extreme). Low vulnerability areas are observed in the southern half of the airport, increasing in vulnerability towards the northern and western extents. Where vulnerability is classified as being ‘X - Rock at or near surface’ this coincides with areas of exposed bedrock or subcrop shown on other GSI geological mapping.

Based on these classifications it is expected that subsoil thickness, and depth to groundwater at the airport will vary from 0m to 10m in the northern and western airport extents to greater than 10m in the southern extent.

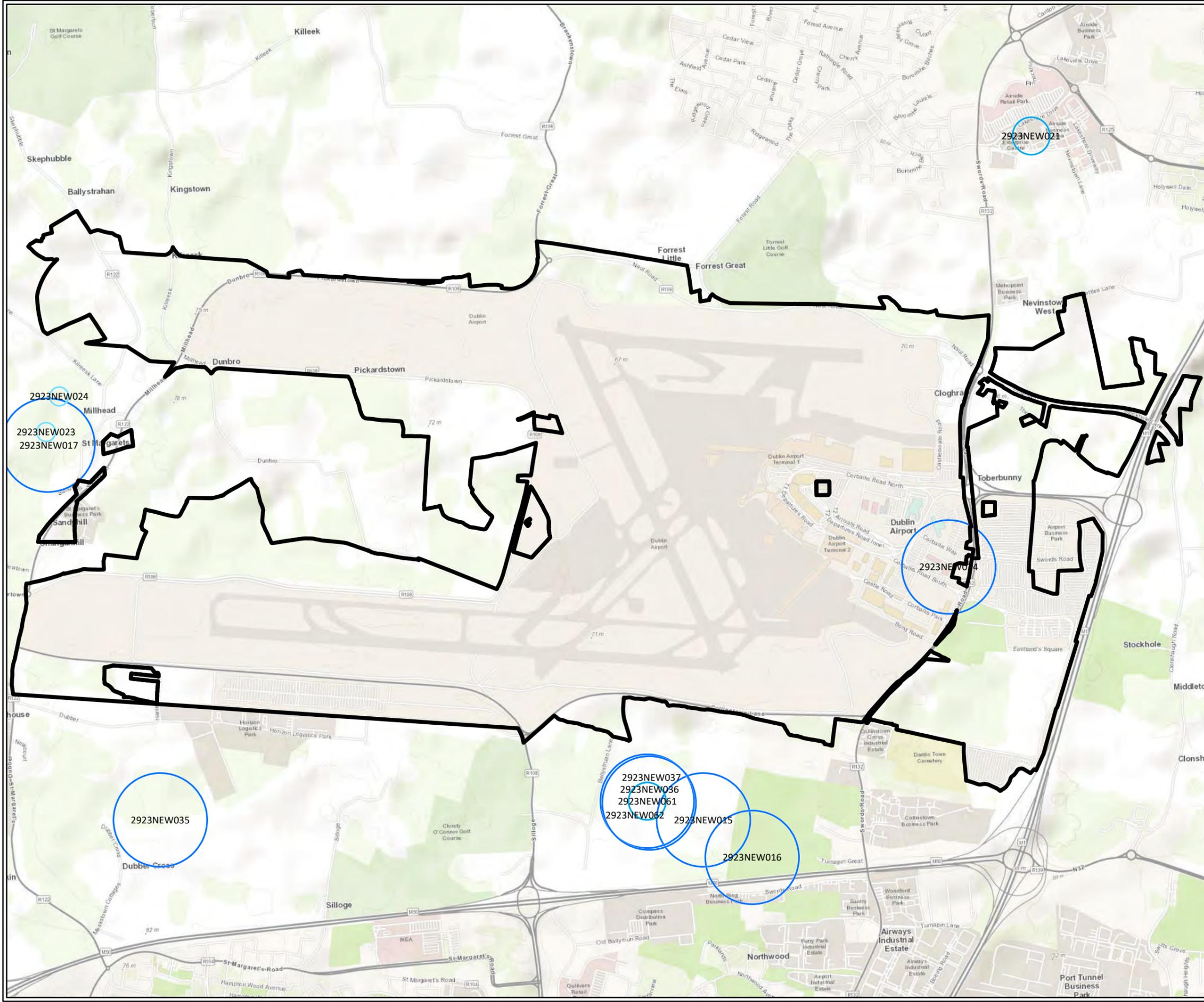
The aquifer vulnerability mapping is shown on Figure 3-3.

3.2.4 Aquifer Recharge

The GSI groundwater recharge mapping depicts the estimated recharge to the deep groundwater system i.e., groundwater that has the potential to be utilised as a groundwater resource. The GSI method for estimating groundwater recharge utilises data on groundwater vulnerability, subsoil permeability, soil drainage, aquifer type and hydrologically effective rainfall.

GSI estimated an annual groundwater recharge value of up to 71mm/yr for the majority of the Dublin Airport complex with a recharge co-efficient of 20% i.e. 20% of the effective rainfall will reach the aquifer.

The effective rainfall at the airport varies from 308 mm/year up to 356mm/year.



- Legend**
- Dublin Airport Boundary
 - Wells and Springs (50-100m Accuracy)
 - Wells and Springs (100-200m Accuracy)
 - Wells and Springs (200-500m Accuracy)

TITLE:	GSI Wells and Springs	
PROJECT:	Environmental Monitoring Report	
FIGURE NO.:	3-4	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	23/02/2024	PAGE SIZE: A3





3.2.5 Ground Water Flow Direction

AECOM Ireland Ltd. prepared a groundwater monitoring report for (IE) License P0480-02 which operates at the North Apron²¹. Based on previous groundwater monitoring events conducted for the licensee, AECOM infer groundwater flow direction at the North Apron is to the north or northeast with discharge occurring to surface water.

A draft 2020 groundwater monitoring report completed by AWN Consultants indicates groundwater flow at Castlemoate House is in an east to southeast direction. Castlemoate House is in the northeast corner of Dublin Airport, downgradient of the North Apron.

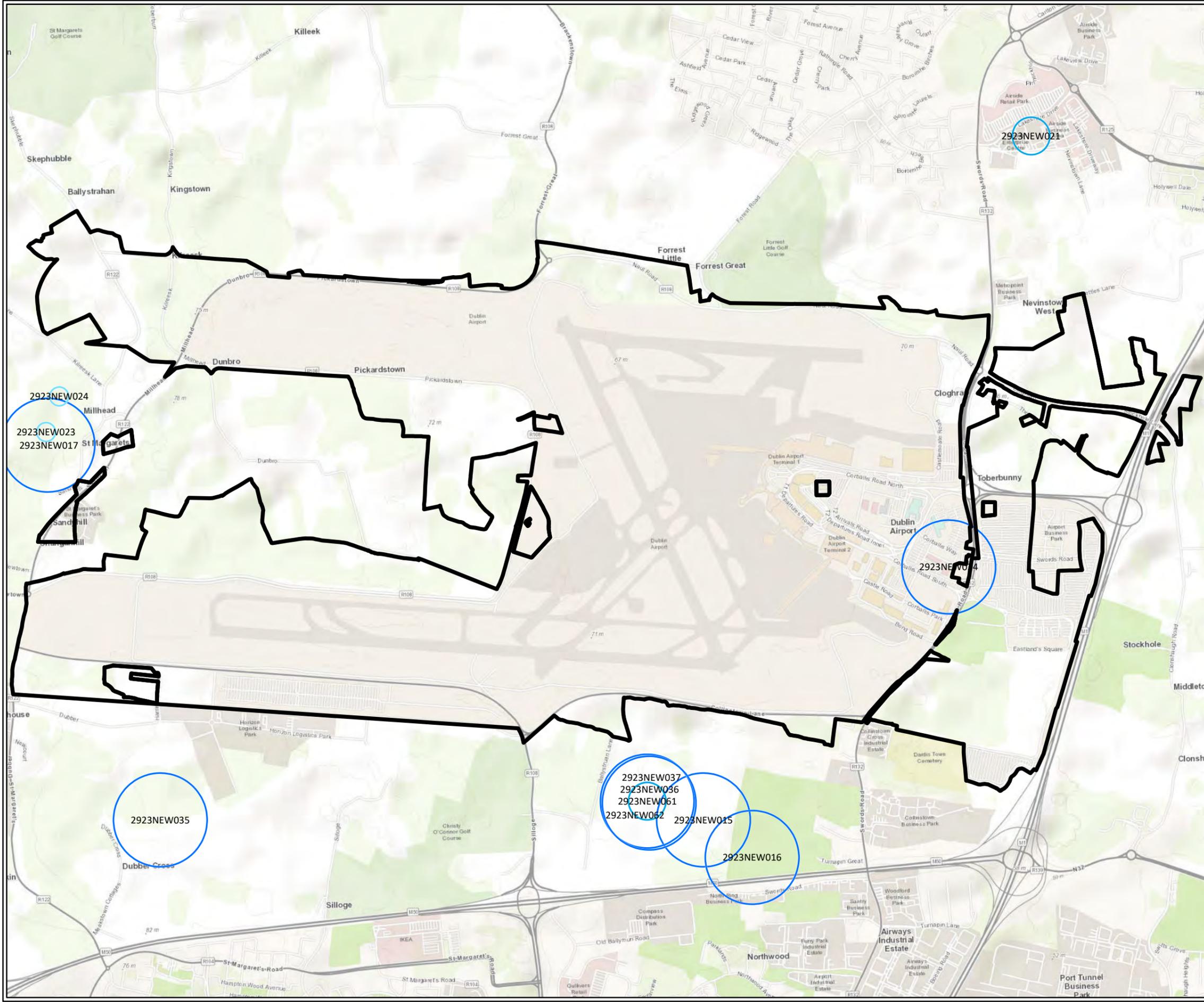
Based on the Swords and Dublin GWB descriptions, it is expected regional groundwater flow is generally towards the coast (east) and overlying rivers, including the River Liffey.

3.2.6 Ground Well Abstraction Wells

A review of GSI wells and springs mapping indicates the presence of groundwater abstraction wells surrounding Dublin Airport.

The locations of the GSI Wells and Springs surrounding the site are presented on Figure 3-4.

²¹ Groundwater Monitoring Report 2020 available at:
https://epawebapp.epa.ie/licences/lic_eDMS/090151b280783d0e.pdf



- Legend**
-  Dublin Airport Boundary
 -  Wells and Springs (50-100m Accuracy)
 -  Wells and Springs (100-200m Accuracy)
 -  Wells and Springs (200-500m Accuracy)

TITLE:	GSI Wells and Springs	
PROJECT:	Environmental Monitoring Report	
FIGURE NO.:	3-4	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	23/02/2024	PAGE SIZE: A3





3.3 Hydrology

Dublin Airport is located within two catchments, the Nanny-Delvin (northwest portion) and Liffey and Dublin Bay catchment (southeast portion). The airport is located in two sub-catchments, the Broadmeadow_SC_010 (within the Nanny Delvin catchment) and the Mayne_SC_010 (within the Liffey and Dublin Bay catchment).

The Regional Hydrology for the site is presented on Figure 3-5.

3.3.1 Nanny-Delvin Catchment/Broadmeadows SC 010

The area of the airport located within the Nanny-Delvin catchment/ Broadmeadow_SC_010 is within one river sub-basin, the Ward_030. The closest surface water bodies to the airport are the Dunbro and Millhead to the west and the Barberstown 08 to the north. The airport drainage system outfalls to the Dunbro, Millhead and Barberstown 08 via land drains.

The Dunbro and Millhead flow west until they meet approximately 200m west of the airport boundary, turning in a northerly direction to meet Huntstown 08. The Barberstown 08 flows in a north direction and turns west approximately 450m north of the airport boundary until it meets Huntstown 08, approximately 1.1km northwest of the airport boundary. The Huntstown 08 meets the Ward River approximately 1.7km north of the airport flowing in an easterly direction. The Ward River enters the Broadmeadow River approximately 4.0km north of the airport boundary, and subsequently into the Broadmeadow Estuary, Malahide Bay and Irish Sea.

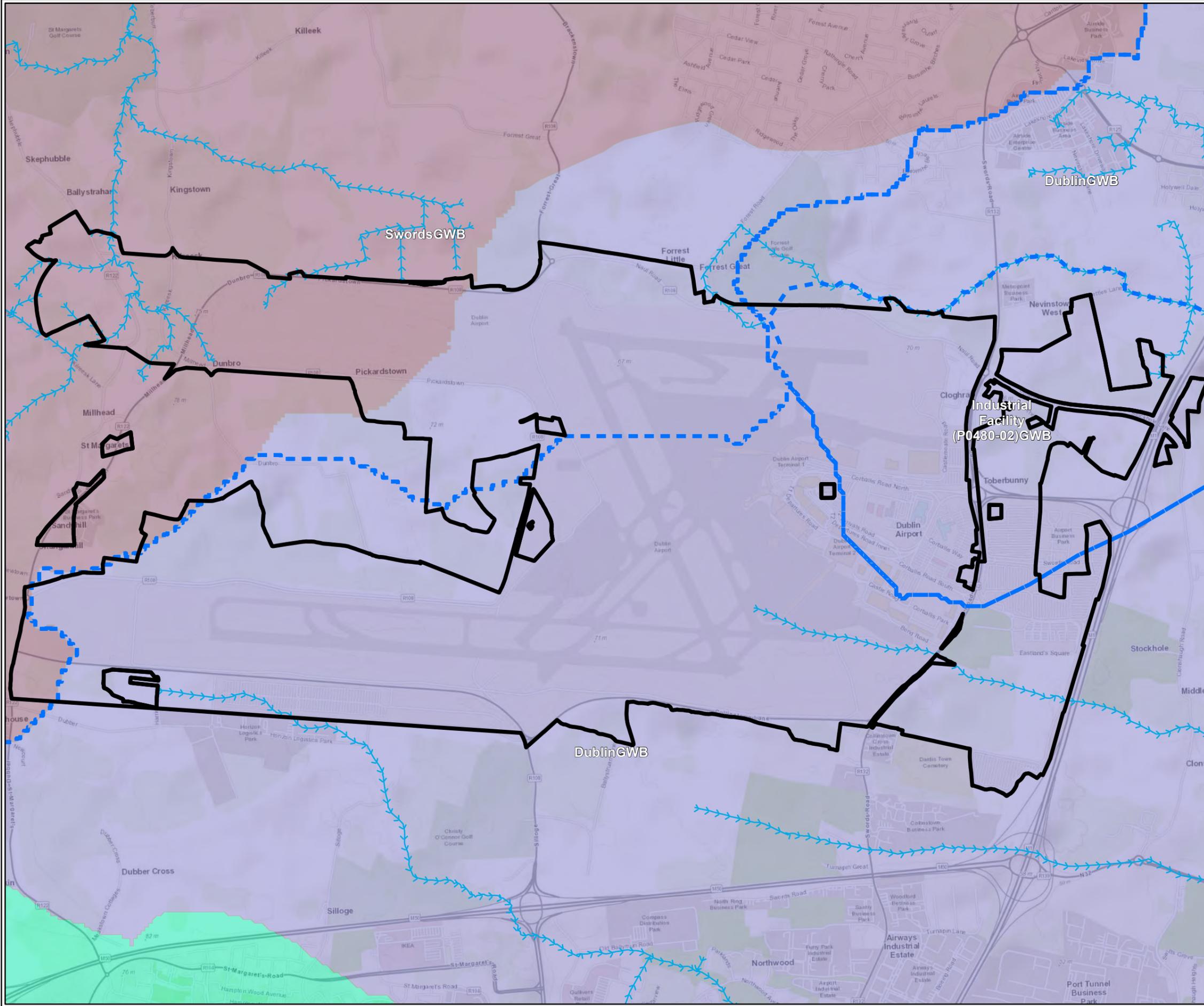
The Dunbro, Millhead, Huntstown 08, Barberstown 08, Ward River, Broadmeadow River and Broadmeadow Estuary have been assigned a 'moderate' 2016-2021 WFD water quality status. For the 2013-2018 period, the downstream portion of the Ward River, Broadmeadow River and Broadmeadow Estuary were assigned a 'poor' water quality status. Malahide Bay has been assigned a 'moderate' status and Irish Sea has been assigned a 'good' status. All aforementioned surface water bodies except for the Irish Sea are described at 'at risk' of not meeting their WFD objectives by 2027. The Irish Sea is 'not at risk'.

3.3.2 Liffey and Dublin Catchment/Mayne SC 010

The area of the airport located within the Liffey and Dublin Bay catchment/ Mayne_SC_010 is within three river sub-basins, the Sluice, Mayne and Santry. The closest surface water bodies to the airport are the Sluice to the north, Cuckoo Stream to the east and Mayne 09 and Santry to the south. The airport drainage system outfalls to the Sluice and Cuckoo Stream, and potentially Mayne 08 and Santry via land drains.

The Sluice and Mayne 09 primarily flow in a southeast direction discharging into the Mayne Estuary prior to entering the Irish Sea. The Irish Sea is approximately 8km from the airport boundary. The Cuckoo Stream flows in a southeast direction until it enters the Mayne 09 approximately 4.6km southeast of the airport boundary. The Santry flows in a southeast direction into the North Bull Island Estuary before entering the Irish Sea.

The water quality status has not been assigned to the Sluice or Mayne Estuary for 2016-2021. The Cuckoo Stream, Mayne 09 and Santry have been assigned a 'poor' water quality status. North Bull Island has a 'Moderate' status. The Irish Sea has been assigned a 'good' status. The risk status of the Sluice and Mayne Estuary of not meeting their WFD objectives by 2027 are under review. The Cuckoo Stream, Mayne 09 and Santry are 'at risk'. North Bull Island is in Review. The Irish Sea is 'not at risk'.



Legend

- Dublin Airport Boundary
- Groundwater Bodies
- Rivers

WFD Sub-Catchments

- Broadmeadow_SC_010
- Mayne_SC_010
- Tolka_SC_020

TITLE:	Regional Hydrology	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	3-5	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	23/02/2024	PAGE SIZE: A3



3.4 Geology

3.4.1 Bedrock Geology

The GSI 1:100,000 scale bedrock geology map shows Dublin Airport and surrounding lands of the airport are underlain by carboniferous limestone consisting of the following four formations, from oldest to youngest:

- Malahide Formation
- Waulsortian Limestones
- Tober Colleen Formation
- Lucan Formation

The Malahide Formation is described as comprising 'argillaceous bioclastic limestone, shale'. The GSI lithological description describes the lower part of the formation as '*calcareous shales, siltstones and sandstones, and occasional thin limestones at its base*'. This formation is located beneath the northern and western areas of the of the airport complex and is lain in a southwest to northeast direction.

The Malahide Formation is overlain by the Waulsortian Limestones which is described as '*pale-grey, crudely bedded or massive limestone*'. The Waulsortian Limestones which extend from Terminal 1 in a northeast direction for approximately 2km, are overlain by the Tober Colleen Formation.

The Tober Colleen Formation is comprised of '*dark-grey, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones*'. This formation is located beneath the southern area of the of the airport complex and is lain in a southwest to northeast direction.

The Lucan Formation overlies the Waulsortian and Tober Colleen Formations and comprises the youngest rocks in the area. This formation is described as '*dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey*'.

According to the GSI online mapping database there are several bedrock structural faults located within the airport. Several north-south and east-west faults are in the western half of the airport with a southwest to northeast fault in the eastern portion of the airport.

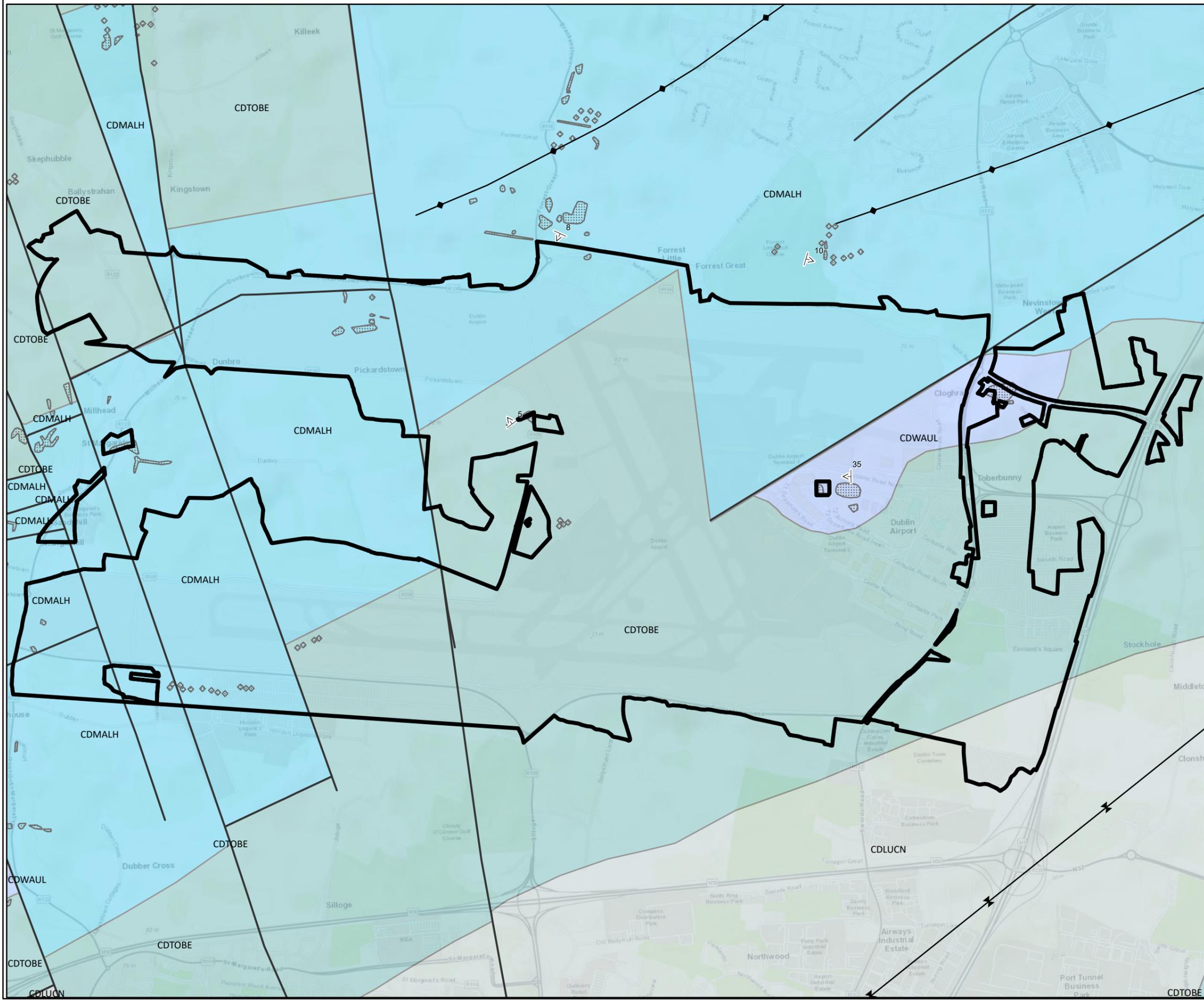
GSI mapping shows some small pockets of bedrock outcrop within and surrounding Dublin Airport.

Bedrock geology for the site is presented on Figure 3-6.

3.4.2 Quaternary Geology

The soil type at the site and in the region is predominately classified by the GSI as being till derived from limestones with the predominant soil cover described as BminDW - deep well drained mineral (mainly basic) and BminPD - mineral poorly drained (Mainly basic). Pockets of gravels derived from limestones and bedrock outcrop are present throughout the region, with alluvium present along the vicinity of rivers and streams.

Quaternary Geology for the site is presented on Figure 3-7.



Legend

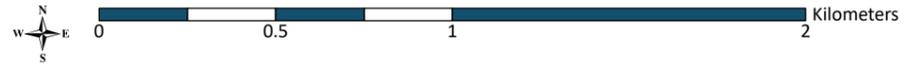
- Dublin Airport Boundary
- Strike and dip of bedding, right way up
- Anticlinal Axis
- Fault
- Synclinal Axis
- Bedrock Outcrop

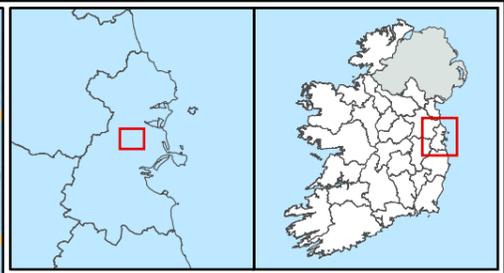
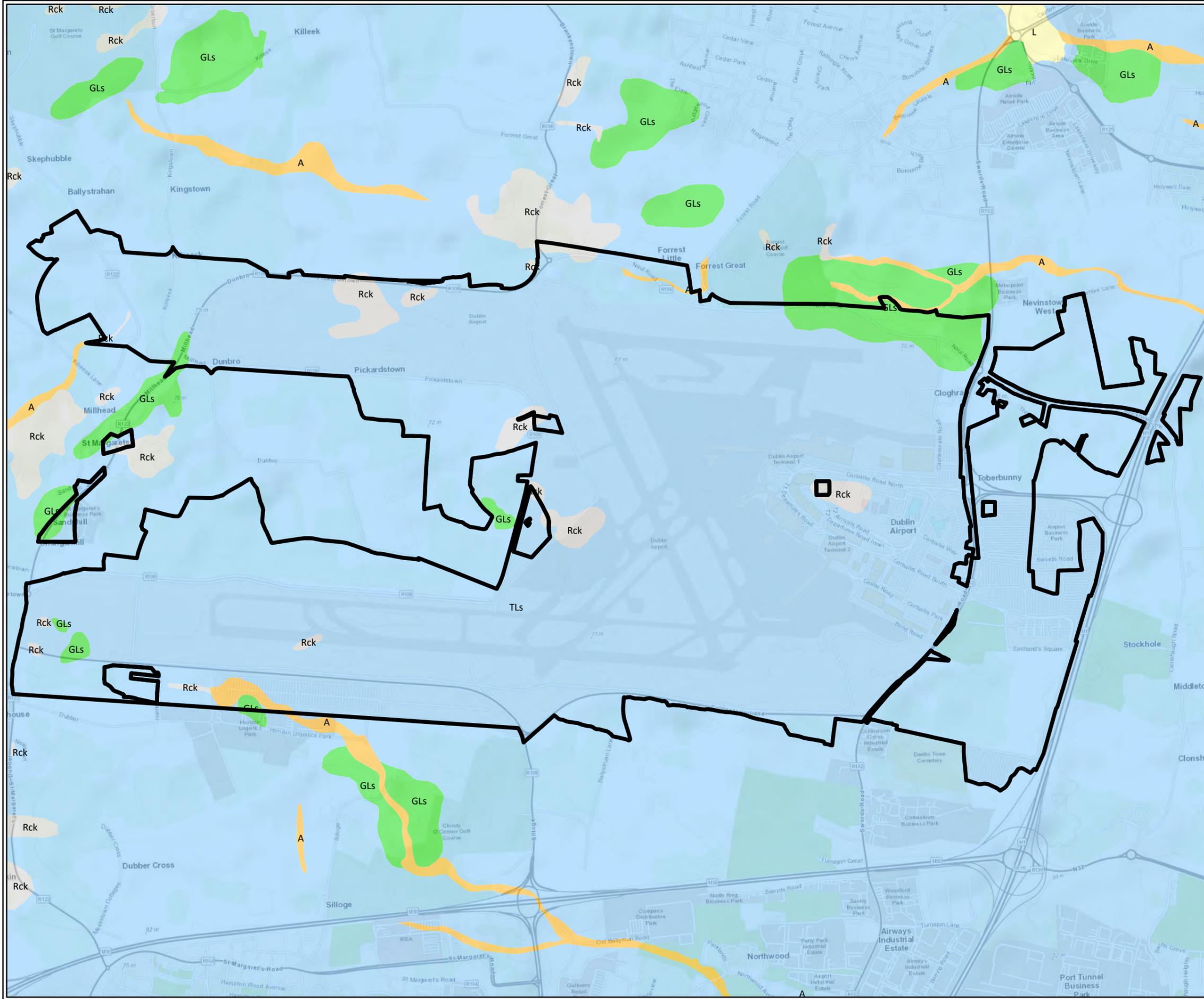
Bedrock Geology

- Lucan Formation
- Malahide Formation
- Tober Colleen Formation
- Waulsortian Limestones

TITLE:	Bedrock Geology	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	3-6	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	23/02/2024	PAGE SIZE: A3

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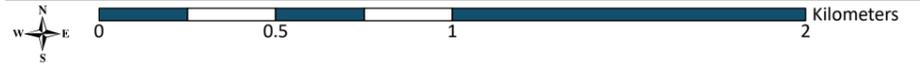




Legend

- Dublin Airport Boundary
- Quaternary Sediments**
- A, Alluvium
- GLs, Gravels derived from Limestones
- L, Lacustrine sediments
- Rck, Bedrock outcrop or subcrop
- TLs, Till derived from limestones

TITLE:	Quaternary Geology	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	3-7	
CLIENT:	daa	
SCALE:	1:20,000	REVISION: 0
DATE:	23/02/2024	PAGE SIZE: A3





4. ENVIRONMENTAL MONITORING PROGRAMME, SITE INVESTIGATIONS AND RESULTS

4.1 Introduction

This section describes the methodologies that were followed during the environmental monitoring undertaken at the airport and its environs.

Environmental monitoring methodologies are provided in Appendix 2 and further described in Sections 4.2 and 4.3. The following environmental monitoring activities were undertaken:

- a) Groundwater sampling of monitoring boreholes, groundwater reservoir and supply well.
- b) Surface water sampling of surface water bodies, manholes and drains.

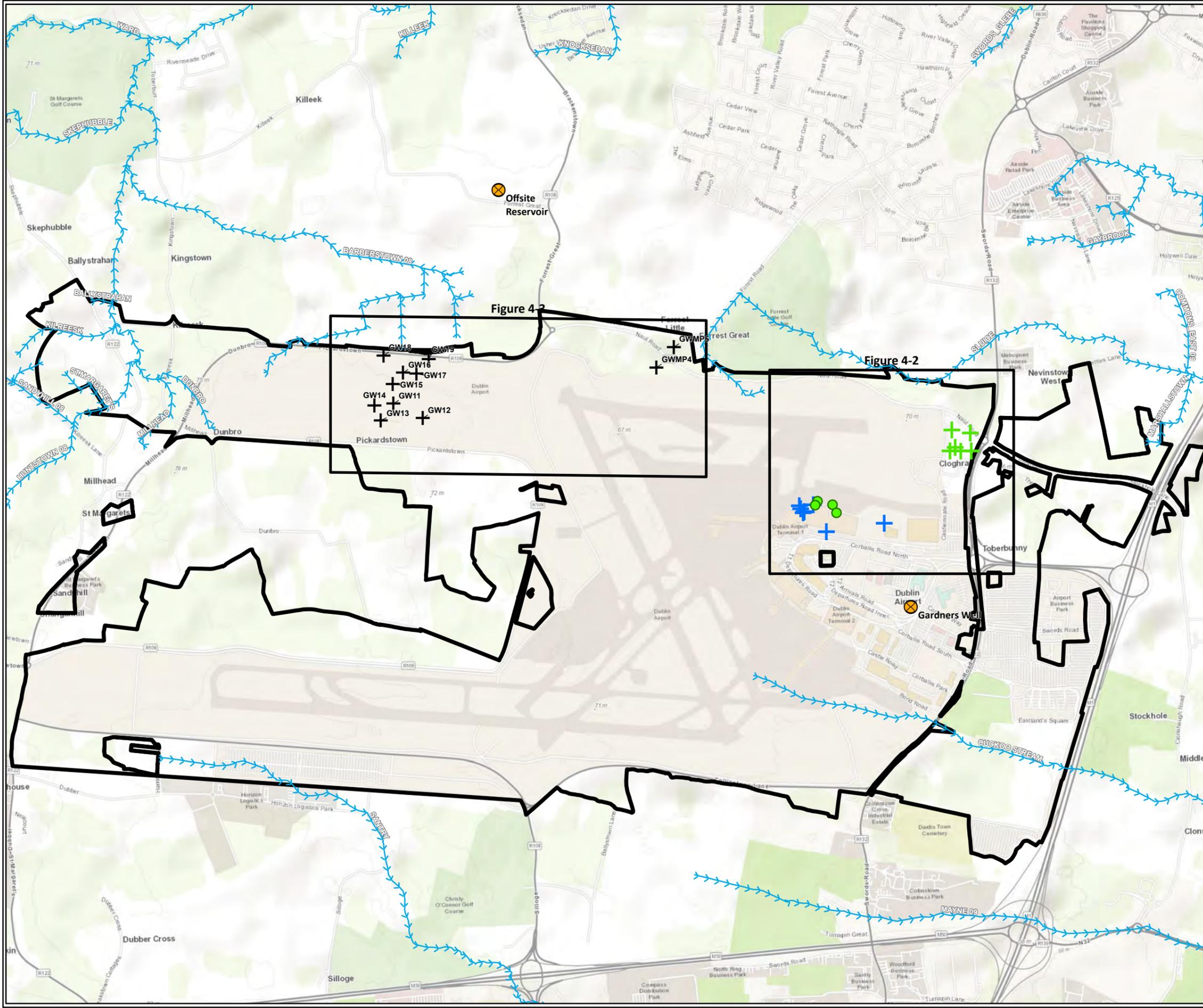
Groundwater monitoring locations are presented on Figure 4-1, Figure 4-2 and Figure 4-3. Surface water monitoring locations are presented on Figure 4-4, Figure 4-5 and Figure 4-6.

Site Investigation methodologies undertaken during the monitoring programme are described in Section 4.3. Site investigations were completed at:

- Dublin Airport Departures Road Project
- West Apron Underpass Project
- Proposed Apron 5H Development
- North Apron South Apron Hub (NASAH)

Site investigation locations are presented in Figure 4-7 to Figure 4-11.

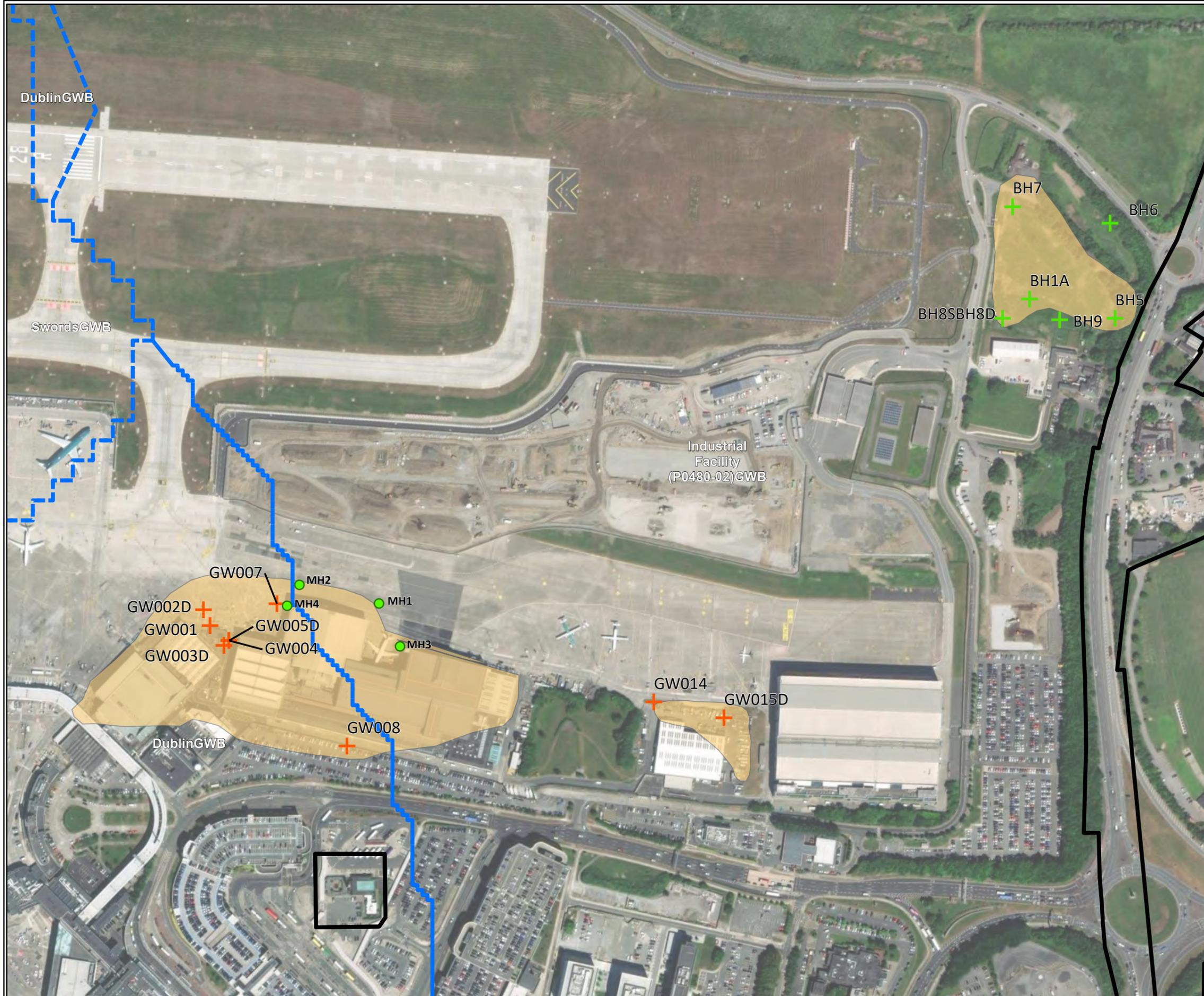
The results report where PFAS has been recorded as present within the airport complex and its environs.



- Legend**
- Dublin Airport Boundary
 - Castlemoate Groundwater Wells
 - North Apron Groundwater Wells
 - Groundwater Reservoir / Supply Well
 - Manhole Monitoring Locations
 - Groundwater Monitoring Locations
 - Rivers

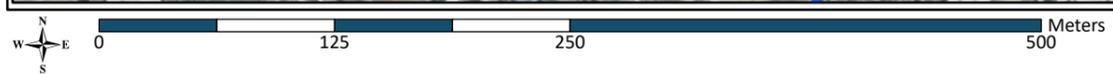
TITLE:	
Groundwater Sample Locations	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	
4.1	
CLIENT:	
daa	
SCALE:	REVISION:
1:20,000	0
DATE:	PAGE SIZE:
3/25/2024	A3

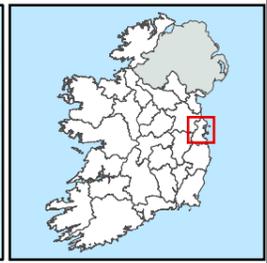
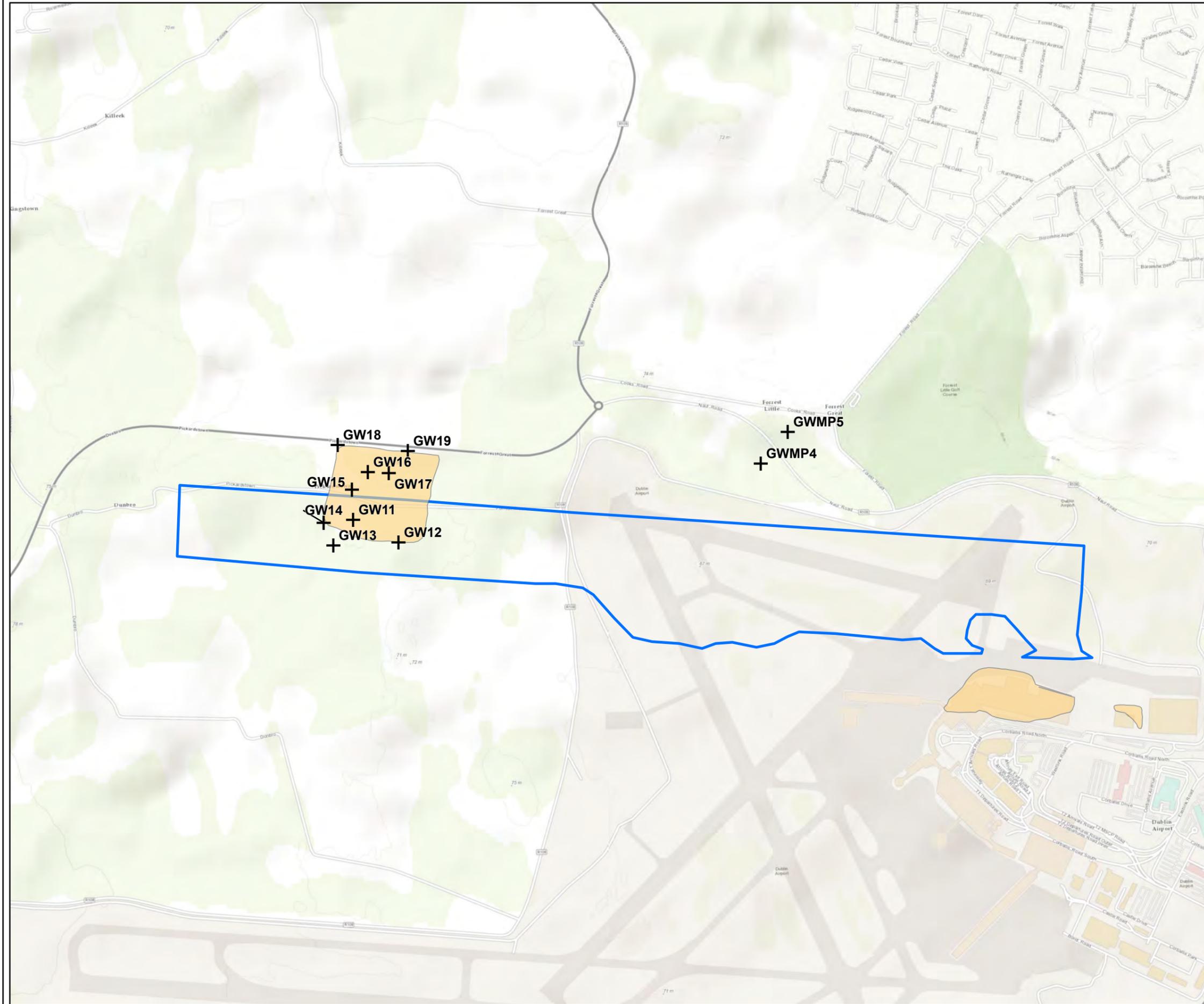




- Legend**
- Dublin Airport Boundary
 - Minimum Extent of PFAS Plumes
 - Groundwater Bodies
 - + Castlemoate Groundwater Wells
 - + North Apron Groundwater Wells
 - Manhole Monitoring Locations

TITLE:	
North Apron and Castlemoate House Groundwater Monitoring Locations	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	4.2
CLIENT:	daa
SCALE:	1:3,750
REVISION:	0
DATE:	3/26/2024
PAGE SIZE:	A3

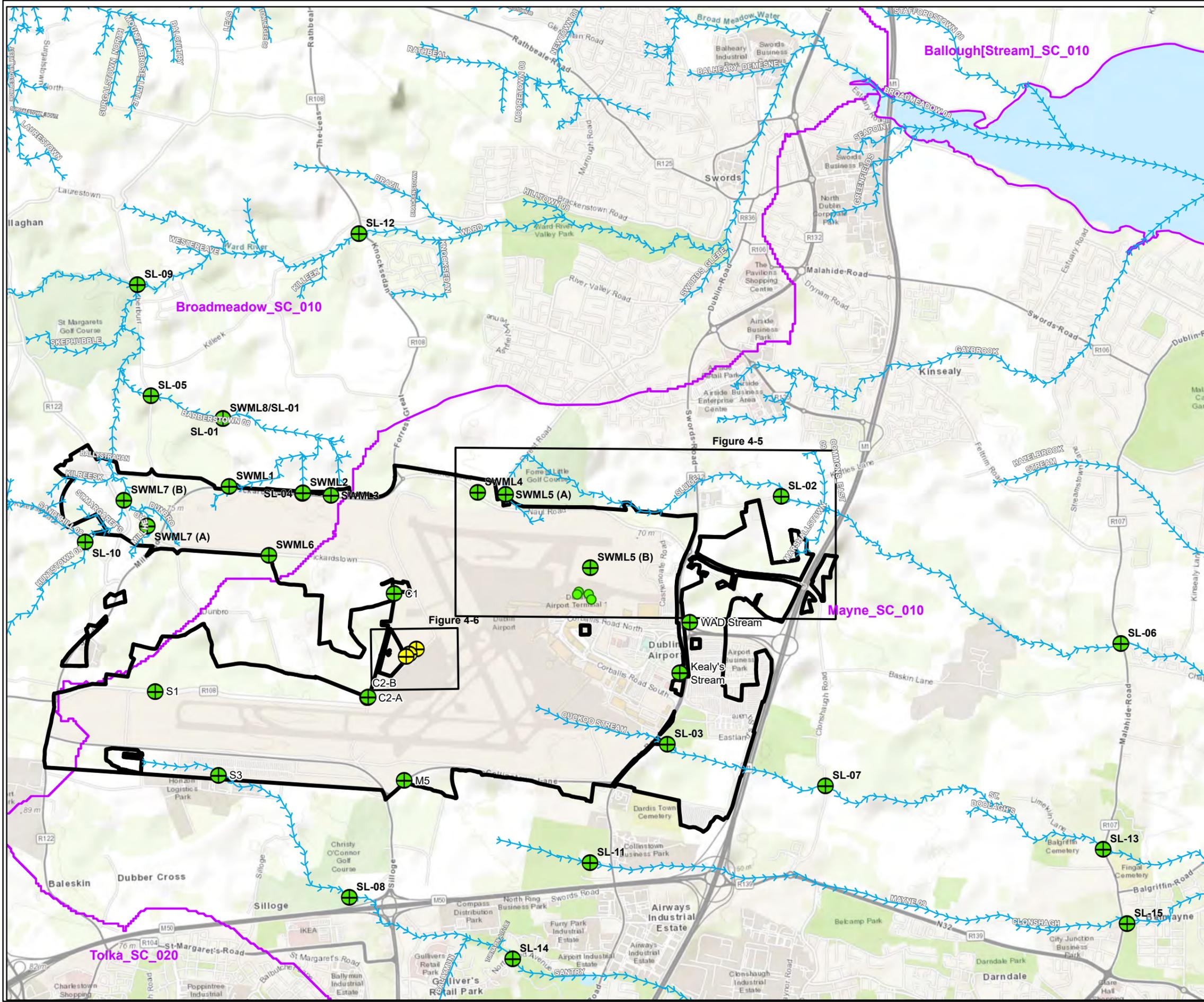




- Legend**
- Minimum Extent of PFAS Plumes
 - North Runway
 - Groundwater Monitoring Locations

TITLE:	North Runway Groundwater Monitoring Locations	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	4.3	
CLIENT:	daa	
SCALE:	1:13,000	REVISION: 0
DATE:	3/25/2024	PAGE SIZE: A3





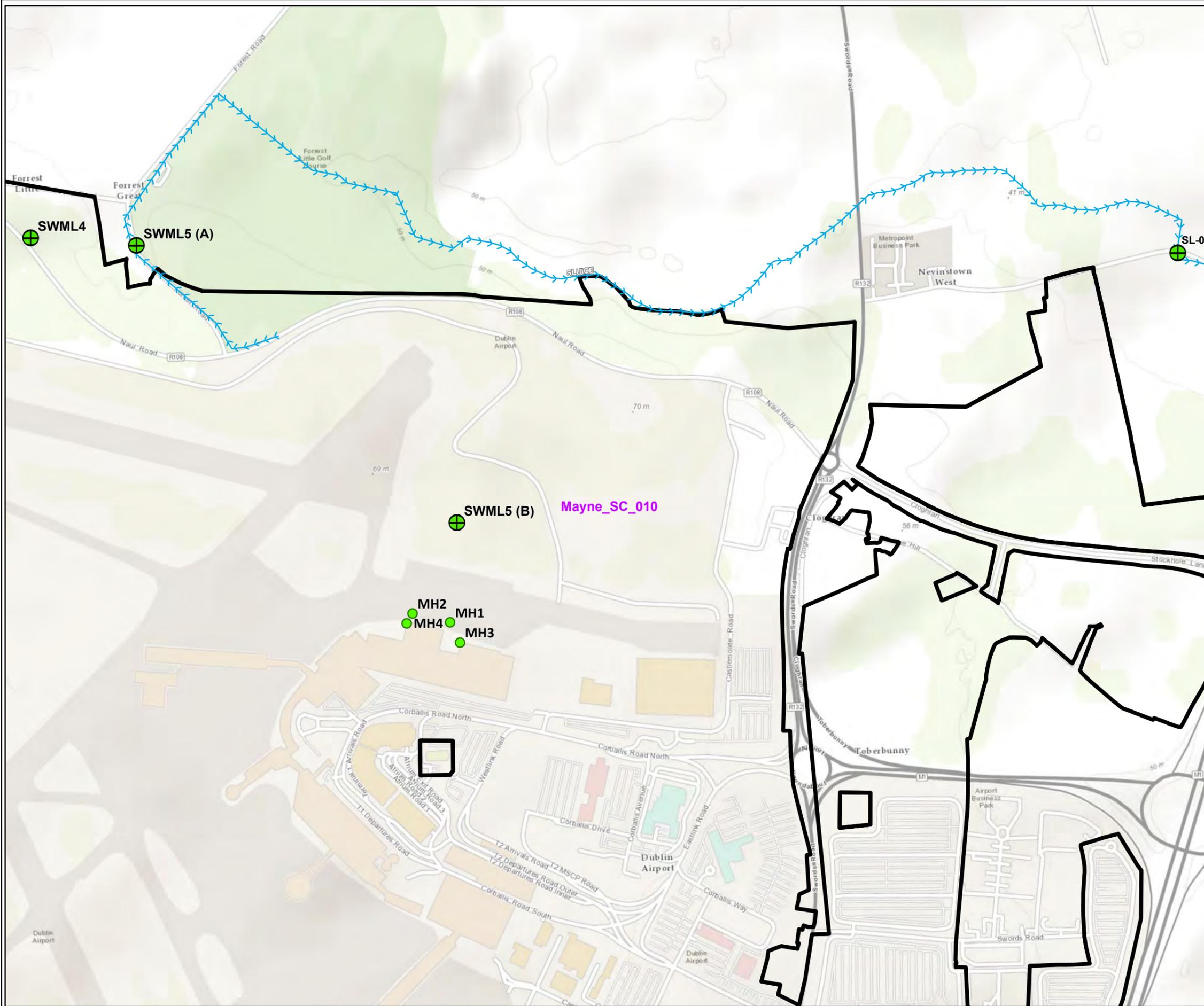
- Legend**
- Dublin Airport Boundary
 - WFD Sub Catchments
 - Manhole Monitoring Locations
 - Current Firestation Surface Water Locations
 - Surface Water Monitoring Locations
 - Rivers

Figure 4-5

Figure 4-6

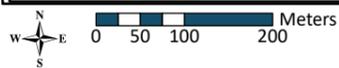
TITLE:	
Surface Water Monitoring Locations	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	
4-4	
CLIENT:	
daa	
SCALE:	REVISION:
1:30,000	0
DATE:	PAGE SIZE:
3/26/2024	A3

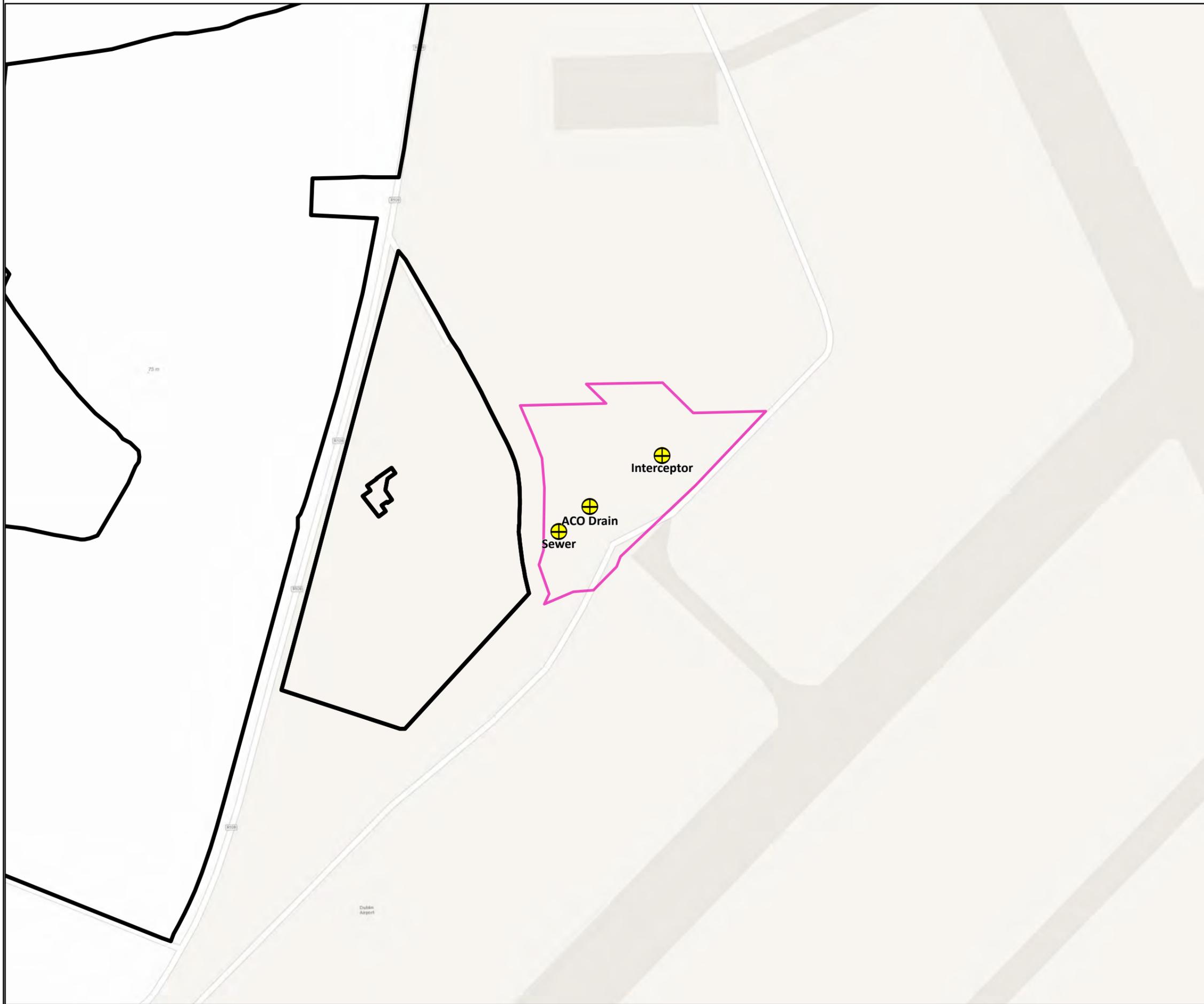




- Legend**
- Dublin Airport Boundary
 - WFD Sub Catchments
 - Manhole Monitoring Locations
 - ⊕ Surface Water Monitoring Locations
 - Rivers

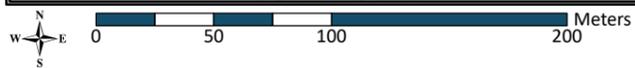
TITLE:	Surface Water Monitoring Locations North of North Apron	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	4-5	
CLIENT:	daa	
SCALE:	1:8,000	REVISION: 0
DATE:	3/25/2024	PAGE SIZE: A3

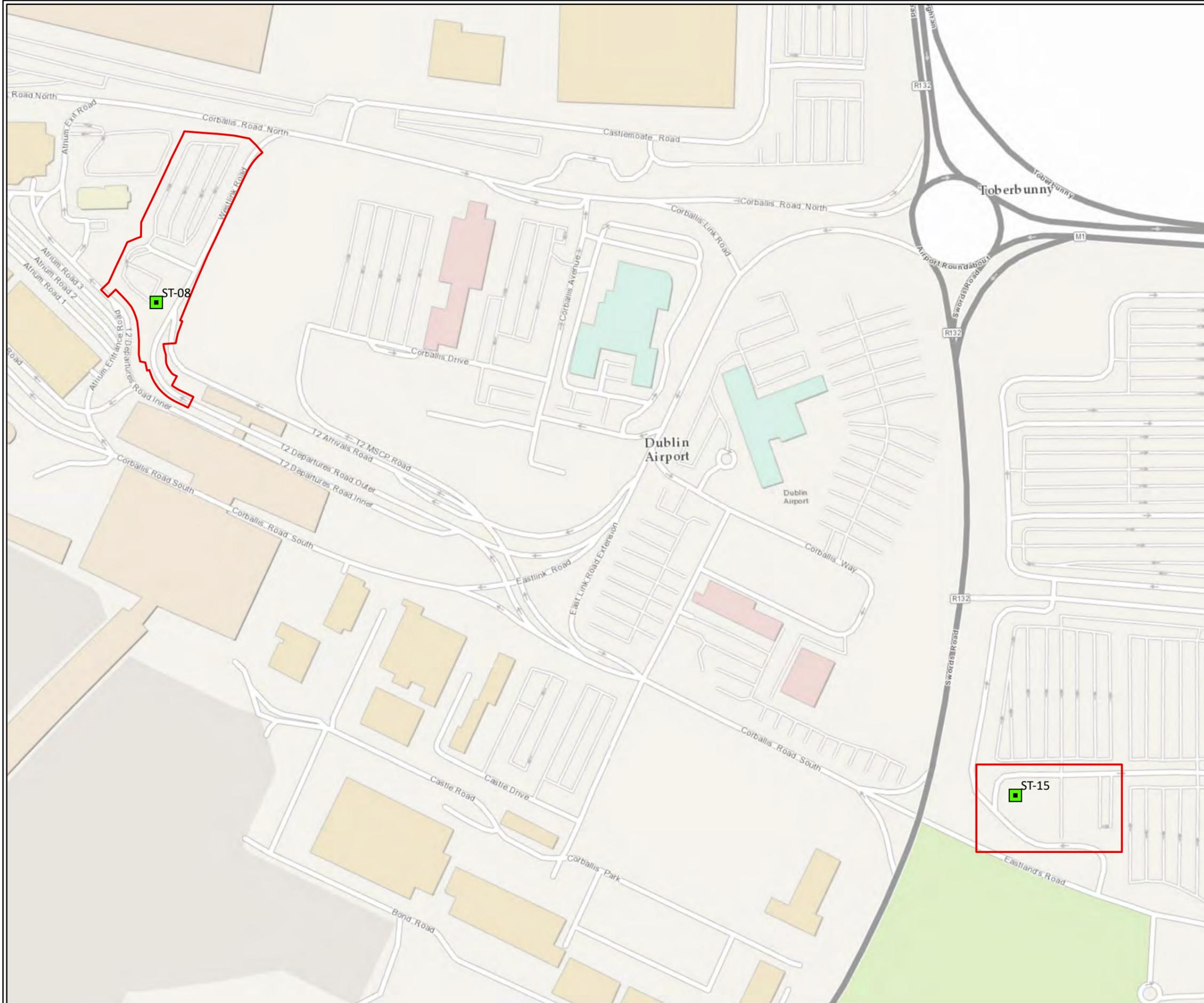




- Legend**
-  Dublin Airport Boundary
 -  Current Fire Station & FFTG
 -  Current Firestation Surface Water Locations

TITLE:	
Current Firestation Surface Water Locations	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	4.6
CLIENT:	daa
SCALE:	1:3,000
REVISION:	0
DATE:	3/25/2024
PAGE SIZE:	A3

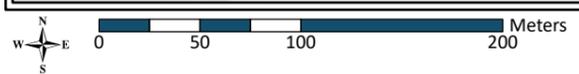




- Legend**
- Area of Works
 - Slit Trench with No Detectable PFAS

Note: The Limit of Detection (LOD) ranges from 0.5-5.0 µg/kg

TITLE:	Departures Roads Project	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	4.7	
CLIENT:	daa	
SCALE:	1:3,500	REVISION: 0
DATE:	3/25/2024	PAGE SIZE: A3

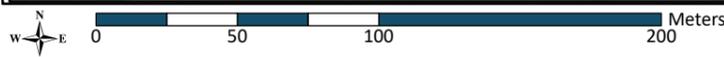




- Legend**
-  Dublin Airport Boundary
 -  Borehole with No Detectable PFAS

Note: The Limit of Detection (LOD) ranges from 0.5-5.0 µg/kg

TITLE:	
West Apron Underpass Project	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	4.8
CLIENT:	daa
SCALE:	1:2,500
REVISION:	0
DATE:	3/25/2024
PAGE SIZE:	A3

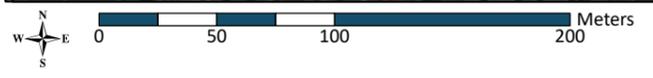




- Legend**
- Dublin Airport Boundary
 - Proposed Apron 5H Development Area
 - Trial Pit Locations with no Detectable PFAS
 - Trial Pit Locations with PFAS detected

Note: The Limit of Detection (LOD) ranges from 0.5-5.0 µg/kg

TITLE:	
Proposed Apron 5H Development Area	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	4.9
CLIENT:	daa
SCALE:	1:3,000
REVISION:	0
DATE:	3/25/2024
PAGE SIZE:	A3

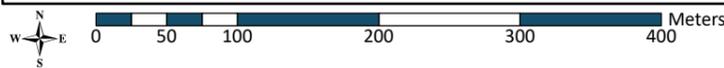


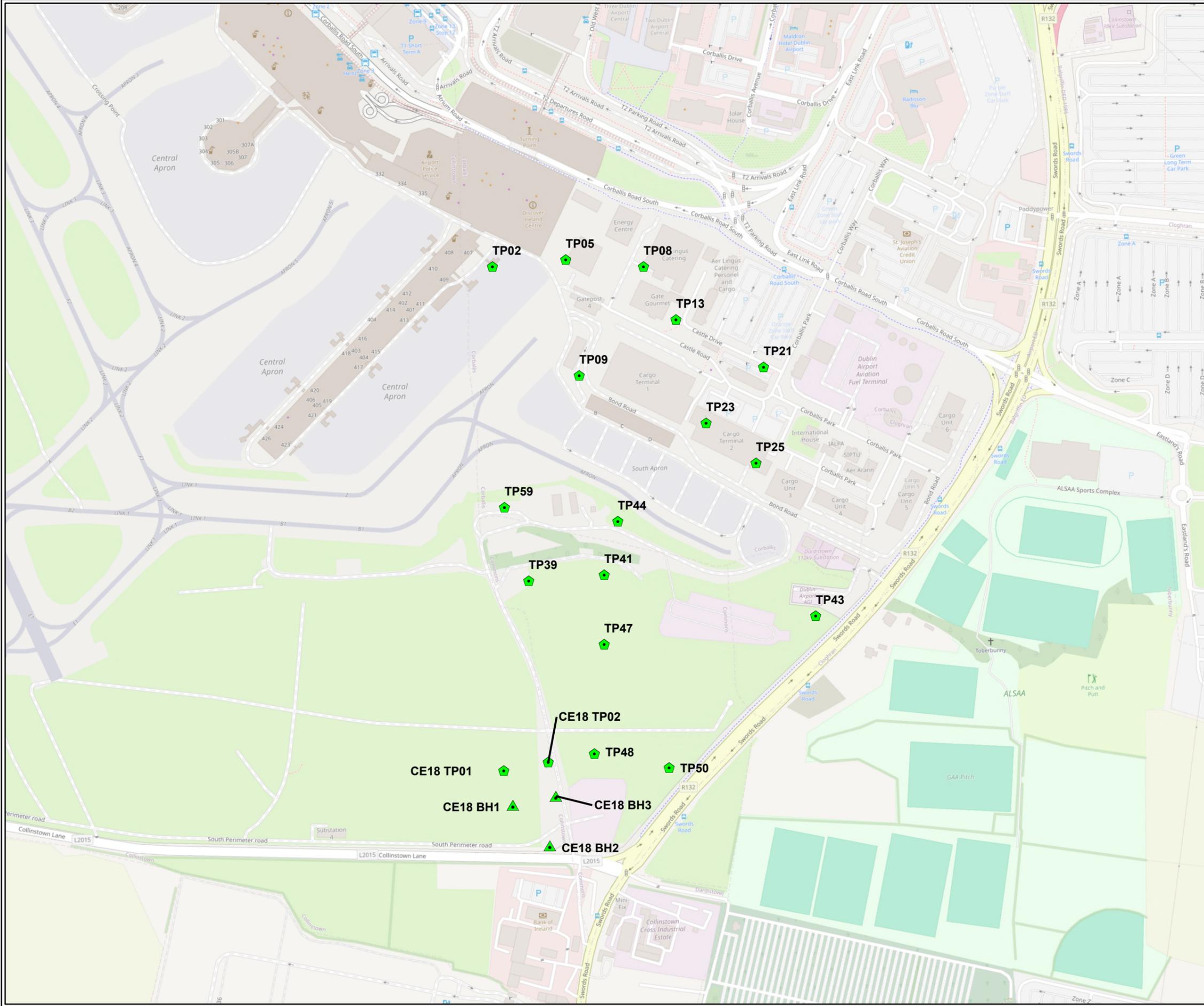


- Legend**
- PFAS Sampling Locations**
- ▲ Borehole with No Detectable PFAS
 - ◆ Trial Pit with No Detectable PFAS
 - ◆ Trial Pit with Detectable PFAS

Note: The Limit of Detection (LOD) ranges from 0.5-5.0 µg/kg

TITLE:	
NASAH Project - North Apron	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	4.10
CLIENT:	daa
SCALE: 1:5,000	REVISION: 0
DATE: 3/26/2024	PAGE SIZE: A3

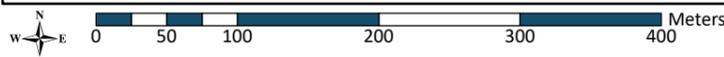




- Legend**
- PFAS Sampling Locations**
- ▲ Borehole with No Detectable PFAS
 - ◆ Trial Pit with No Detectable PFAS

Note: The Limit of Detection (LOD) ranges from 0.5-5.0 µg/kg

TITLE:	NASAH Project - South Apron	
PROJECT:	Environmental Monitoring Report	
FIGURE NO:	4.11	
CLIENT:	daa	
SCALE:	1:5,000	REVISION: 0
DATE:	3/26/2024	PAGE SIZE: A3





4.2 Groundwater Monitoring

16 No. groundwater monitoring wells, a water supply well and an offsite reservoir location were included as part of the monitoring programme to determine if PFAS was present in groundwater. Groundwater monitoring was undertaken at the following locations:

- North Apron – 9 No. groundwater monitoring wells
- Castlemoate House (Historic Unregulated Waste Disposal Site) - 7 No. groundwater monitoring wells
- Reservoir (Offsite Reservoir) - 1 No.
- Water supply well (Gardener’s Well) – 1 No. well

Gardener's Well is used by daa for the purposes of watering plants and flowers. Water abstracted from the supply well is not used for human consumption.

The private Offsite Reservoir is used for the abstraction of groundwater, therefore, this location was included as part of the groundwater monitoring programme. The results of this programme have been shared with the owners.

The groundwater sampling locations and associated groundwater bodies are outlined in Tables 4-1 to 4-3 and are shown on Figure 4-1, Figure 4-2 and Figure 4-3.

Table 4-1: North Apron Groundwater Monitoring Locations

Monitoring Location	Ground Water Body (GWB)
GW001	Dublin
GW002D	
GW003D	
GW004	
GW005D	
GW007	
GW008	
GW014		Industrial Facility
GW015D	



Table 4-2: Castlemoate House Groundwater Monitoring Locations

Monitoring Location	Ground Water Body (GWB)
BH1	Industrial Facility
BH5	
BH6	
BH7	
BH8D	
BH8S	
BH9	

Table 4-3: Water Supply Well and Reservoir Monitoring Locations

Monitoring Location	Ground Water Body (GWB)
Gardeners Well	Industrial Facility
Offsite Reservoir	Swords

4.2.1 Sampling Methodology

The sampling methodology is provided in Appendix 2. A summary is provided below.

Dedicated bottleware supplied by the laboratory was used to take the groundwater samples. The monitoring methodology entailed the following:

- The depth of each well and depth to groundwater was determined using a dip-meter. At least 3 well volumes of groundwater were removed from each well prior to sampling. This is in accordance with standard practice (EPA, 2003)²² and is carried out to remove any stagnant water in the well casing to ensure stable sampling conditions of the aquifer. It is referred to as purging.
- A Waterra pump consisting of a Waterra foot valve attached to the bottom end of Waterra tubing was used for sample collection. Using an oscillation movement the groundwater is slowly pumped from the well through a sampling tube and into a sampling vessel. Each monitoring location contains its own dedicated tubing and foot valves to avoid cross-contamination between locations.
- Duplicate samples were collected at each monitoring locations as part of the quality control procedures.
- The sampling containers were completely filled, and then capped and properly stored (in a cooler box, <4°C).

²² EPA. 2003. Landfill Manuals, Landfill Monitoring, 2nd Edition. Environmental Protection Agency, Johnston Castle, Wexford, Ireland



All groundwater samples collected as part of the monitoring programme were submitted to ALS Global (ALS), an ISO 17025:2017 approved laboratory. Samples were submitted via courier under Chain of Custody procedures and analysed for:

- PFAS under ALS Method No. TM434

To date, FT has carried out up to twelve rounds of groundwater monitoring between August 2021 and November 2023 as detailed in Table 4-4, 4-8 and 4-12. Groundwater monitoring at the North Apron and Castlemoate House was first undertaken in November 2021.

Summary tables with groundwater results are presented in Section 4.2.3 with the tabulated laboratory data available in Appendix 3.

The Laboratory Certificates for each round of monitoring are available in Appendix 4.

4.2.2 Groundwater Generic Assessment Criteria

The drinking water limit (100ng/L for Sum of 20 PFAS) is used as the groundwater GAC for this report. Further information is provided in Section 1.2.4.1.

4.2.3 Results

The data obtained from the groundwater monitoring has been used to interpret and report on the presence of PFAS within the airport complex and its environs. Groundwater monitoring locations were selected from existing borehole locations within and adjacent to the airport complex.

The results report where PFAS is present within the airport complex and its environs. A summary of the results is presented in the following sections. Tables of all results are in Appendix 3 and laboratory certificates are in Appendix 4.

4.2.3.1 *North Apron*

A number of groundwater monitoring locations are installed as part of groundwater monitoring requirements under IE Licence reg. no. P0480-02 issued by the EPA. These locations were monitored by FT, separate to the requirements of the IE Licence, to confirm if PFAS is present in groundwater at the North Apron. The locations and summary of monitoring events are presented in Table 4-4.



Table 4-4: North Apron Count of Groundwater Monitoring Events

ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round	12 th Round
	15/11/21	10/02/22	15/03/22	19/04/22	24/05/22	21/06/22	20/09/22	15/11/22	14/02/23	30/05/23	15/08/23	22/11/23
GW001	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NS	NS
GW002D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NS	✓
GW003D	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GW004	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓	✓	✓
GW005D	NS	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GW007	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓	✓	✓
GW008	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓	✓	✓
GW014	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GW015D	✓	✓	✓	✓	✓	NS	✓	✓	✓	NS	✓	✓

Note: A tick denotes a sample was collected. NS denotes no samples were collected. Following the detection of PFAS during monitoring at the North Apron, additional monitoring wells (GW003D, GW005D and GW014) were added by FT to the monitoring programme to determine the extent of the plume. Samples omitted from the 6th round of monitoring was due to samples not being analysed at the lab as a result of a scheduling issue. Samples omitted from the 10th, 11th and 12th rounds of monitoring as monitoring wells were obstructed by operational infrastructure and could not be accessed.

The depths to groundwater (metres below ground level) were recorded at all accessible monitoring locations between March 2022 and November 2023 (Table 4-5).

Table 4-5: Depth to Groundwater at the North Apron (March 2022 - November 2023)

Monitoring Location	Total Well Depth (m)	Depth to Groundwater - Metres Below Ground Level									
		15/03/22	20/04/22	23/05/22	21/06/22	20/09/22	15/11/22	14/02/23	30/05/23	15/08/23	22/11/23
GW001	3.00	1.08	0.89	0.83	0.88	1.45	0.78	2.28	0.84	- ²	0.80 ³
GW002D	20.00	9.31	9.39	9.54	9.41	10.58	10.01	9.68	9.69	- ²	9.89
GW003D	19.30	9.36	9.43	9.55	9.45	10.49	10.06	9.67	9.61	10.76	9.62
GW004	3.50	0.63	0.62	0.65	0.66 ¹	0.71	0.63	1.52	0.69	0.64	0.62
GW005D	22.00	8.91	8.99	9.13	9.08	10.07	9.63	10.02	9.55	10.32	9.50
GW007	2.58	2.25	1.31	1.25	1.27 ¹	2.15	1.19	1.55	1.22	1.20	2.11
GW008	4.85	2.38	1.25	1.14	1.22 ¹	1.15	1.00	1.23	1.20	1.10	1.10
GW014	3.20	0.86	1.12	1.16	0.96	0.91	0.96	2.02	0.79	1.32	0.62
GW015D	21.4	10.68	9.92	9.59	10.04 ¹	- ²	9.44	9.18	- ²	9.89	9.10

1 Dip monitoring completed however samples were not analysed at the lab.

2 Access to this monitoring location was not available during the monitoring event.

3 Dip monitoring completed, sampling could not be undertaken due to obstruction.



A bar graph illustrating the groundwater depth at the North Apron between March to November 2023 is detailed in Figure 4-12. Groundwater levels did not vary significantly across the monitoring period. A difference in overburden and bedrock levels is noted, with bedrock levels deeper than overburden levels.

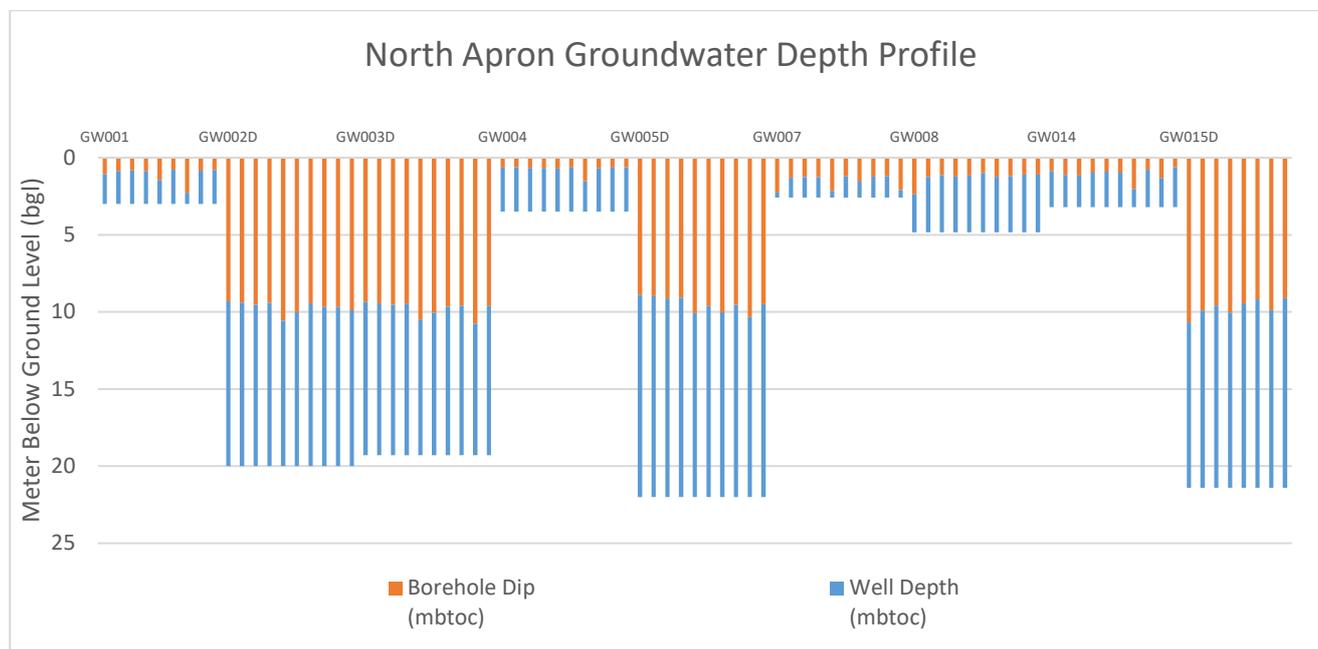


Figure 4-12: North Apron Groundwater Depth Profile

Table 4-9 presents a summary of the groundwater monitoring results for the North Apron:

Table 4-6: North Apron Groundwater Monitoring Summary Results

ID	No of samples	GAC Limit Value (ng/L)	Min Sum of 20 PFAS (ng/L)	Max Sum of 20 PFAS (ng/L)	Average Sum of 20 PFAS (ng/L)
GW001	20	100	286.2	516.3	397.6
GW002D	21		310.13	557.7	389.5
GW003D	21		<LOD	2,205.9	166.6
GW004	22		46.8	505.80	153.4
GW005D	20		62.9	432.0	201.2
GW007	22		70.4	237.0	135.2
GW008	22		41.7	126.7	77.0
GW014	21		<LOD	52.6	16.9
GW015D	18		91.2	3,180	766.1

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC ((Sum of 20 PFAS) Limit Value¹. Results in *Italics* exceed the laboratory limit of detection (LOD²).

¹ GAC (Sum of 20 PFAS) refers to the Drinking Water Limit of 100ng/L (refer to Section 4.2.2).

² The Limit of Detection (LOD) for each Sum of 20 PFAS parameter ranges from 0.65 -2.0ng/l but may be higher if dilution is required by laboratory.

With the exception of monitoring locations GW003D and GW014, Sum of 20 PFAS concentrations are consistently above the laboratory limit of detection.



Sum of 20 PFAS concentrations detected at monitoring location GW003D was below the LOD in nine of 21 samples, while at GW014 concentrations were below the LOD in seven out of 21 samples throughout 2022 and 2023.

With the exception of monitoring location GW014, all monitoring locations recorded Sum of 20 PFAS groundwater concentrations above the GAC.

Average Sum of 20 PFAS groundwater concentrations were elevated above the GAC in 7 No. monitoring wells (GW001, GW002D, GW003D, GW004, GW005D, GW007, GW008 and GW015D).

The highest Sum of 20 PFAS concentrations in groundwater at the North Apron is at monitoring location GW015D, the most easterly existing monitoring point. During the monitoring period, Sum of 20 PFAS concentrations in groundwater ranged between 91.2ng/l to 3,180ng/l, with an average of 766ng/l.

The next highest Sum of 20 PFAS concentrations in groundwater at the North Apron were detected within the western area in monitoring locations GW001, GW002D and GW003D. Monitoring locations GW001, GW002D and GW003D are closest to the Former Fire Station which based on available information was a source of PFAS. GW001 is in overburden and GW002D and GW003D are in bedrock. Groundwater monitoring results for GW001, GW002D and GW003D indicate PFAS is present in both the overburden and bedrock aquifers, respectively beneath the site at this location. During the monitoring period, Sum of 20 PFAS concentrations in groundwater in locations GW001, GW002D and GW003D ranged from below the laboratory limit of detection (LOD) of 0.65ng/l to 2,206ng/l, with a maximum average of 398ng/l. Sum of 20 PFAS concentrations in groundwater decrease with distance from the Former Fire Station (Figure 4-2).

Monitoring location GW015D is approximately 500m east and downgradient (based on available information) of GW001, GW002D and GW003D. The highest Sum of 20 PFAS concentrations at the North Apron were reported in GW015D. This indicates there are two potential sources of PFAS within the North Apron; the Former Fire Station and within the eastern area of the North Apron in the vicinity of GW015D.

The results indicate that PFAS has mobilised but owing to the low permeability overburden and poorly productive bedrock, the extent of the groundwater plumes at the Former Fire Station and in the eastern area of the North Apron are localised. The local extent of the plumes has not been fully delineated, further site investigations are required.

The results of the manholes are discussed in Section 4.3.3 as part of surface water monitoring completed at site but are mentioned here for completeness. As discussed in Section 4.3.2, PFOS is currently regulated in surface water. In 2021, a CCTV survey of the storm and foul sewer lines at Hangar 2 and Hangar 3 at the North Apron were carried out. The survey identified ingress of groundwater flow through pipe defects and unsealed joints. This potentially includes groundwater passing beneath the Former Fire Station. An examination of Sum of 20 PFAS groundwater concentrations in manhole locations MH2 and MH4 (closest manholes to the Former Fire Station) identified similar or higher values reported in GW001 and GW002D. This indicates groundwater seepage at the Former Fire Station is entering the storm and sewer lines and is conveyed through this preferential pathway as surface water. Sum of 20 PFAS groundwater concentrations present in MH1 and MH3 were comparable to the North Apron exterior monitoring locations (GW004, GW007, GW008) also indicating groundwater ingress into the drainage network.



4.2.3.2 North Apron Trends

Trends of Sum of 20 PFAS concentrations across the monitoring programme are presented in Figure 4-13 to Figure 4-21.

Based on the results to date, Sum of 20 PFAS concentrations appear to be overall steadily decreasing in monitoring well locations GW003D, GW004 and GW015D while concentrations appear relatively stable in monitoring locations GW002D, GW007 and GW014. An upward trend is noted in Sum of 20 PFAS concentrations across the monitoring period in monitoring well location GW005D. Sum of 20 PFAS groundwater concentrations appear to be slightly increasing in monitoring locations GW001 and GW008.

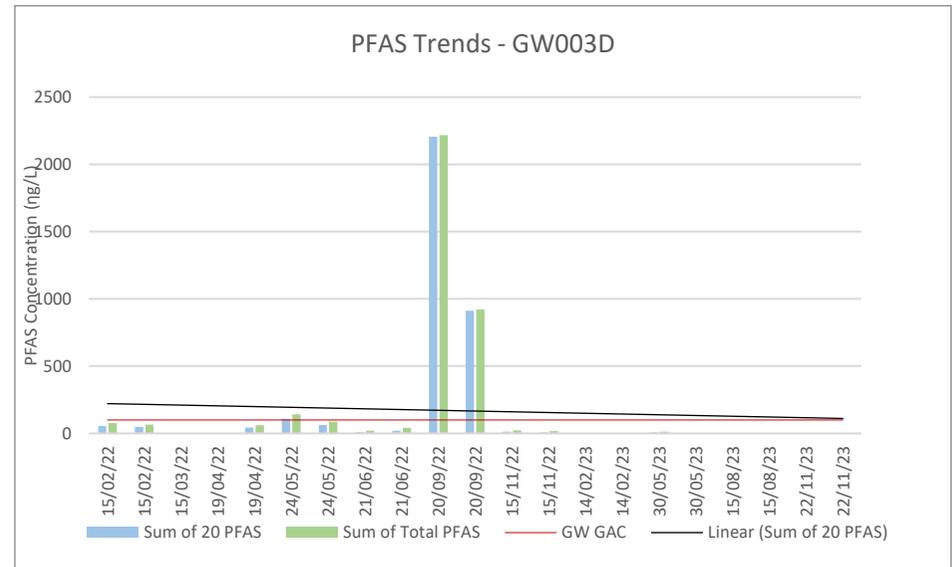
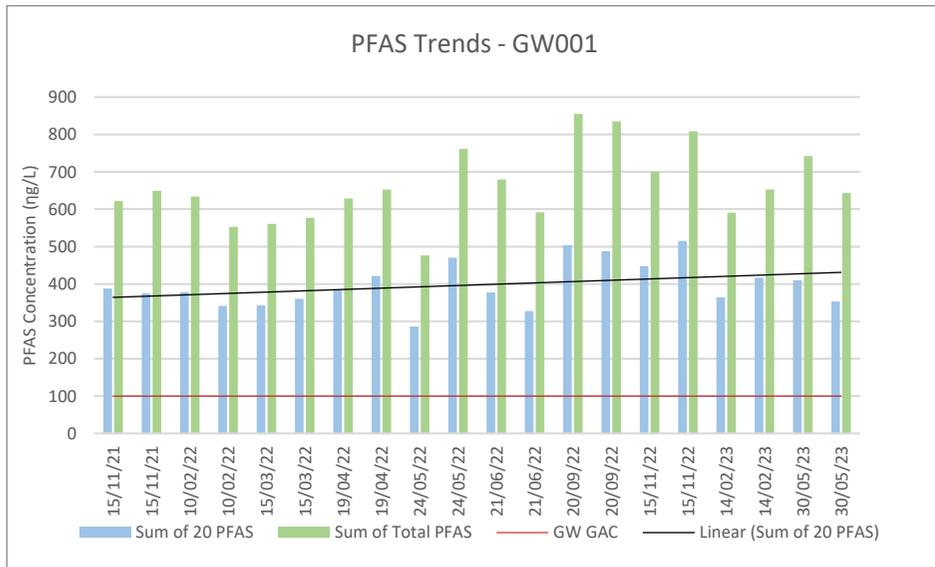


Figure 4-13: Sum of PFAS Concentrations at GW001 (Above GAC)

Figure 4-14: Sum of PFAS Concentrations at GW003D (Below GAC)

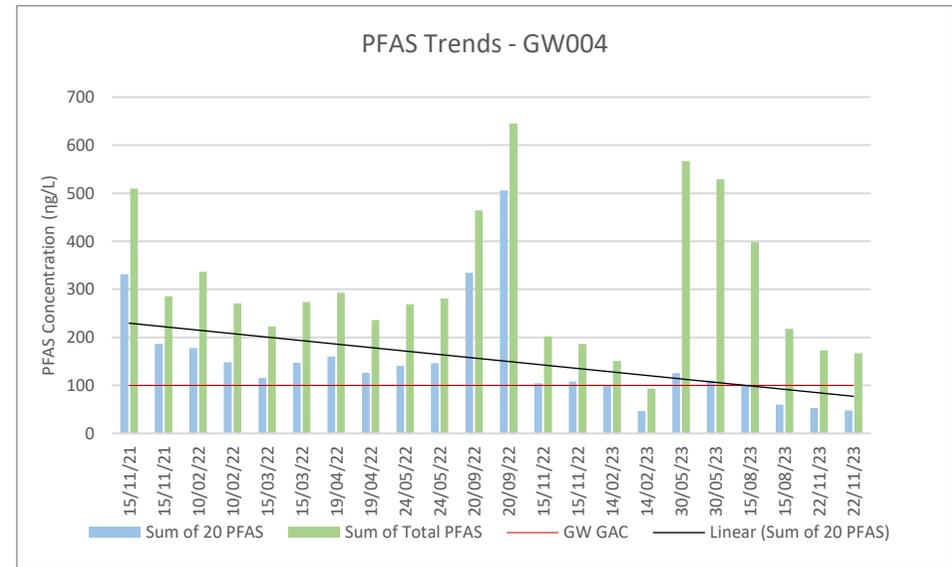
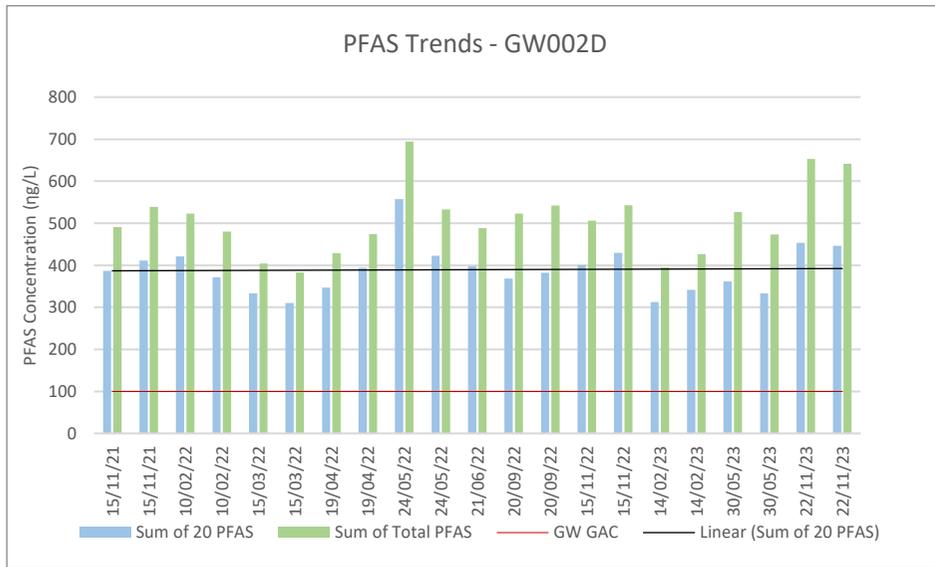


Figure 4-15: Sum of PFAS Concentrations at GW002D (Above GAC)

Figure 4-16: Sum of PFAS Concentrations at GW004 (Below GAC)

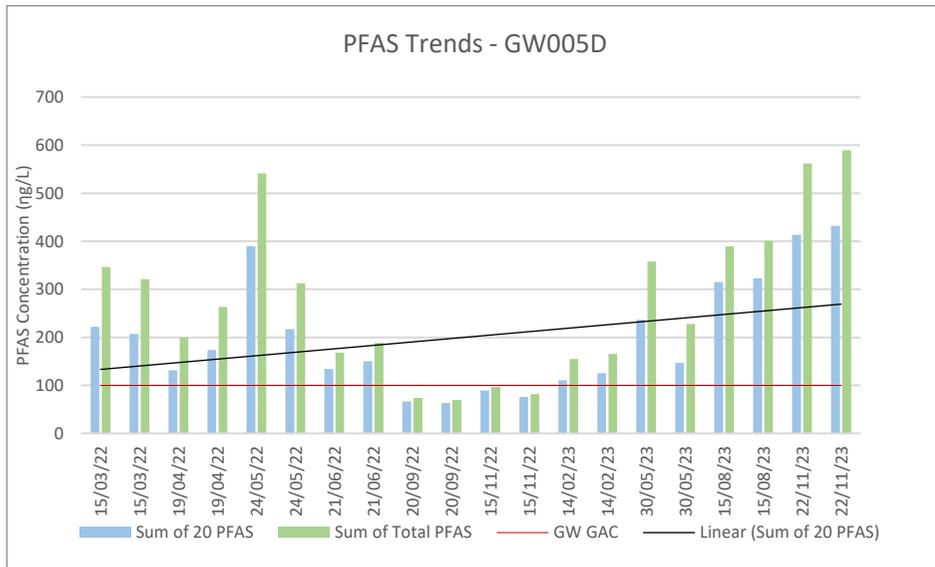


Figure 4-17: Sum of PFAS Concentrations at GW005D (Above GAC)

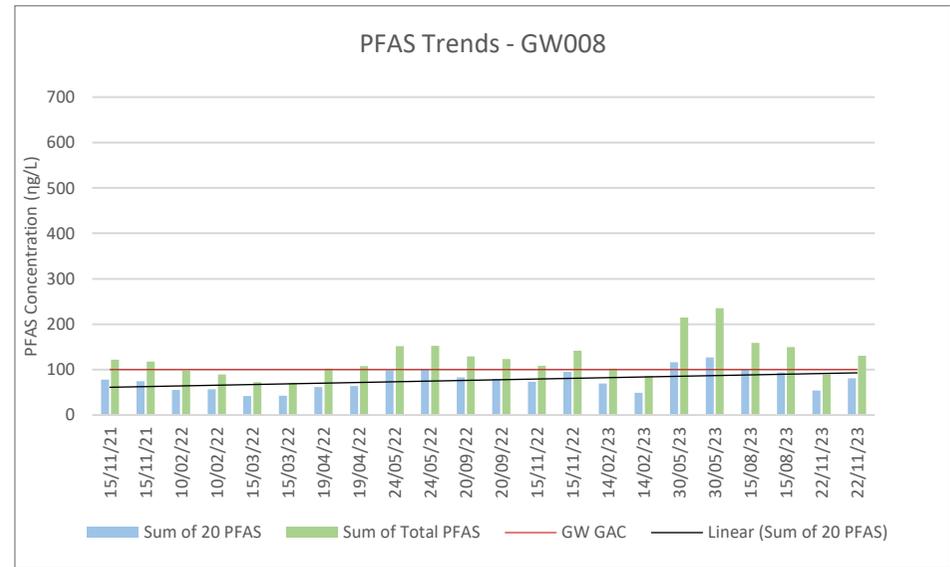


Figure 4-18: Sum of PFAS Concentrations at GW008 (Below GAC)

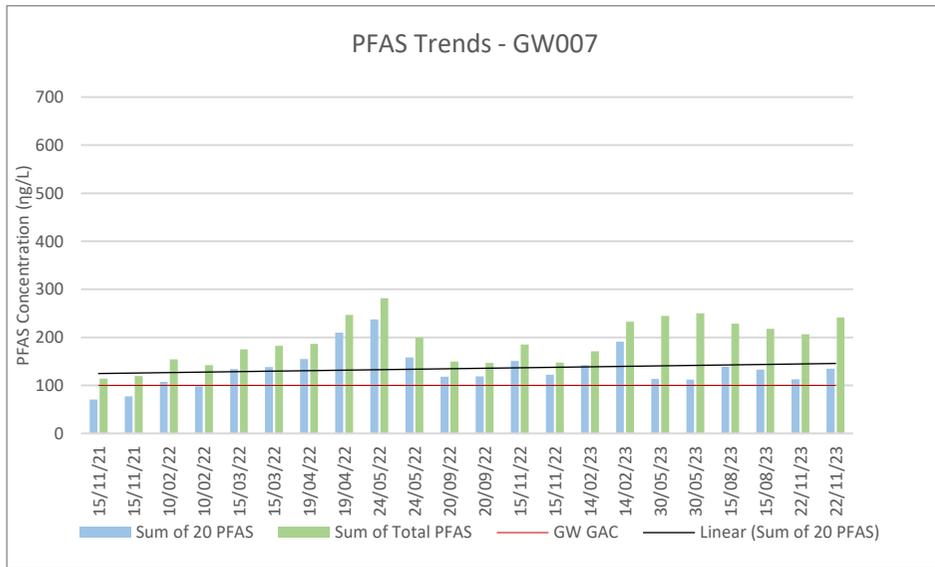


Figure 4-19: Sum of PFAS Concentrations at GW007 (Above GAC)

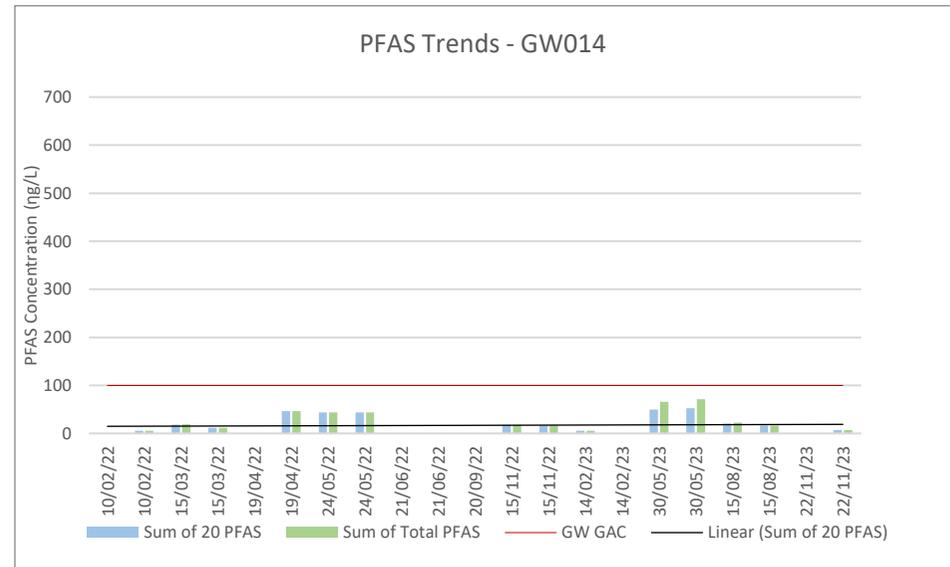


Figure 4-20: Sum of PFAS Concentrations at GW0014 (Below GAC)

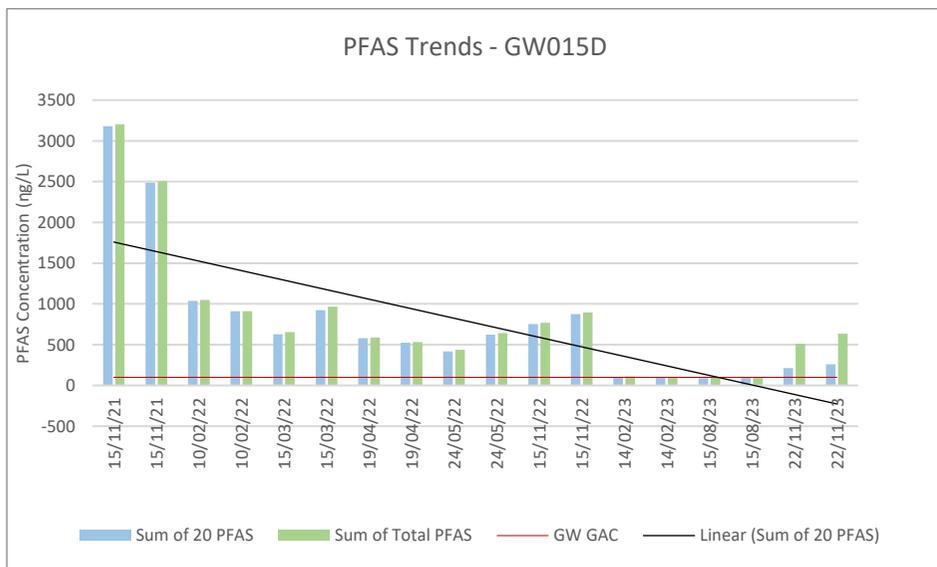


Figure 4-21: Sum of PFAS Concentrations at GW015D (Above GAC)



4.2.3.3 North Runway/APEC 5

A network of groundwater monitoring locations were installed as part of the North Runway development prior to the reporting period. Residual PFAS in bedrock and soil remains as it was not possible to fully remove all PFAS containing material during the construction phase. The monitoring wells (GW11 – GW19) are installed within bedrock to confirm the extent of the PFAS plume and groundwater flow direction.

The locations and summary of monitoring events undertaken by FT during the reporting period are presented in Table 4-7. The depths to groundwater (metres below ground level) were recorded at 10. No monitoring well locations at the North Runway on four occasions between March and November 2023 (Table 4-8).

Table 4-7: North Runway Count of Groundwater Monitoring Events

ID	14 th Round	15 th Round	16 th Round	17 th Round
	21/03/23	30/05/23	16/08/23	22/11/23
GWMP 4	NS	NS	NS	NS
GWMP 5	✓	✓	✓	✓
GW11	✓	✓	✓	✓
GW12	✓	✓	✓	✓
GW13	✓	✓	✓	✓
GW14	✓	✓	✓	✓
GW15	✓	✓	✓	✓
GW16	✓	✓	✓	✓
GW17	✓	✓	✓	✓
GW18	✓	✓	✓	✓
GW19	✓	✓	✓	✓

Note: A tick denotes a sample was collected. NS denotes no samples were collected. GWMP 4 was noted to be decommissioned during the 2023 monitoring.



Table 4-8: Depth to Groundwater at the North Runway (March - November 2023)

Monitoring Location	Total Well Depth (m)	Depth to Groundwater - Metres Below Ground Level			
		21/03/2023	31/05/2023	16/08/2023	21/11/2023
GWMP4	15.0	NS	NS	NS	NS
GWMP5	19.5	1.96	5.08	2.64	2.40
GW11	10.0	0.21	1.58	0.81	0.00 ¹
GW12	10.0	2.47	2.64	2.64	2.58
GW13	10.0	0.11	1.94	2.84	1.56
GW14	10.0	0.44	0.79	0.59	0.43
GW15	10.0	0.68	1.96	1.81	1.56
GW16	10.0	2.27	1.37	1.33	1.15
GW17	10.0	0.12	1.53	1.43	1.20
GW18	10.0	1.40	1.52	1.48	1.15
GW19	10.0	0.86	1.44	1.19	0.92

NS GWMP 4 was noted to be has been decommissioned during the 2023 monitoring and could not be sampled.

¹ During the November 2023 monitoring event, water was noted in the annulus²³ of monitoring location GW11.

A bar graph illustrating the groundwater depth at the North Runway between March to November 2023 is detailed in Figure 4-22.

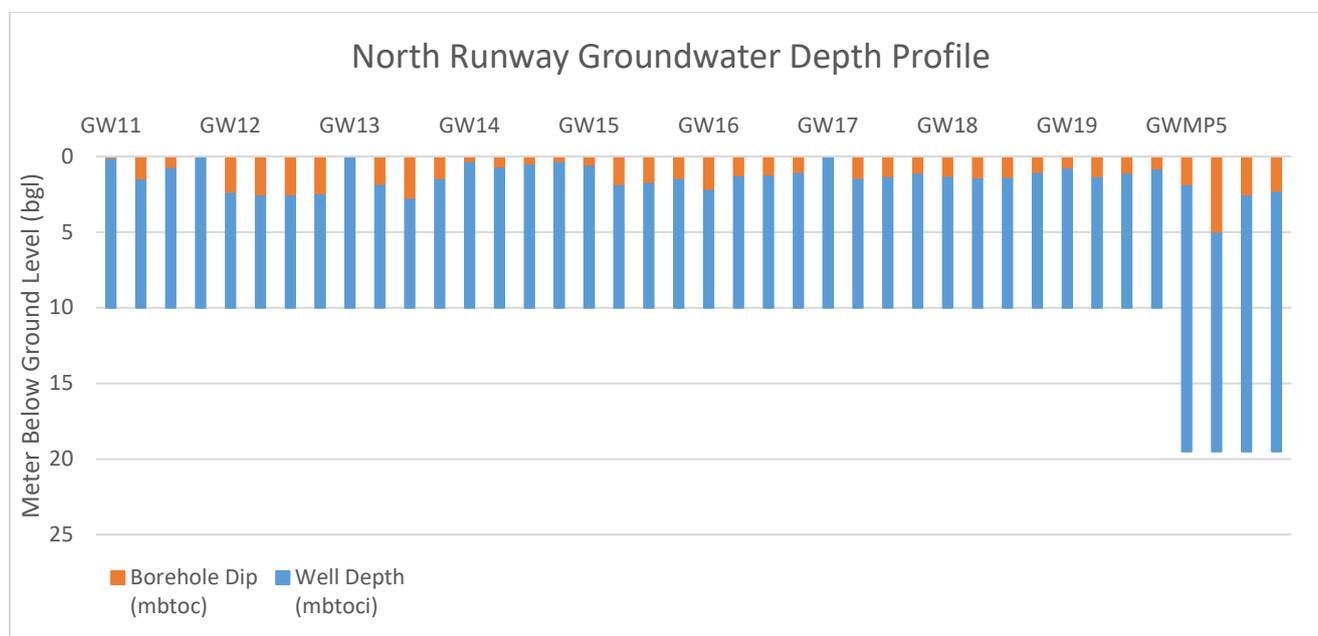


Figure 4-22: North Runway Groundwater Depth Profile

²³ Void space between the outer casing and the inner monitoring tube.



Table 4-9 presents a summary of the groundwater monitoring results for the North Runway. This table has been supplemented with data previously collected from other bodies.

Table 4-9: North Runway Groundwater Monitoring Summary Results

ID	No of samples	GAC Limit Value (ng/L)	Min Sum of 20 PFAS (ng/L)	Max Sum of 20 PFAS (ng/L)	Average Sum of 20 PFAS (ng/L)
GWMP 4	8	100	<LOD	216.2	46.5
GWMP 5	15		1.02	187.4	30.9
GW11	11		810.7	4,111	1,573
GW12	11		42.1	90.2	63.8
GW13	11		<LOD	6.72	1.01
GW14	11		6.04	1,712	526.8
GW15	11		<LOD	23.3	9.81
GW16	11		63.8	257.7	165.4
GW17	11		<LOD	71.1	17.9
GW18	11		<LOD	<LOD	<LOD
GW19	11		<LOD	3.38	0.31

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC ((Sum of 20 PFAS) Limit Value¹. Results in *Italics* exceed the laboratory limit of detection (LOD²).

¹ GAC (Sum of 20 PFAS) refers to the Drinking Water Limit of 100ng/L (refer to Section 4.2.2).

² The Limit of Detection (LOD) for each Sum of 20 PFAS parameter ranges from 0.65 -2.0ng/l but may be higher if dilution is required by laboratory.

With the exception of monitoring locations GW13, GW18 and GW19, Sum of 20 PFAS concentrations are consistently above the laboratory limit of detection.

Sum of 20 PFAS concentrations detected at monitoring location GW13 was below the LOD on nine occasions out of 11, GW18 was below the LOD during all monitoring events, and GW19 concentrations were below the LOD on 10 out of 11 monitoring occasions.

Monitoring locations GW12, GW13, GW15, GW17, GW18 and GW19 recorded Sum of 20 PFAS groundwater concentrations below the GAC on all monitoring events.

Average Sum of 20 PFAS groundwater concentrations were elevated above the GAC in 3 No. monitoring wells (GW11, GW14 and GW16), refer to Table 4-9.

Monitoring location GW13, installed as a potential upgradient and background location reported minor detections (6.72ng/l for Sum of 20 PFAS) in November 2023 for the first time. GW18 and GW19 are located to the north of APEC 5. Detectable PFAS has not been reported in GW18. Only a minor detection in GW19 (3.38ng/l for Sum of 20 PFAS) was reported for the first time in November 2023. GW15 (maximum 23.31ng/l), GW16 (maximum 257.7ng/l) and GW17 (maximum 71.14ng/l but occasionally below LOD) north of APEC 5 have all reported detectable levels of Sum of 20 PFAS. The highest Sum of 20 PFAS concentrations in groundwater at the North Runway is at monitoring location GW11, located beneath/within the residual PFAS present in bedrock.



The results indicate the highest residual concentrations (up to over 4,000 ng/l) of Sum of 20 PFAS remain within the original source, i.e. within the APEC 5 boundary, with the plume primarily extending west to GW14 and north to GW16. Maximum and average Sum of 20 PFAS concentrations reduce significantly over distances of approximately 150m to GW14 (1,712; 526.8ng/l, respectively) and GW16 (257.7; 165.4ng/l, respectively).

GW14 is located immediately west of APEC 5, reported concentrations may be related to the historical use of PFAS containing AFFF during firefighting training rather than plume migration since the construction of the North Runway.

GW15 and GW17 located approximately 50-60m east and west of GW16, respectively report maximum and average Sum of 20 PFAS concentrations which are between 72% and 94% lower than GW16.

The lateral extent of the plume indicates it largely confined to its source location, but additional site investigations are required to confirm the plume boundary.

The reason for detection of PFAS in GW13 during the most recent monitoring event cannot be confirmed at this time, but the detection is reported in very minor concentrations.

4.2.3.4 *North Runway/ APEC 5 Trends*

Trends of Sum of 20 PFAS concentrations across the monitoring programme are presented in Figure 4-23 to Figure 4-33.

Based on the results to date, Sum of 20 PFAS concentrations appear to be overall steadily decreasing in monitoring well locations GWMP 4, GWMP 5, GW12 and GW17 while concentrations appear relatively stable in monitoring locations GW13, GW15 and GW19. An upward trend is noted on Sum of 20 PFAS concentrations across the monitoring period in monitoring well location GW14, however this may be associated with higher concentrations reported in August 2023 which have since reduced within historical ranges. Sum of 20 PFAS groundwater concentrations appear to be slightly increasing in monitoring locations GW11 and GW16. Sum of 20 PFAS at monitoring location GW18 has not be detected above the LOD.

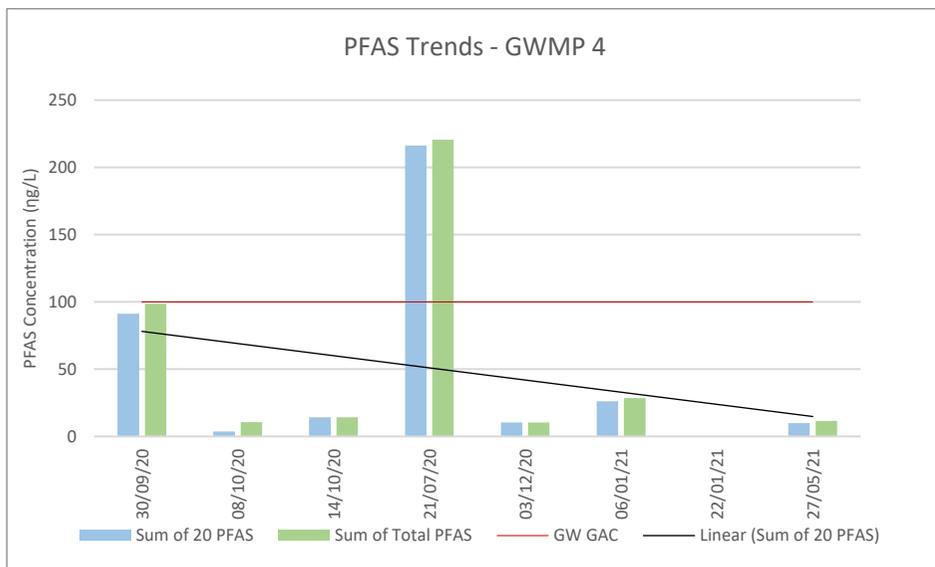


Figure 4-23: Sum of PFAS Concentrations at GWMP 4 (Below GAC)

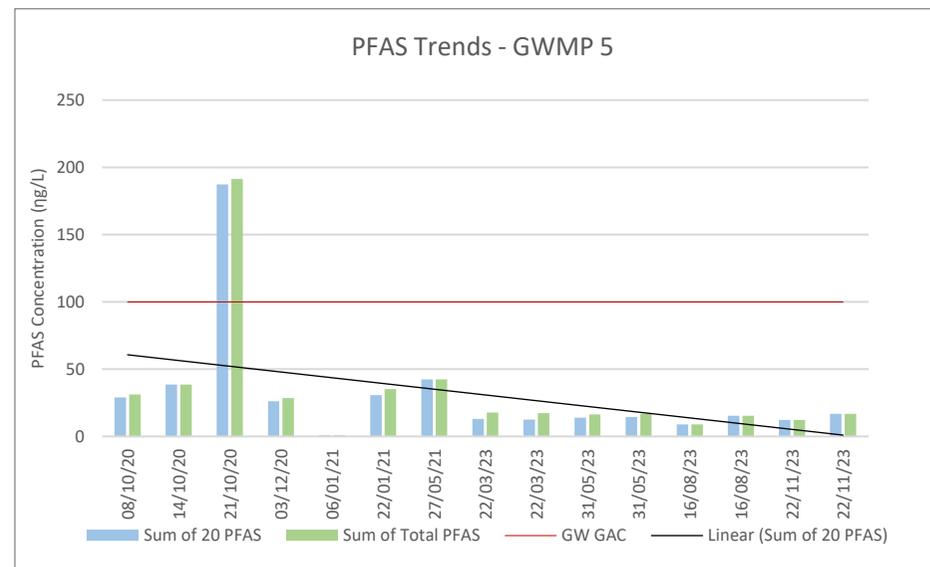


Figure 4-24: Sum of PFAS Concentrations at GWMP 5 (Below GAC)

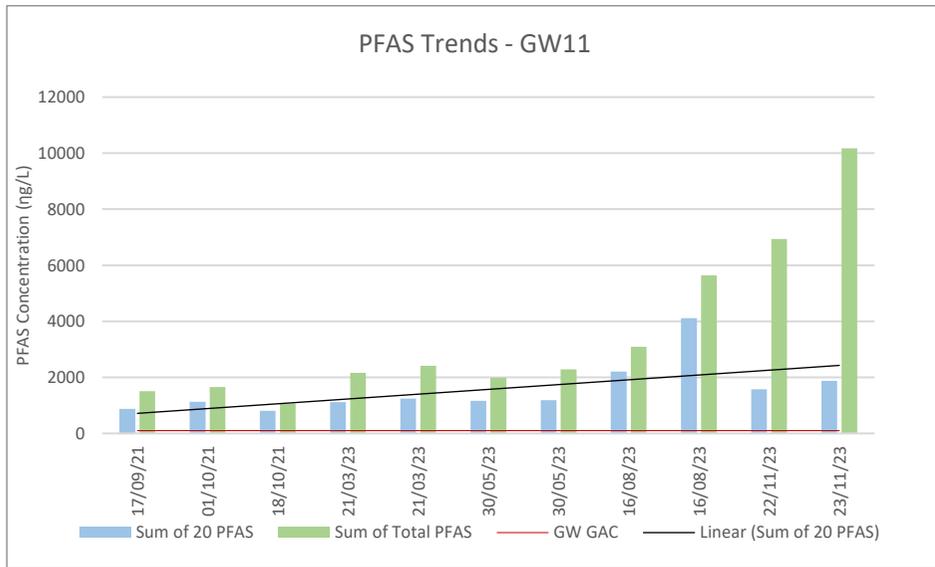


Figure 4-25: Sum of PFAS Concentrations at GW11 (Above GAC)

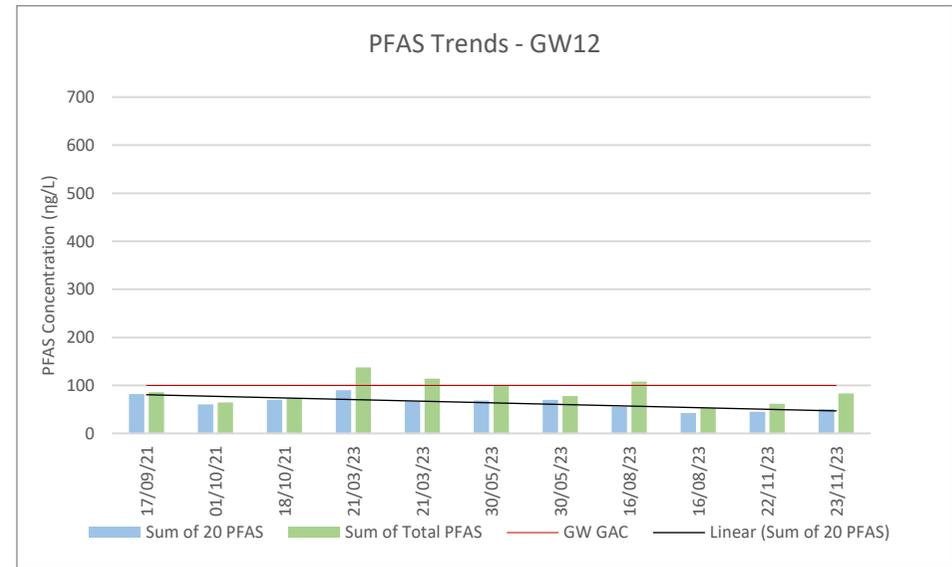


Figure 4-26: Sum of PFAS Concentrations at GW12 (Below GAC)

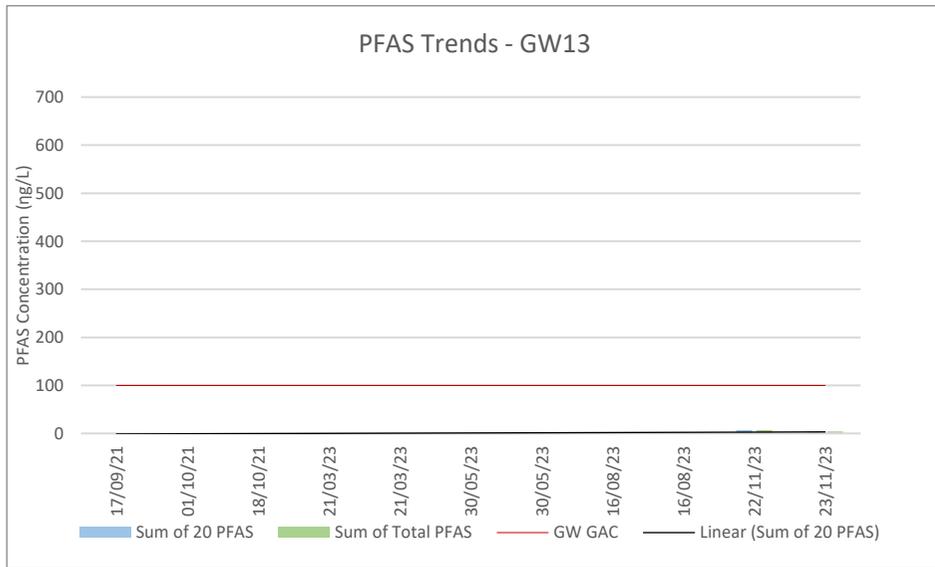


Figure 4-27: Sum of PFAS Concentrations at GW13 (Below GAC)

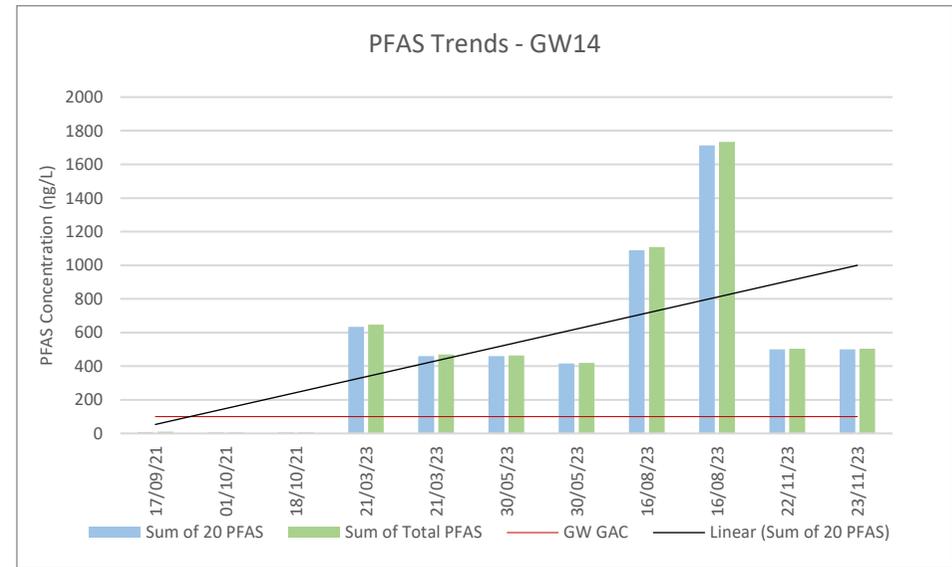


Figure 4-28: Sum of PFAS Concentrations at GW14 (Above GAC)

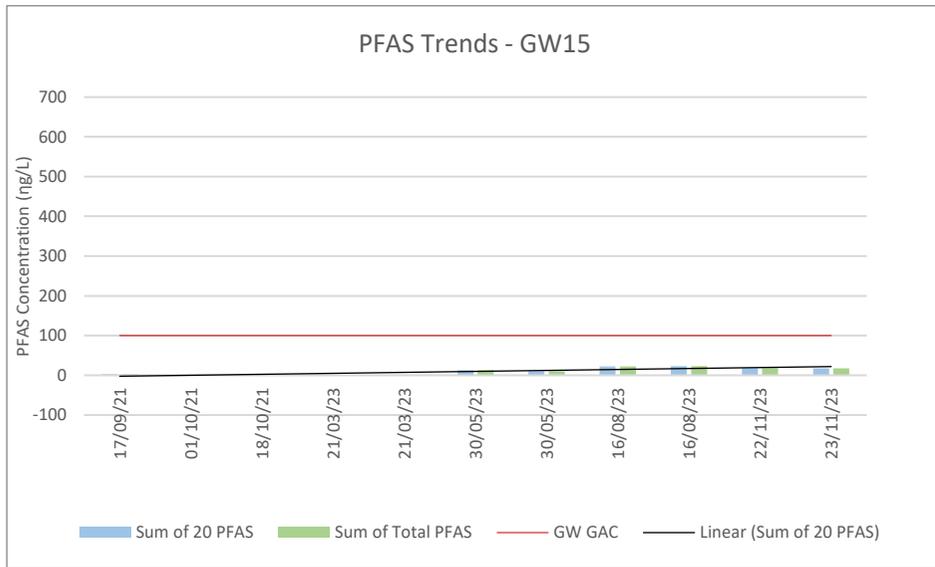


Figure 4-29: Sum of PFAS Concentrations at GW15 (Below GAC)

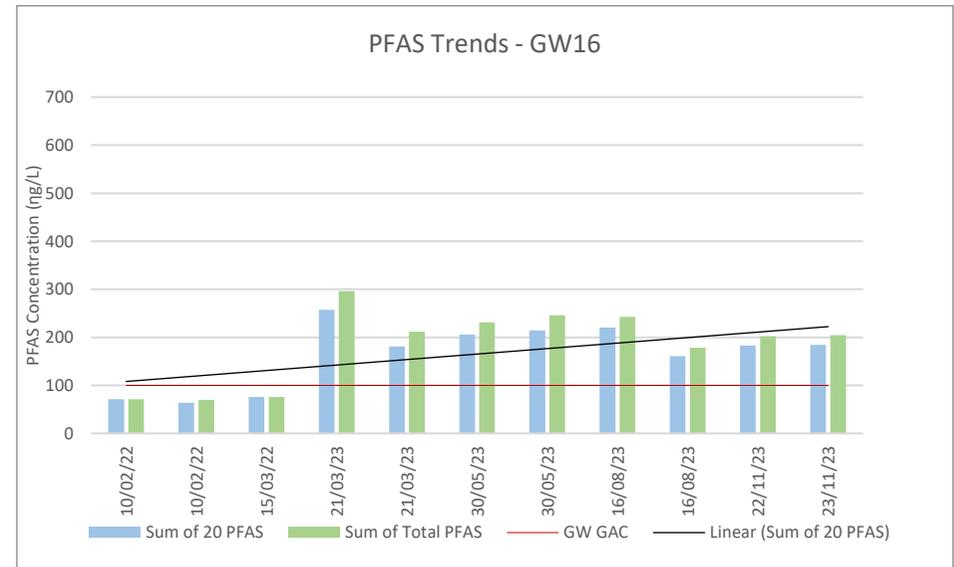


Figure 4-30: Sum of PFAS Concentrations at GW16 (Above GAC)

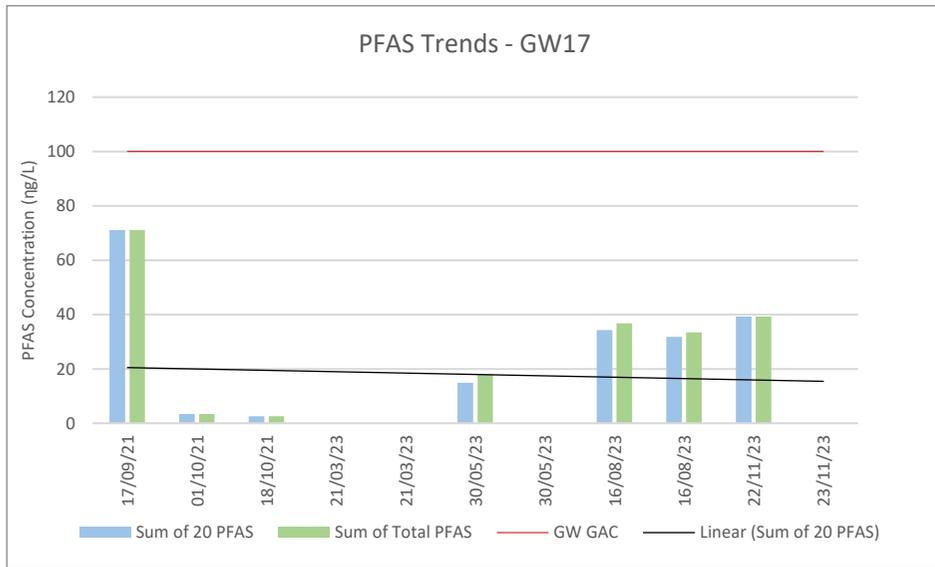


Figure 4-31: Sum of PFAS Concentrations at GW17 (Below GAC)

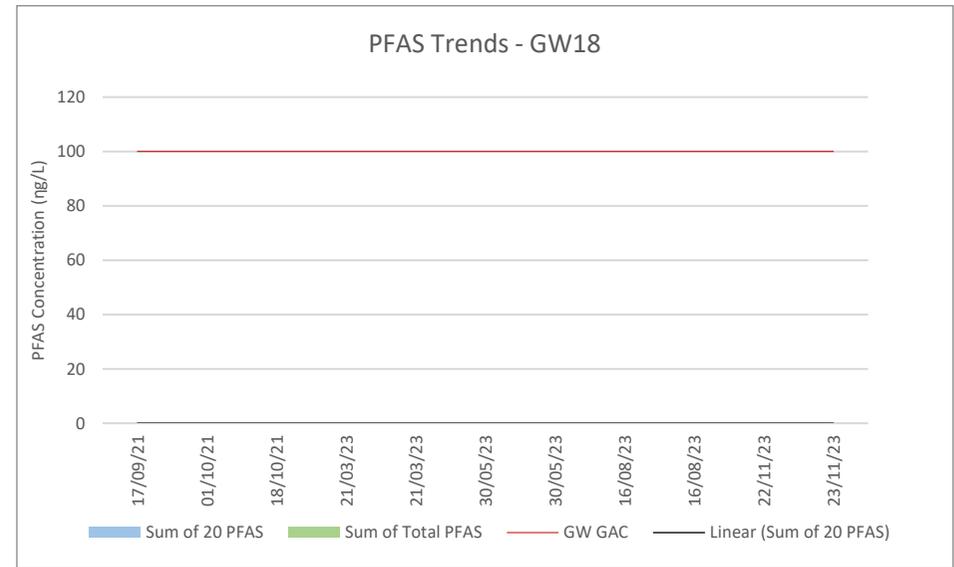


Figure 4-32: Sum of PFAS Concentrations at GW18 (Below GAC)

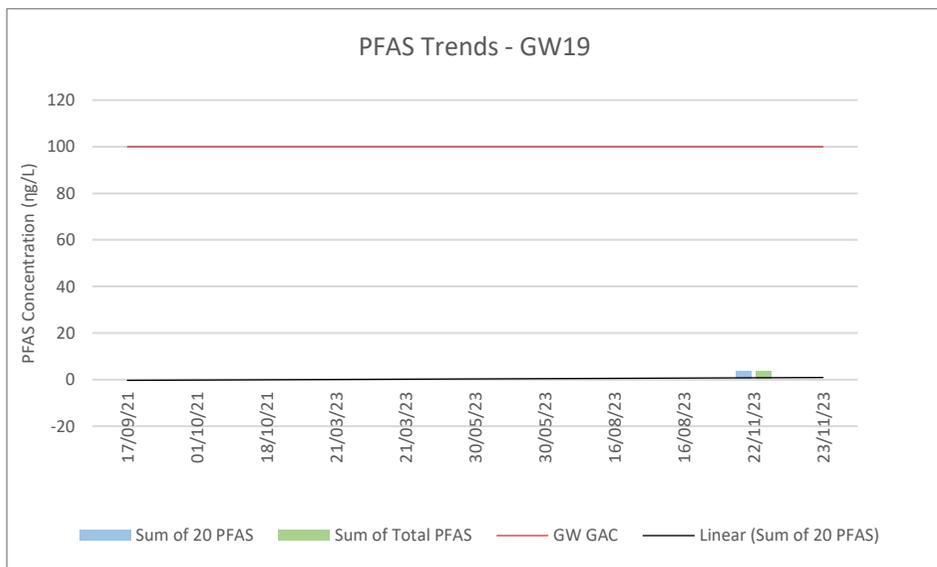


Figure 4-33: Sum of PFAS Concentrations at GW19 (Below GAC)



4.2.3.5 *Castlemoate House (Historic Unregulated Waste Disposal Site)*

9 No. groundwater monitoring boreholes were installed at Castlemoate House as part of a groundwater investigation at the historic unregulated waste disposal site.

FT have completed up to 13 rounds of groundwater monitoring at seven of the nine monitoring boreholes. The wells monitored were selected from the outer extent of the unregulated waste disposal site to determine if PFAS was entering or exiting the site. During the first monitoring round, detectable Sum of 20 PFAS concentrations were detected in BH5 and BH8D. As a result, additional monitoring locations were included in the monitoring programme to identify the extent of PFAS at the site (Table 4-10).

The 7 No. groundwater monitoring wells are included in Table 4-8.



Table 4-10: Castlemoate House Count of Groundwater Sampling Events

ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round	12 th Round	13 th Round
	12/11/21	12/11/21	09/02/22	16/03/22	21/04/22	24/05/22	24/06/22	20/09/22	15/11/22	14/02/23	31/05/23	16/08/23	22/11/23
BH1A	NS	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH7	✓	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH8D ¹	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH8S ¹	NS	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH9	NS	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: A tick denotes a sample was collected. NS denotes no samples were collected. Following the detection of PFAS during the 1st round of monitoring, additional monitoring wells (BH1, BH8S and BH9) were added by FT to the monitoring programme.

¹ BH8 is a dual installation borehole installed in January 2018 with a shallow and deep pipe. Although BH8D is a deep well, the installation is in overburden.



The depths to water were recorded at all 7 No. monitoring wells within the Castlemoate House area on five occasions (Table 4-11):

Table 4-11: Castlemoate House Groundwater Dip Levels (March 2022 – November 2023)

Monitoring Location	Total Well Depth (m)	DTW (m BGL)								
		16/03/22	20/04/22	23/05/22	20/09/22	15/11/22	14/02/23	31/05/23	16/08/23	24/11/23
BH1A	3.01	1.20	1.17	1.51	2.21	0.83	1.13	1.22	0.97	0.51
BH5	12.21	5.74	5.55	5.91	6.82	5.88	4.04	5.13	4.8	3.96
BH6	6.17	1.22	1.52	1.66	2.60	1.26	1.43	1.52	1.46	1.14
BH7	14.03	2.02	2.07	2.16	2.29	1.86	1.92	1.96	1.64	1.59
BH8D ¹	15.02	0.93	1.64	1.91	2.80	1.33	1.26	1.30	1.79	2.50
BH8S ¹	3.52	0.96	1.61	1.89	2.79	1.32	1.29	1.31	1.30	2.41
BH9	20.00	9.88	9.77	9.98	10.29	9.69	9.70	9.96	10.36	9.39

¹ BH8 is a dual installation borehole installed in January 2018 with a shallow and deep pipe

Groundwater depths at Castlemoate House are shown in Figure 4-34. Groundwater levels did not vary significantly across the monitoring period. A difference in overburden and bedrock levels is noted, with bedrock levels deeper than overburden levels.

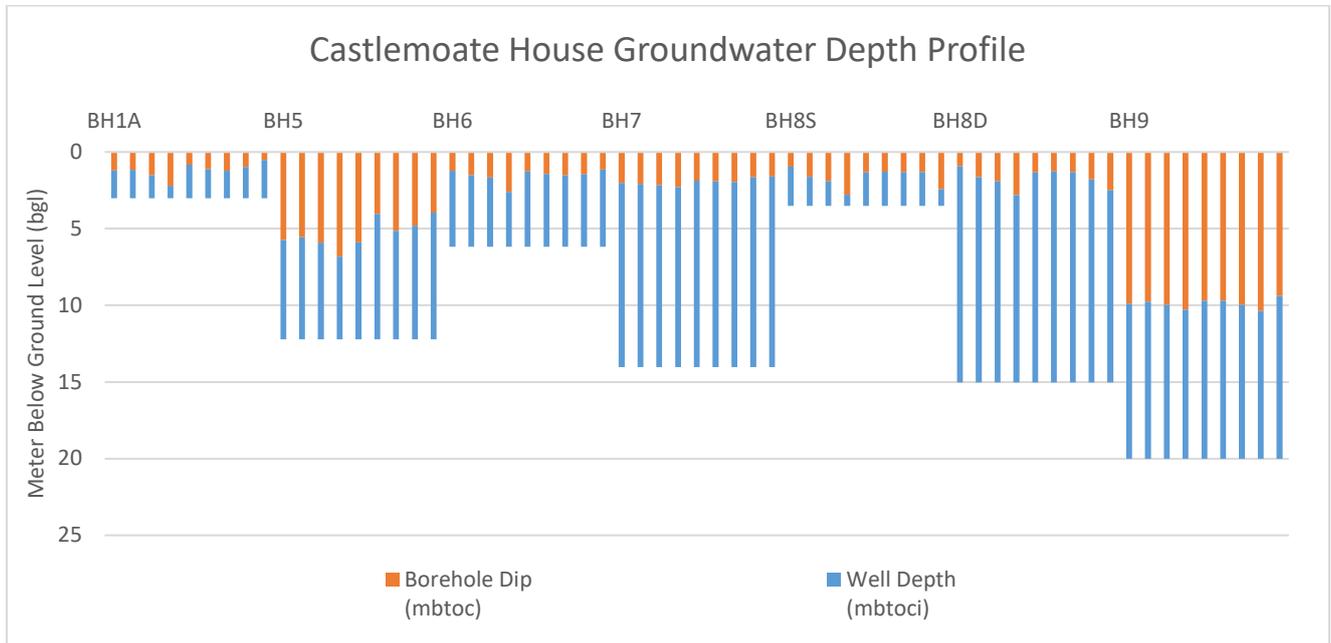


Figure 4-34: Castlemoate House Groundwater Level Depth Profile

A summary of results is presented in Table 4-12:



Table 4-12: Castlemoate House Groundwater Monitoring Summary Results

ID	No. of Samples	GAC Limit Value	Min Sum of 20 PFAS	Max Sum of 20 PFAS	Average Sum of 20 PFAS
BH1A	22	100	<LOD	<i>642</i>	<i>36.4</i>
BH5	24		<LOD	<i>23.1</i>	<i>3.54</i>
BH6	24		<LOD	<i>67.0</i>	<i>5.15</i>
BH7	23		<LOD	<i>346.7</i>	<i>56.16</i>
BH8D	24		<LOD	<i>43.39</i>	<i>9.80</i>
BH8S	22		<LOD	<i>39.01</i>	<i>9.32</i>
BH9	22		<LOD	<LOD	<LOD

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC (Sum of 20 PFAS) Limit Value¹ Results in *Italics* exceed the LOD².

¹ GAC (Sum of 20 PFAS) refers to the Drinking Water Limit of 100ng/L (refer to Section 4.2.2).

² The Limit of Detection (LOD) for each Sum of 20 PFAS parameter ranges from 0.65 -2.0ng/l but may be higher if dilution is required by laboratory.

During the monitoring period, 111 of 161 samples (69%) of samples were below the LOD. Only monitoring locations BH1A and BH7 reported results above the GAC, BH1A in September 2022 (642ng/l) and BH7 in May, August and November 2023 (maximum 347ng/l). There was no exceedance of the GAC (Sum of 20 PFAS) at any of the remaining monitoring wells located at Castlemoate House.

No Sum of 20 PFAS groundwater concentrations were detected at monitoring location BH9 during the reporting period. Sum of 20 PFAS groundwater concentrations were not detected at all other monitoring locations in more than 50% of the samples.

The average Sum of 20 PFAS groundwater concentrations in all monitoring locations were below the GAC ranging from below the laboratory LOD (0.65ng/l) to 56.2ng/l.

Based on the historic unregulated waste disposal which took place within Castlemoate House, it is considered that the presence of PFAS is likely associated with the deposition of waste materials. Concentrations of PFAS are considered to be very low in all monitoring locations for the majority of the monitoring events.

4.2.3.6 Castlemoate House (Historic Unregulated Waste Disposal Site) Trends

Trends of Sum of 20 PFAS concentrations across the monitoring period are presented in Figure 4-35 to Figure 4-41.

With the exception of one monitoring location (BH7), Sum of 20 PFAS groundwater concentration trends were detected at low levels and below GAC. Monitoring locations BH1A, BH5, BH6, BH8S and BH8D show a noticeable variations and fluctuations in Sum of 20 PFAS concentrations from below LOD to their maximum reported concentrations.

BH7, located to the northwest corner of the Castlemoate House site, shows an increasing trend in Sum of 20 PFAS concentrations. The reason for this increasing trend cannot be confirmed at this time, however average Sum of 20 PFAS concentrations are below the 100ng/l GAC at 56.2ng/l.

As outlined previously, these observations are likely associated with the deposition of waste materials.

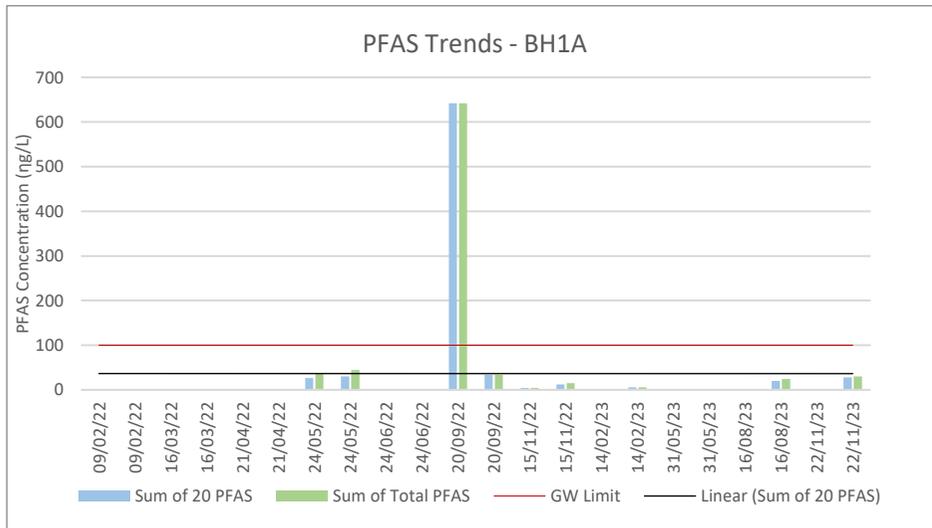


Figure 4-35: Sum of PFAS Concentrations at BH1A (Below GAC)

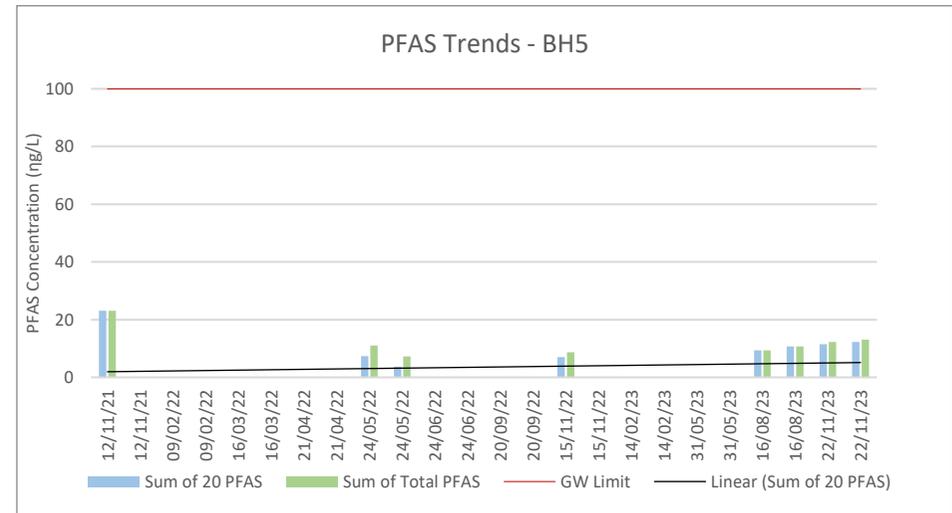


Figure 4-37: Sum of PFAS Concentrations at BH5 (Below GAC)

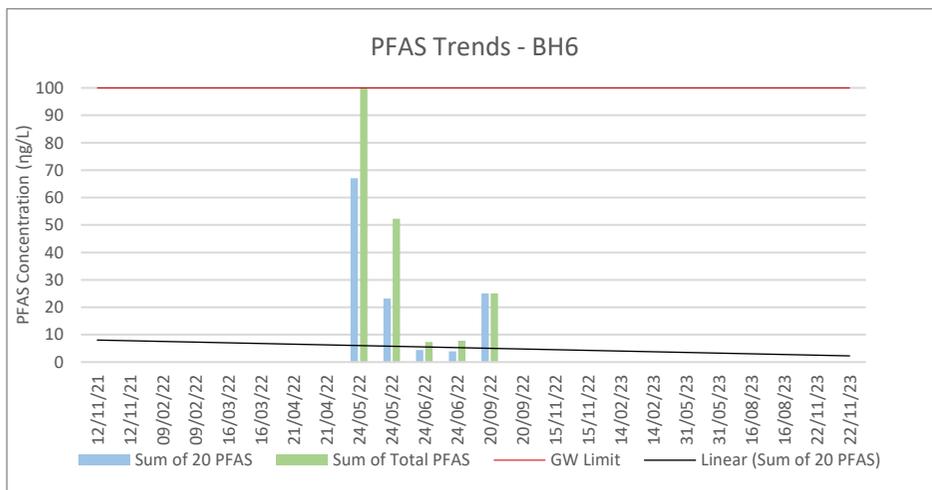


Figure 4-36: Sum of PFAS Concentrations at BH6 (Below GAC)

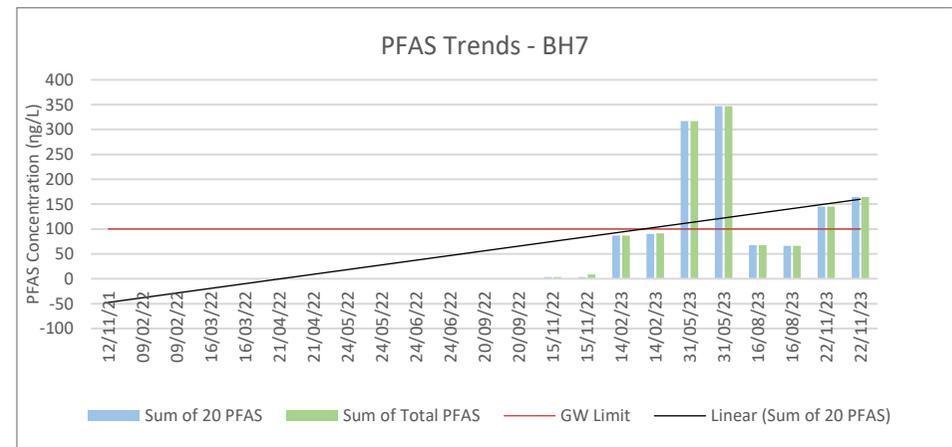


Figure 4-38: Sum of PFAS Concentrations at BH7 (Above GAC)

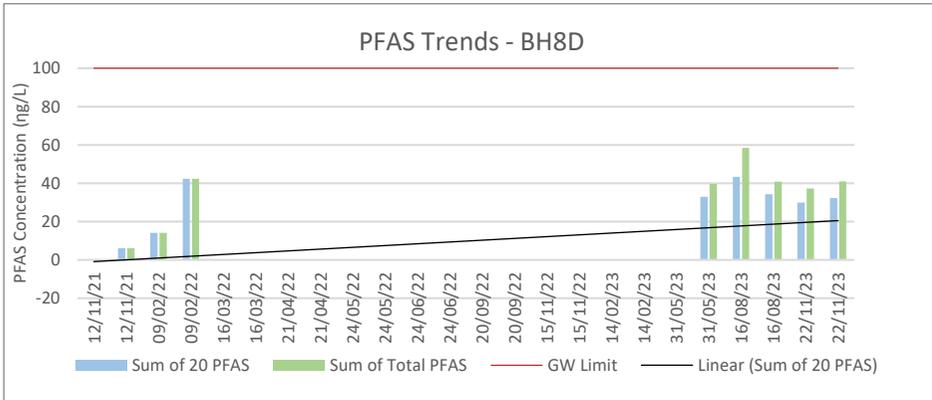


Figure 4-39: Sum of PFAS Concentrations at BH8D (Below GAC)

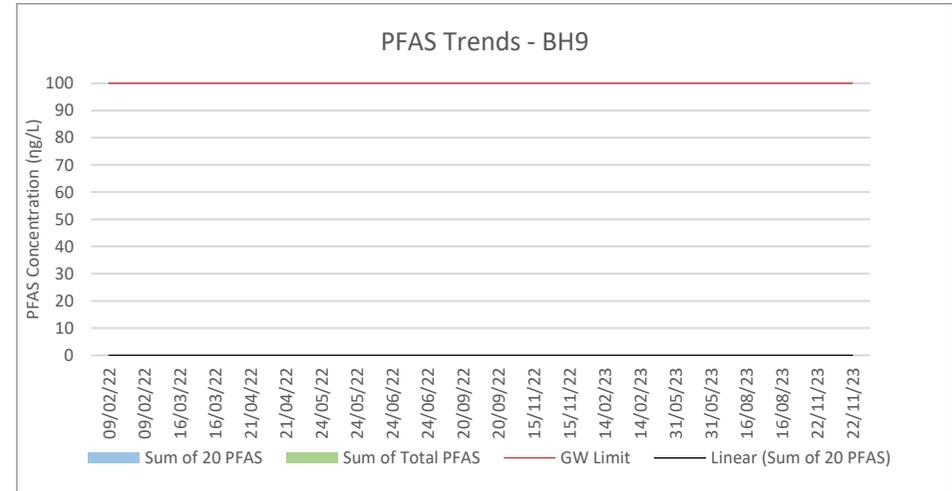


Figure 4-41: Sum of PFAS Concentrations at BH9 (Below GAC)

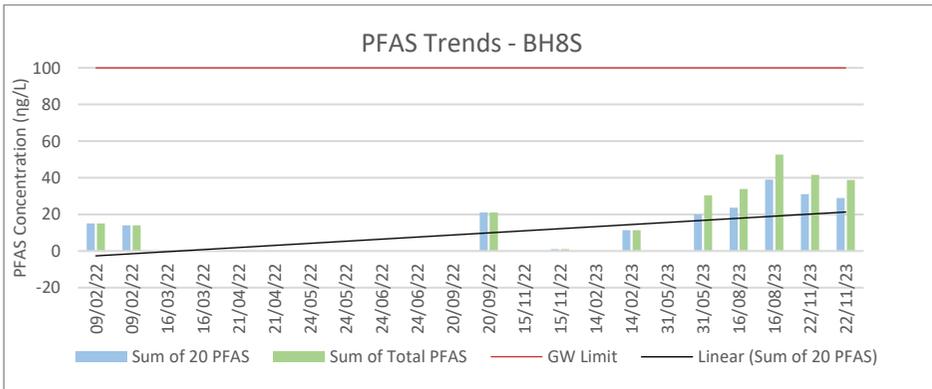


Figure 4-40: Sum of PFAS Concentrations at BH8S (Below GAC)



4.2.3.7 *Water Supply Well and Private Offsite Reservoir*

1 No. private reservoir and 1 No. water supply well are used for the abstraction of groundwater, these locations were included as part of the groundwater monitoring programme between August 2021 and November 2023. The results of the monitoring programme have been shared with the owners. The locations are shown in Table 4-13.



Table 4-13: Count of Water Supply Well and Reservoir Sampling Events

ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round	12 th Round	13 th Round	14 th Round
	25/08/2021	15/11/2021	10/02/2022	15/03/2022	20/04/2022	24/05/2022	03/06/2022	21/06/2022	20/09/2022	15/11/2022	13- 15/02/2023	29- 31/05/2023	15/08/23	22/11/23
Gardener's Well	✓	NS	✓	✓	✓	✓	NS	NS	✓	✓	✓	✓	✓	✓
Offsite Reservoir	NS	✓	✓	✓	NS	NS	✓	NS	NS	✓	✓	✓	✓	✓

Note: A tick denotes a sample was collected. NS denotes no samples were collected. GW samples not collected during the 1st and 2nd round of monitoring was due to no detections. Sampling was subsequently reinstated.



A summary of results is presented in Table 4-14:

Table 4-14: Water Supply Well and Offsite Reservoir Monitoring Summary Results

ID	No. of Samples	GAC Limit Value (ng/L)	Min Sum of 20 PFAS (ng/L)	Max Sum of 20 PFAS (ng/L)	Average Sum of 20 PFAS (ng/L)
Gardeners Well	21	100	<LOD	3.33	0.32
Offsite Reservoir	18		<LOD	2.47	<i>0.303</i>

Note: All results are reported in ng/L. Results in Italics exceed the LOD¹.

¹ The Limit of Detection (LOD) for each Sum of 20 PFAS parameter ranges from 0.65 -2.0ng/l but may be higher if dilution is required by laboratory.

Sum of 20 PFAS concentrations in the private Offsite Reservoir has been noted at concentrations above and below the laboratory limit of detection over the course of the reporting period, with no apparent discernible trends. The maximum Sum of 20 PFAS concentration of 2.47ng/l is below the GAC (100ng/l).

Sum of 20 PFAS concentrations in Gardener's Well were below the laboratory limit of detection during the monitoring programme in 2022, the first (and only) detection was in August 2023 (3.33ng/l) but was below the GAC.

4.2.3.8 Water Supply Well and Private Offsite Reservoir Trends

Trends of Sum of 20 PFAS concentrations across the monitoring period are presented in Figure 4-42 and Figure 4-43.

Sum of 20 PFAS concentrations in the private Offsite Reservoir has been noted at concentrations above and below the laboratory limit of detection over the course of the reporting period, with no apparent discernible trends (Figure 4-42).

Sum of 20 PFAS concentrations in Gardener's Well were below the laboratory limit of detection during the monitoring programme in 2022, the first (and only) detection was in August 2023 (Figure 4-43).

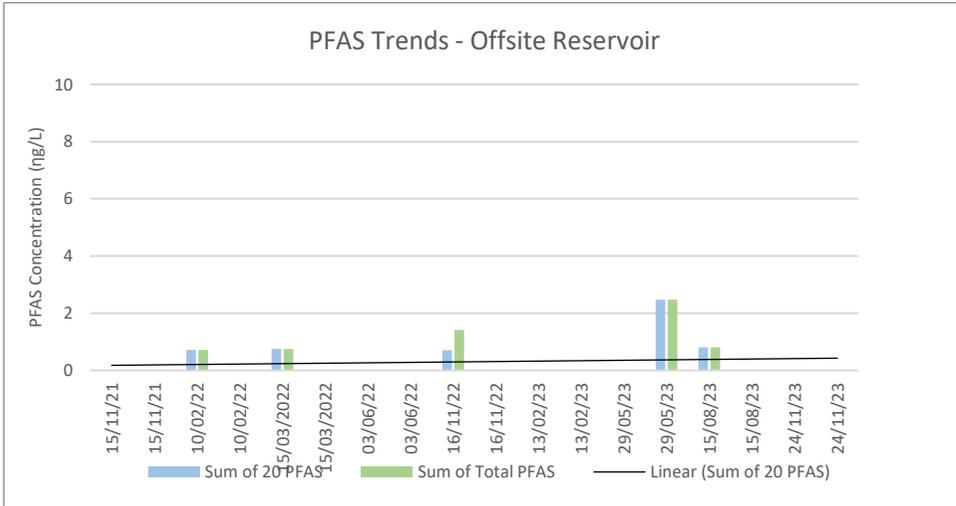


Figure 4-42: Sum of PFAS Concentrations at Offsite Reservoir (Below GAC)

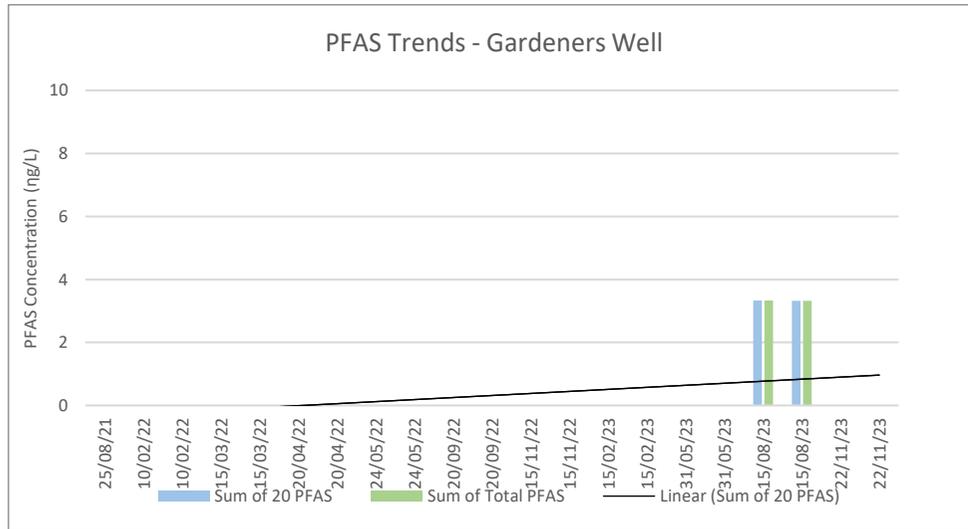


Figure 4-43: Sum of PFAS Concentrations at Gardeners Well (Below GAC)



4.3 Surface Water Monitoring

24 No. landside and 17 No. airside surface water locations were included as part of the surface water monitoring programme conducted between June 2021 and November 2023. 4 No. airside monitoring locations (MH1-MH4) were sampled between June and October 2021. Between November 2021 and November 2023, landside surface water monitoring was undertaken. The landside locations are all situated downstream of the boundary of the airport and in all orientations (i.e., north, east, south, west) surrounding the airport. From February 2022, monitoring of airside surface water locations has been undertaken with additional locations included in 2023. The monitoring locations are in Figure 4-4.

In 2021, a CCTV survey of the storm and foul sewer lines at Hangar 2 and Hangar 3 at the North Apron was carried out. The survey identified ingress of groundwater flow through pipe defects and unsealed joints which was identified as a potential source for PFAS discharge into surface water. The CCTV survey was carried out during the manhole monitoring period (June – October 2021). Groundwater PFAS sources which have the potential to enter the storm and foul sewer lines is discussed in Section 4.2.3.

The surface water drainage system for the airport is connected by a series of manholes and discharges via oil interceptors to surface water at various outfall points around the perimeter of the site. As the manhole locations in the area of the North Apron discharge to a surface water location, these were included as part of the surface water monitoring.

The surface water sampling locations and associated surface water catchment areas are outlined in Table 4-15:

Table 4-15: Surface Water Monitoring Locations

ID	Surface Water Body	Surface Water Catchment	Airside/ Landside Location
SL1 (also known as 'Proposed SWML 8')	Barberstown 08	Ward_030	Landside
SL2	Sluice	Mayne_010	
SL3	Cuckoo Stream	Mayne_010	
SL4 (also known as 'SWML 2')	Ward_030	Ward_030	
SL5	Ward_030	Ward_030	
SL6	Sluice	Mayne_010	
SL7	Cuckoo Stream	Mayne_010	
SL8	Santry	Mayne_010	
SL9	Westereave	Ward_030	
SL10	Sandyhill 08	Ward_030	
SL11	Mayne 09	Mayne_010	
SL12	Ward	Ward_030	
SL13	Cuckoo Stream	Mayne_010	



ID	Surface Water Body	Surface Water Catchment	Airside/ Landside Location	
SL14	Santry	Mayne_010		
SL15	Mayne 09	Mayne_010		
C1	Drainage Channel	Sluice_010		
C-2A	Manhole	Mayne_010		
C-2B	Manhole	Mayne_010		
Kealy's Stream	Drainage Channel	Sluice_010		
M5	Drainage Channel	Mayne_010		
S1	Drainage Channel	Santry_010		
S3	Santry	Santry_010		
WAD Stream	Drainage Channel	Sluice_010		
M1	Manhole	Mayne_010		
P2	Manhole	Ward_030		Airside
P3	Manhole	Ward_030		
P4	Headwall	Sluice_010		
P7	Manhole	Ward_030		
P8	Manhole	Ward_030		
R1	Headwall	Sluice_010		
R2	Headwall	Sluice_010		
SWML3	Unnamed	Sluice_010		
SWML4	Unnamed	Sluice_010		
SWML5(A)	Sluice	Sluice_010		
SWML5(B)	Drainage Channel	Mayne_010		
SWML7a	Unnamed	Ward_030		
SWML7b	Huntsdown 08	Ward_030		
MH1	Onsite Manholes for Drainage Channel	Mayne_010		
MH2		Mayne_010		
MH3		Mayne_010		
MH4		Mayne_010		



4.3.1 Sampling Methodology

The sampling methodology is provided in Appendix 2. A summary is provided below.

Dedicated bottleware supplied by the laboratory was used for the surface water samples. The monitoring methodology entailed the following:

- A surface water grab sampler was used to acquire samples safely from the surface water monitoring locations.
- To ensure quality control, all samples were stored and shipped in cooler boxes (<4°C). All samples were accompanied by a chain-of-custody form on-site for same day delivery to laboratory. The procedure was repeated at all surface water monitoring locations, using new sampling containers.
- Duplicate samples were collected at each monitoring locations as part of the quality control procedures.

All groundwater samples collected as part of the monitoring programme were submitted to ALS, an ISO 17025:2017 approved laboratory. Samples were submitted via courier under Chain of Custody procedures and analysed for:

- PFAS under ALS Method No. TM434

Summary tables with surface water results are presented in Section 4.3.3 with the tabulated laboratory data available in Appendix 5.

The Laboratory Certificates for each round of monitoring are available in Appendix 6.

4.3.2 Surface Water Generic Assessment Criteria (GAC)

The Water Framework Directive (WFD) (Directive 2000/60/EC) as amended by Directive 2013/39/EC and the European Union Environmental Objectives (Surface Waters) Regulations (S.I. No. 77, as amended) include limits for PFOS in surface water.

PFOS is one type of PFAS. PFOS is currently the only regulated PFAS in surface water in Ireland.

The limits referred to as Environmental Quality Standards (EQS) are set for water to meet a 'Good' status under the WFD. In this report, the surface water EQS is used as the GAC:

- 0.65ng/L PFOS Annual Average (AA)
- 36,000ng/L PFOS MAC (maximum admissible concentration)

The Annual Average is the maximum average concentration of PFOS at a surface water sampling location across a period of one year. The MAC is the maximum concentration for any single measurement reported at a surface water sampling location.

Further information is provided in Section 1.2.4.2.



4.3.3 Results

24 No. landside and 17 No. airside surface water locations were included as part of the surface water monitoring programme conducted between June 2021 and November 2023.

Landside surface water monitoring locations situated up and down gradient of the airport campus were selected to determine the impact historical activities at the site are having on the surrounding environs of the airport.



Tables of all results are in Appendix 5 and laboratory certificates are in Appendix 6.

4.3.3.1 Landside Surface Water Monitoring

A breakdown of landside surface water monitoring completed during the monitoring period are outlined in Table 4-16:

Table 4-16: Count of Landside Surface Water Monitoring Rounds

ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round	12 th Round	13 th Round
	15/11/21	09/02/22	14/03/22	19/04/22	26/05/22	21/06/22	19/09/22	16/11/22	14/12/22	13/02/23	29/05/23	14-16 /08/23	21-22 /10/23
SL1	✓	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL2	✓	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL3	✓	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL4	✓	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL5	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL6	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL7	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL8	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL9	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL10	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL11	NS	✓	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL12	NS	NS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SL13	NS	NS	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL14	NS	NS	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓
SL15	NS	NS	✓	✓	✓	✓	✓	✓	NS	✓	✓	✓	✓



ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round	12 th Round	13 th Round
	15/11/21	09/02/22	14/03/22	19/04/22	26/05/22	21/06/22	19/09/22	16/11/22	14/12/22	13/02/23	29/05/23	14-16 /08/23	21-22 /10/23
C1	NS	NS	✓	✓									
C-2A	NS	NS	✓	✓									
C-2B	NS	NS	✓	✓									
Kealy's Stream	NS	NS	✓	✓									
M5	NS	NS	✓	✓									
S1	NS	NS	✓	✓									
S3	NS	NS	✓	✓									
WAD Stream	NS	NS	✓	✓									
M1	NS	NS	NS	✓									

Note: A tick denotes a sample was collected. NS denotes no samples were collected. Following the detection of PFOS during the 1st round of monitoring, additional monitoring locations (SL5 – SL15) were added by FT to the monitoring programme over rounds 2 and 3. Additional monthly monitoring was completed in SL12 in December 2022. Additional representative monitoring locations were included in 2023 on the recommendation of daa.



A summary of results is presented in Table 4-17. This summary is supported by previous monitoring completed at SL4 for PFAS by a contractor as part of ongoing works at the North Runway.

Table 4-17: Landside Surface Water Monitoring Summary Results

ID	No. of Samples	GAC Limit Value (ng/L)	Min PFOS (ng/L)	Max PFOS (ng/L)	Average PFOS (ng/L)
SL1	24	0.65 (Annual Average)	<i>0.67</i>	<i>9.58</i>	<i>1.66</i>
SL2	24		<i>2.01</i>	<i>25.20</i>	<i>12.19</i>
SL3	24		<i>3.83</i>	<i>50.60</i>	<i>13.67</i>
SL4	59		<i>0.74</i>	<i>17.50</i>	<i>3.78</i>
SL5	22		<i>0.68</i>	<i>3.26</i>	<i>1.34</i>
SL6	22		<i>3.24</i>	<i>12.40</i>	<i>8.07</i>
SL7	22		<i>4.15</i>	<i>23.70</i>	<i>11.06</i>
SL8	22		<i>0.69</i>	<i>1.99</i>	<i>1.42</i>
SL9	22		<i>0.66</i>	<i>2.51</i>	<i>1.05</i>
SL10	22		<i>0.66</i>	<i>3.45</i>	<i>1.47</i>
SL11	22		<i>1.00</i>	<i>7.26</i>	<i>3.52</i>
SL12	21		<i>0.69</i>	<i>22.50</i>	<i>4.97</i>
SL13	19		<i>1.41</i>	<i>23.10</i>	<i>8.56</i>
SL14	19		<i>0.67</i>	<i>13.20</i>	<i>2.32</i>
SL15	20		<i>0.83</i>	<i>5.41</i>	<i>2.12</i>
C1	4		<i>1.70</i>	<i>1.74</i>	<i>1.72</i>
C-2A	4		<i>0.99</i>	<i>0.99</i>	<i>0.99</i>
C-2B	4		<i>2.37</i>	<i>2.57</i>	<i>2.47</i>
Kealy's Stream	4		<i>15.10</i>	<i>28.60</i>	<i>22.08</i>
M5	4		<i>0.88</i>	<i>1.37</i>	<i>1.13</i>
S1	4	<LOD	<LOD	<LOD	
S3	4	<LOD	<LOD	<LOD	
WAD Stream	4	<i>0.80</i>	<i>2.84</i>	<i>1.90</i>	
M1	2	<LOD	<LOD	<LOD	

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC (PFOS) Limit Value¹. Results in *Italics* exceed the LOD².

¹ GAC (PFOS) refers to the AA EQS Limit Value of 0.65ng/L is based on the annual average PFOS detected at a given location (refer to Section 1.2.4.2).

² The Limit of Detection (LOD) for each Sum of 20 PFAS parameter ranges from 0.65 - 2.0 but may be higher if dilution is required by laboratory. Dilution may be necessary if there are high suspended solids present in the sample.

With the exception of S1, S3 and M1, PFOS was detected in each surface water monitoring location on at least two occasions during the reporting period. The average PFOS concentrations in each surface water monitoring location were elevated above the 0.65ng/l AA GAC, with exception of S1, S3 and M1.



PFOS concentrations in surface water monitoring locations SL3, SL4, SL6, SL7, SL11, SL13 – SL15 were consistently above the GAC. All surface water monitoring results reported over the monitoring period were below the 36,000ng/l PFOS MAC defined in the Surface Water Regulations.

The highest average PFOS concentrations in surface waters are located to the east of the airport in the Sluice (SL02, SL06), Cuckoo Stream (SL03, SL07 and SL13) and Kealy's Stream. Average PFOS concentrations at these locations range from 8.1ng/l to 22.1ng/l. The highest PFOS concentration was detected on the Cuckoo Stream at 50.6ng/l (May 2023). Surface water in the vicinity of the North Apron which includes MH1 – MH4 and SWML5(B) is directed to the Sluice upstream of SL02 and SL06. New drainage constructed beneath the North Runway and APEC 5 (where residual PFAS is confirmed) also discharges to the Sluice upstream of SL02 and SL06. Monitoring results indicate the area drained by the North Apron has higher PFOS surface water concentrations than that at APEC 5 (outfall at P4). FT do not possess other information to confirm if there are other drains within the curtilage of Dublin Airport which discharge to the Sluice.

In the Sluice, maximum PFOS concentrations in downstream monitoring location SL06 are approximately half of upstream monitoring location SL02. This indicates PFOS concentrations are being diluted in the Sluice. In the Cuckoo Stream, PFOS concentrations in surface water generally decrease downstream as dilution occurs, but not to a significant extent.

Tributaries of the River Ward generally contain low levels of PFOS concentrations but are elevated above the 0.65ng/l AA GAC. During the monitoring period, PFOS concentrations ranged from below the limit of detection (LOD) (0.65ng/l) to 9.6ng/l.

PFOS concentrations in surface water monitoring location SL11 and SL15 on the Mayne may be from an external source to the airport. Concentrations of PFOS in monitoring location M5 (August 2023: 1.37ng/l; November 2023: <0.65ng/l), located adjacent to the airport boundary are lower than concentrations reported in downstream monitoring location S11 (August 2023: 2.2ng/l; November 2023: 0.996ng/l). This indicates other sources of PFOS to this surface water downstream of the airport. Similar observations are evident in the Santry, where PFOS concentrations were equal or lower in the upstream sampling location S3 (<0.65ng/l in August and November 2023) adjacent to the airport, than downstream monitoring locations SL8 (August 2023: 1.99ng/l; November 2023: <0.65ng/l) and SL14 (August 2023: <0.65ng/l; November 2023: 0.79ng/l).

4.3.3.2 *Landside Surface Water Trends*

Trends of PFOS concentrations across the monitoring period are presented in Figure 4-44 to Figure 4-58.

SL1, SL3 and SL5 demonstrated an overall slight upward trend. All other surface water monitoring locations indicated stable or downward trends, or no overall discernible trends.

Similar results of PFOS were recorded at monitoring locations SL03 (upstream) and SL07 (downstream) which are both located on the Cuckoo Stream.

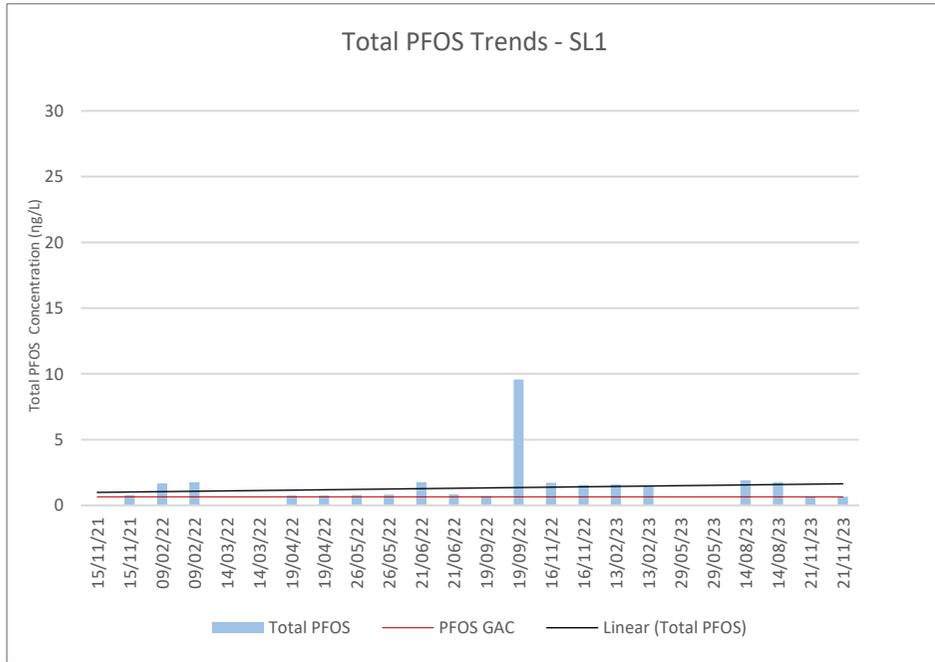


Figure 4-44: PFOS Concentrations at SL1 (Above GAC)

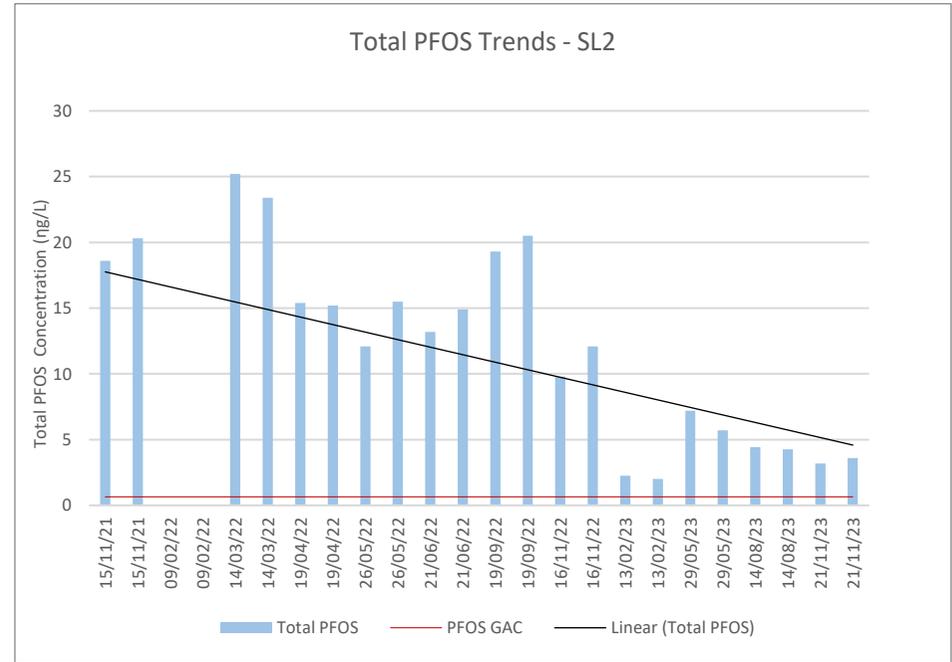


Figure 4-45: PFOS Concentrations at SL2 (Above GAC)

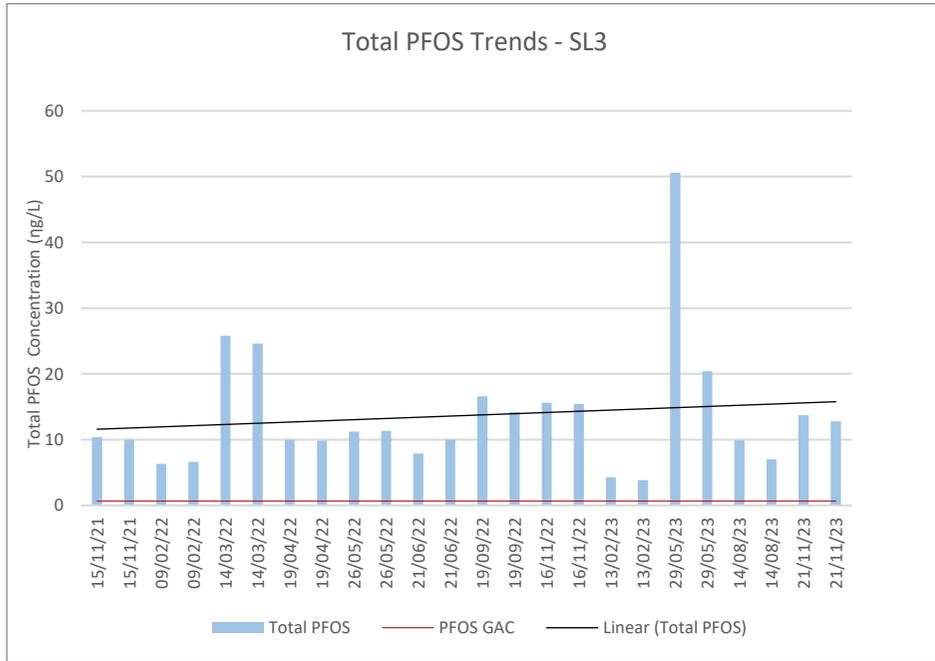


Figure 4-46: PFOS Concentrations at SL3 (Above GAC)

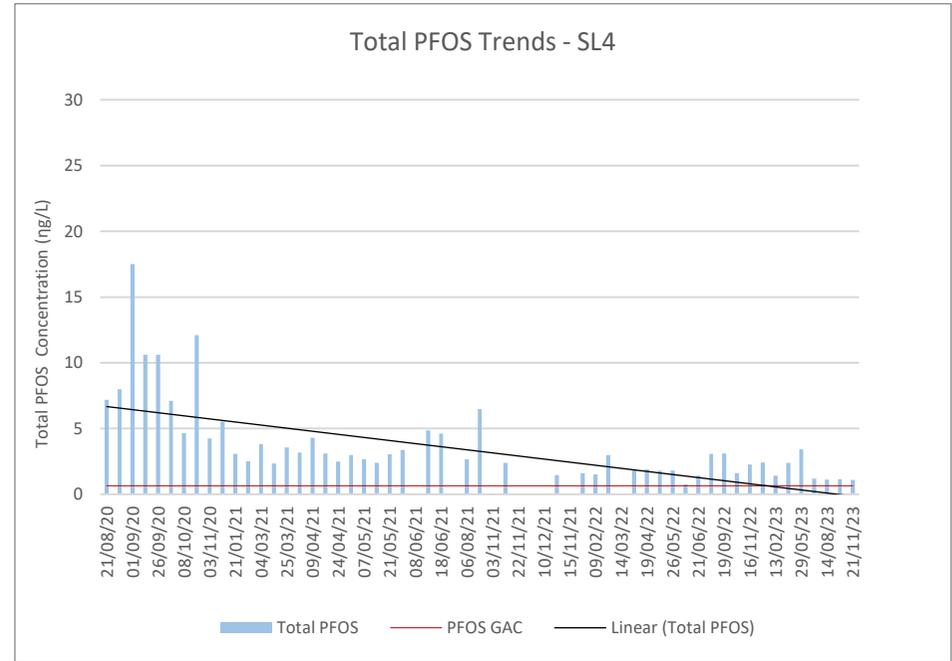


Figure 4-47: PFOS Concentrations at SL4 (Above GAC)

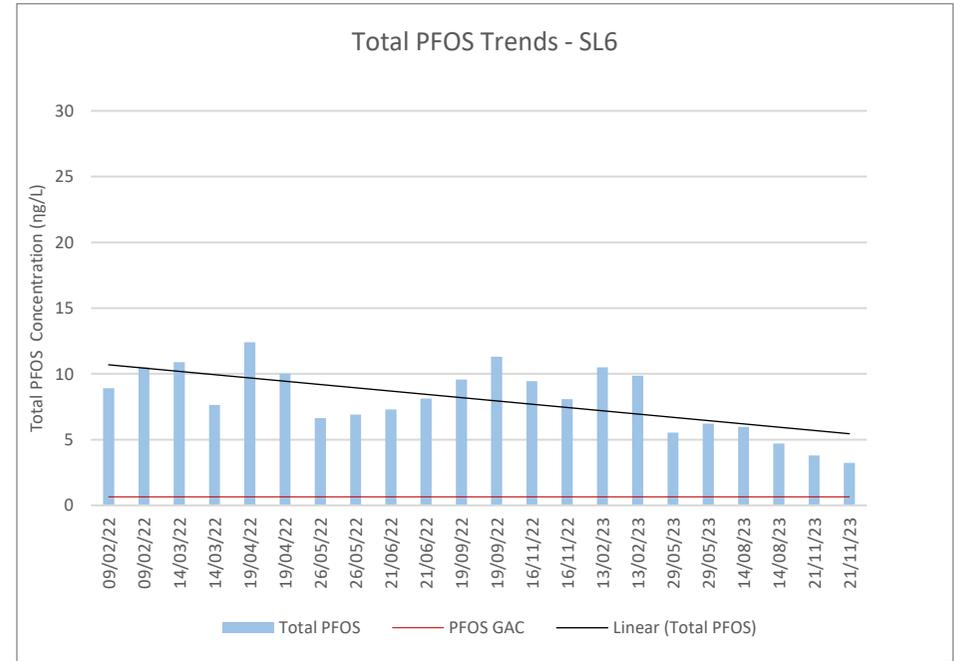
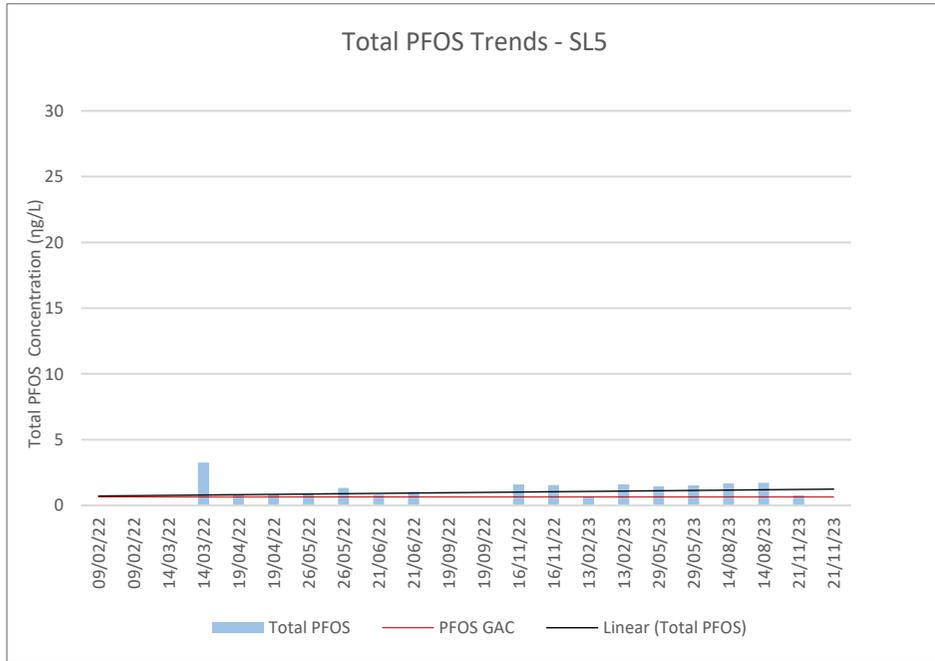


Figure 4-48: PFOS Concentrations at SL5 (Above GAC)

Figure 4-49: PFOS Concentrations at SL6 (Above GAC)

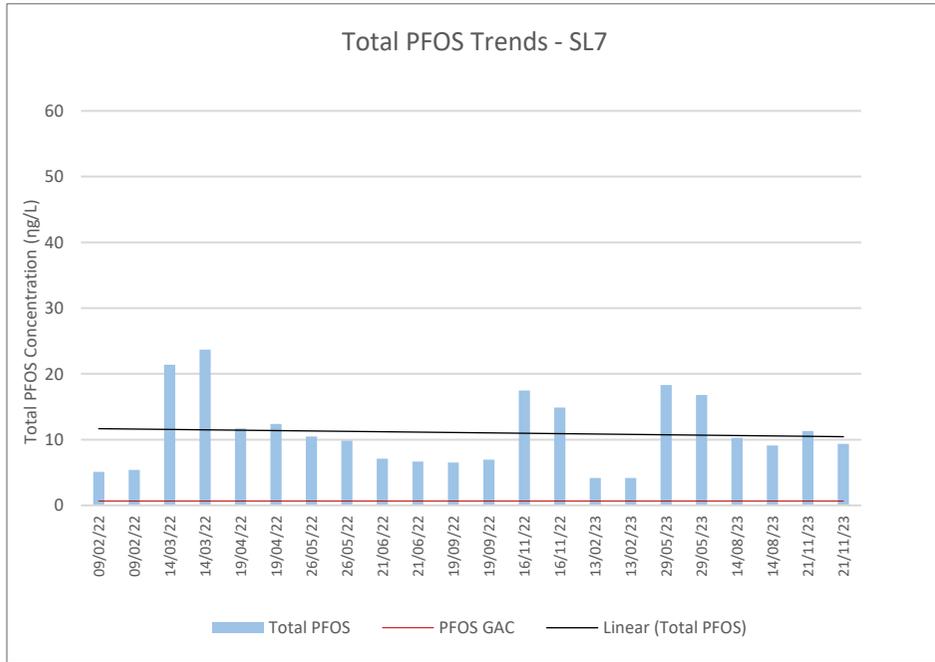


Figure 4-50: PFOS Concentrations at SL7 (Above GAC)

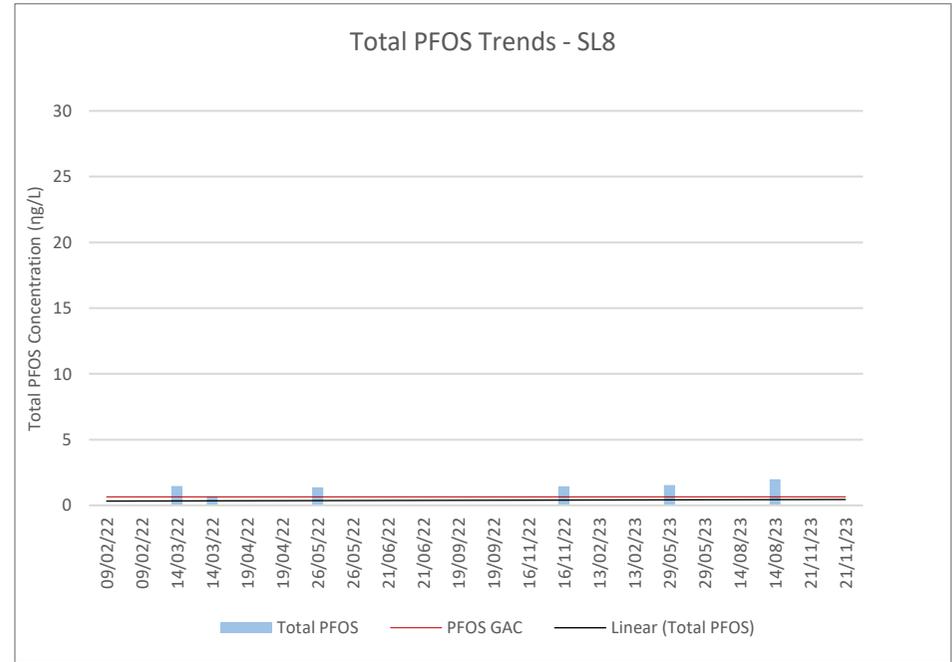


Figure 4-51: PFOS Concentrations at SL8 (Above GAC)

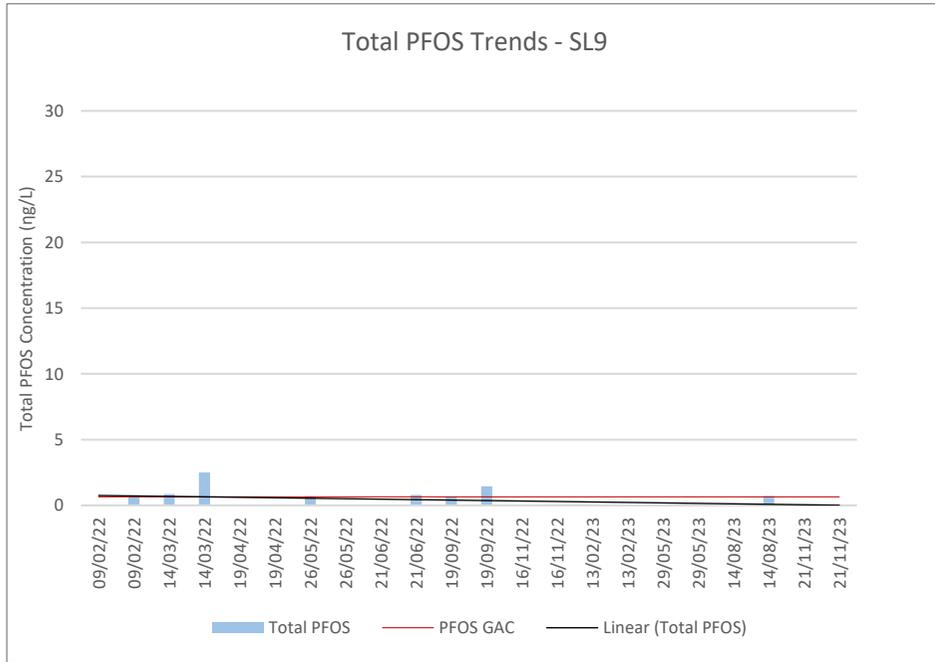


Figure 4-52: PFOS Concentrations at SL9 (Below GAC)

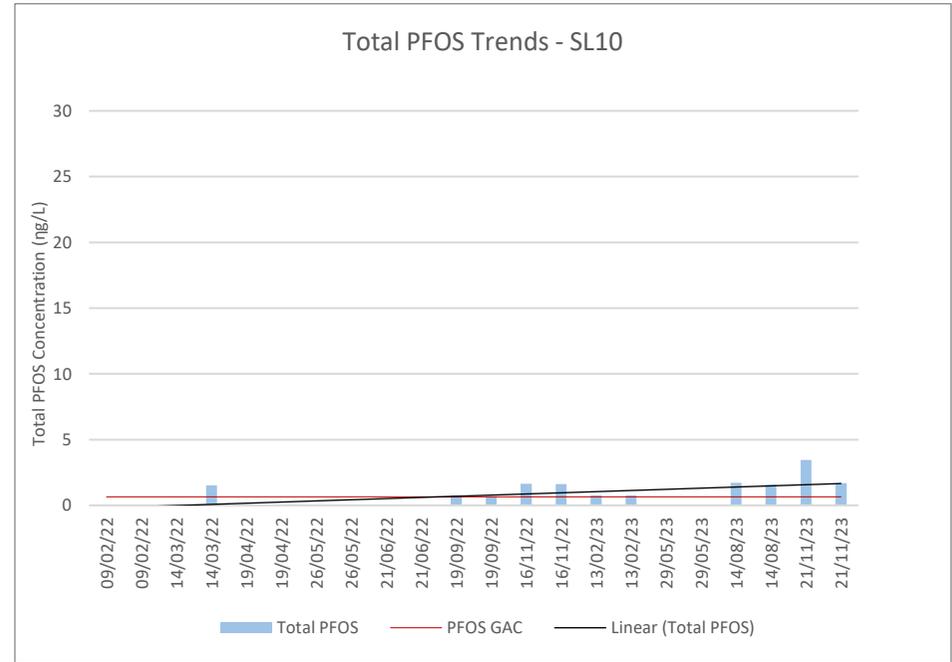


Figure 4-53: PFOS Concentrations at SL10 (Above GAC)

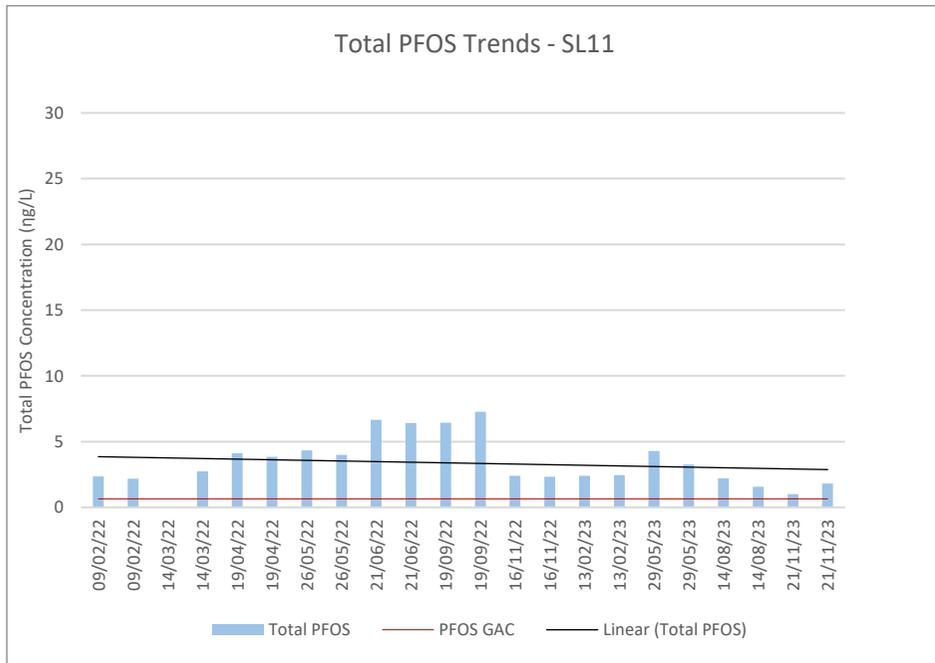


Figure 4-54: PFOS Concentrations at SL11 (Above GAC)

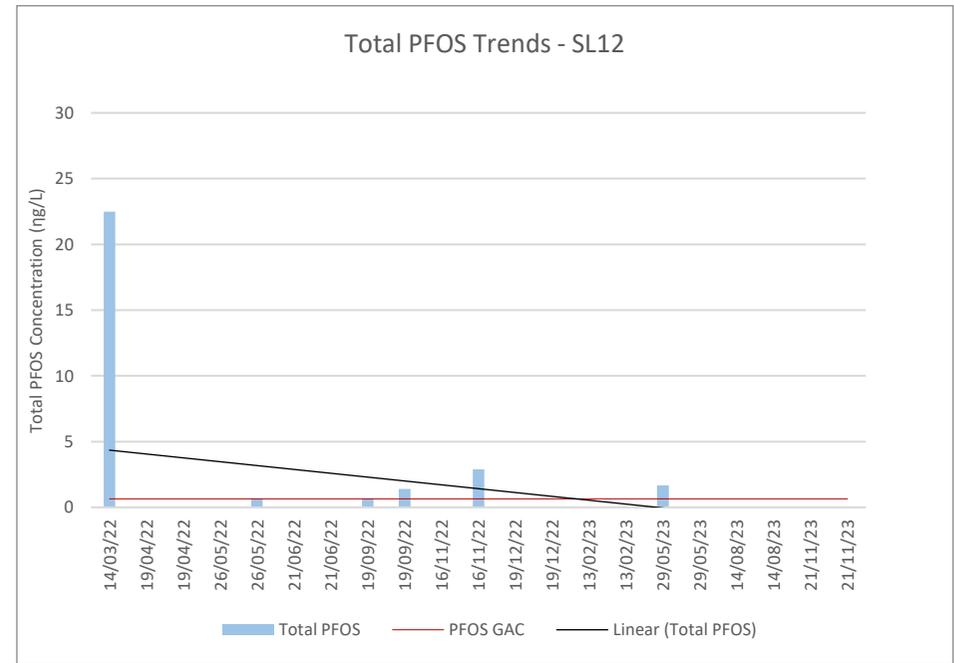


Figure 4-55: PFOS Concentrations at SL12 (Above GAC)

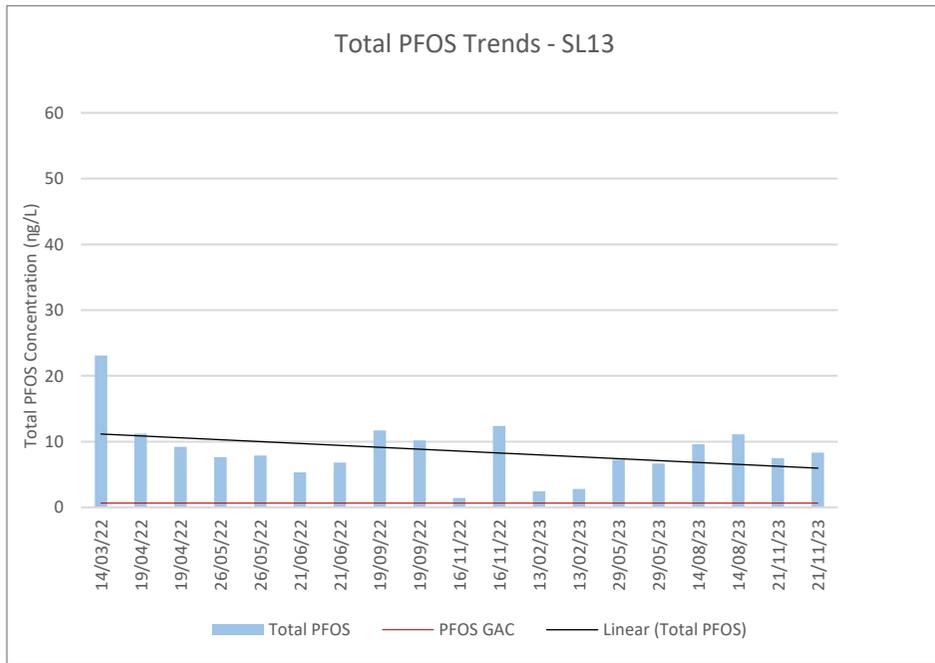


Figure 4-56: PFOS Concentrations at SL13 (Above GAC)

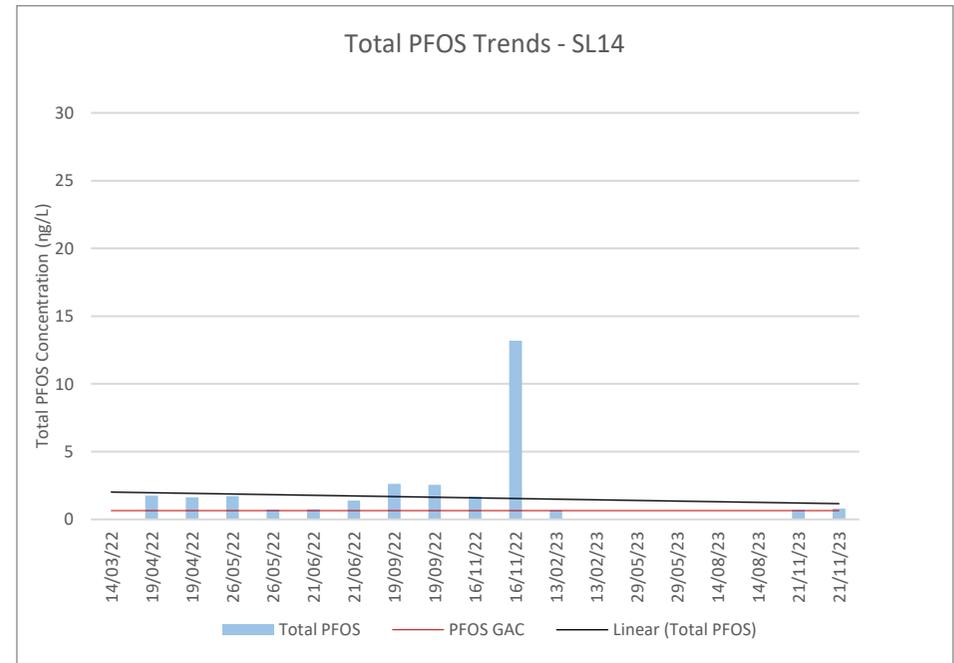


Figure 4-57: PFOS Concentrations at SL14 (Above GAC)

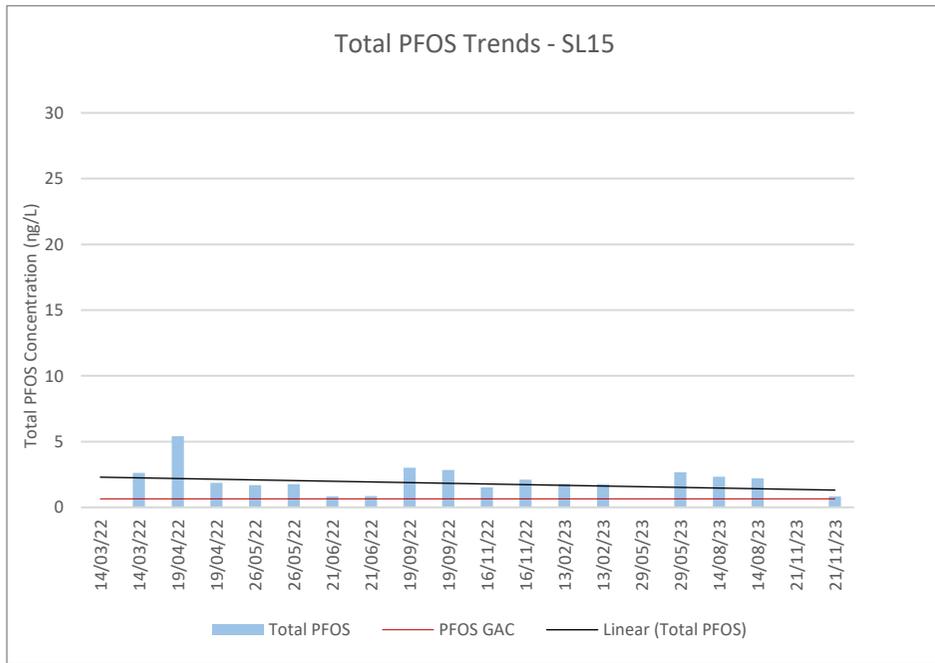


Figure 4-58: PFOS Concentrations at SL15 (Above GAC)



4.3.3.3 Airside Surface Water

A breakdown of airside surface water monitoring completed during the reporting period are outlined in Table 4-18:

Table 4-18: Airside Surface Water Monitoring Rounds

ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round
	15/02/22	15/03/22	20/04/22	24/05/22	21/06/22	20/09/22	15/11/22	22/03/23	30/05/23	16/08/23	22/10/23
P2	NS	✓	✓	✓	✓						
P3	NS	✓	✓	✓	✓						
P4	NS	✓	✓								
P7	NS	✓	✓	✓	✓						
P8	NS	✓	✓	✓	✓						
R1	NS	✓	✓	✓	✓						
R2	NS	✓	✓	✓	✓						
SWML3	NS	✓	✓	✓	✓						
SWML4	NS	✓	✓	✓	✓						



ID	1 st Round	2 nd Round	3 rd Round	4 th Round	5 th Round	6 th Round	7 th Round	8 th Round	9 th Round	10 th Round	11 th Round
	15/02/22	15/03/22	20/04/22	24/05/22	21/06/22	20/09/22	15/11/22	22/03/23	30/05/23	16/08/23	22/10/23
SWML5a	NS	✓	NS	NS	NS	NS	NS	NS	✓	NS	✓	✓
SWML5(B)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SWML7a	NS	NS	NS	NS	NS	NS	NS	✓	✓	✓	✓
SWML7b	NS	✓	✓	✓	✓						

Note. A tick denotes a sample was collected. SWML5(B) was the only airside monitoring location sampled in 2022. All locations were sampled in 2023 as recommended by daa. P4 was inaccessible in the 8th and 9th rounds. SWML5a was dry during the 9th round.



A summary of results is presented in Table 4-19. This summary is supported by previous monitoring completed for PFAS at all airside locations by a contractor as part of ongoing works at the North Runway.

PFOS concentrations were detected during each monitoring event in the majority of monitoring locations. Concentrations were above the 0.65ng/l AA GAC but below the 36,000ng/l PFOS MAC defined in the Surface Water Regulations. The highest PFOS concentrations were recorded in SWML5(B) (1,430ng/l in March 2022). PFOS concentrations are elevated above the 0.65ng/l AA GAC in manholes MH1 – MH4 (Section 4.3.3.5) upstream of SWML5(B).

Table 4-19: Airside Surface Water Monitoring Results

ID	No. of Samples	Min PFOS (ng/L)	Max PFOS (ng/L)	Average PFOS
P2	48	1.04	13.60	3.66
P3	47	0.96	9.37	2.86
P4	36	2.25	28.20	7.42
P7	46	0.77	10.30	3.08
P8	45	1.07	15.40	5.56
R1	39	0.72	8.95	4.65
R2	39	1.63	82.90	25.50
SWML3	35	2.17	34.20	12.03
SWML4	62	2.40	138.00	17.03
SWML5a	32	4.95	85.20	28.15
SWML5b	45	5.46	1,430	232.8
SWML7a	48	0.78	7.22	3.25
SWML7b	42	0.71	18.00	3.63

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC (PFOS) Limit Value¹. Results in *Italics* exceed the LOD².

¹ GAC (PFOS) refers to the AA EQS Limit Value of 0.65ng/L is based on the annual average PFOS detected at a given location (refer to Section 1.2.4.2).

² The Limit of Detection (LOD) for PFOS is 0.65ng/l but may be higher if dilution is required by laboratory.

4.3.3.4 Airside Surface Water Trends

The PFOS concentrations across the monitoring period are presented in Figure 4-59 to Figure 4-71.

Based on the results to date, PFOS concentrations appear to be overall steadily decreasing in monitoring locations P4, P8, R2, SWML3, SWML4, SWML5a, SWML7b while concentrations appear relatively stable in monitoring locations P2, P3, P7, R1, SWML5b, SWML7a. No increase is noted on PFOS concentrations across the monitoring period in all monitoring locations.

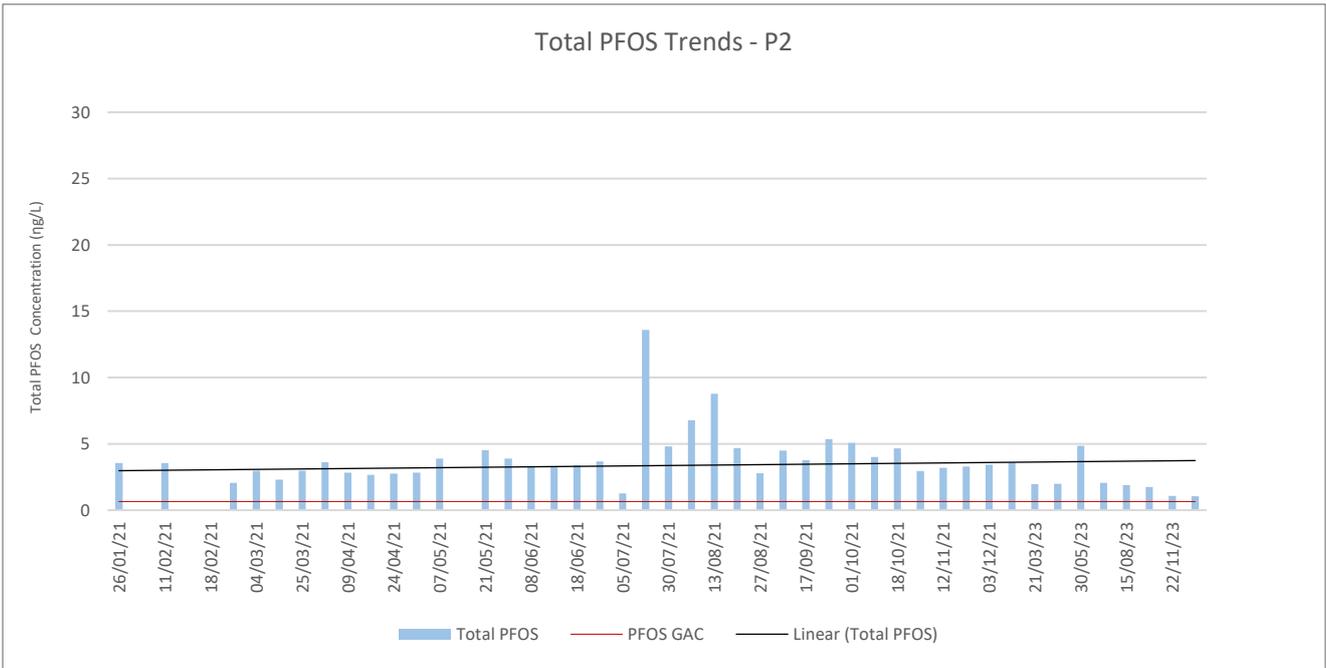


Figure 4-59: FOS Concentrations at P2 (Above GAC)

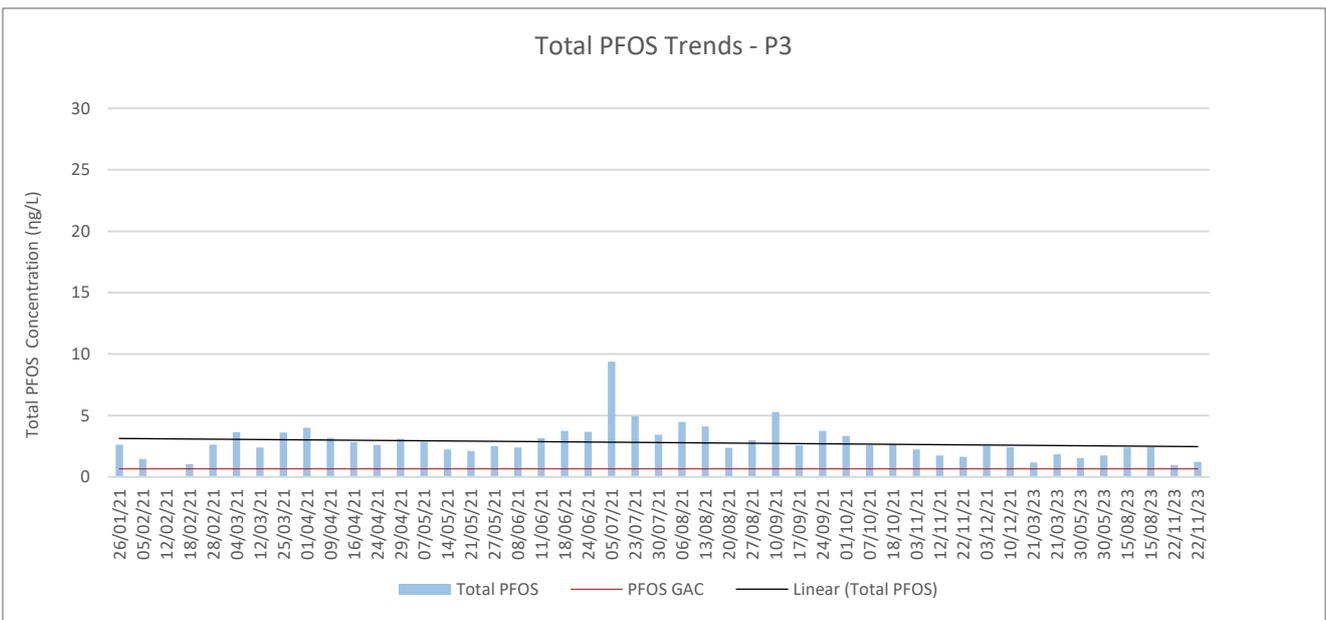


Figure 4-60: PFOS Concentrations at P3 (Above GAC)

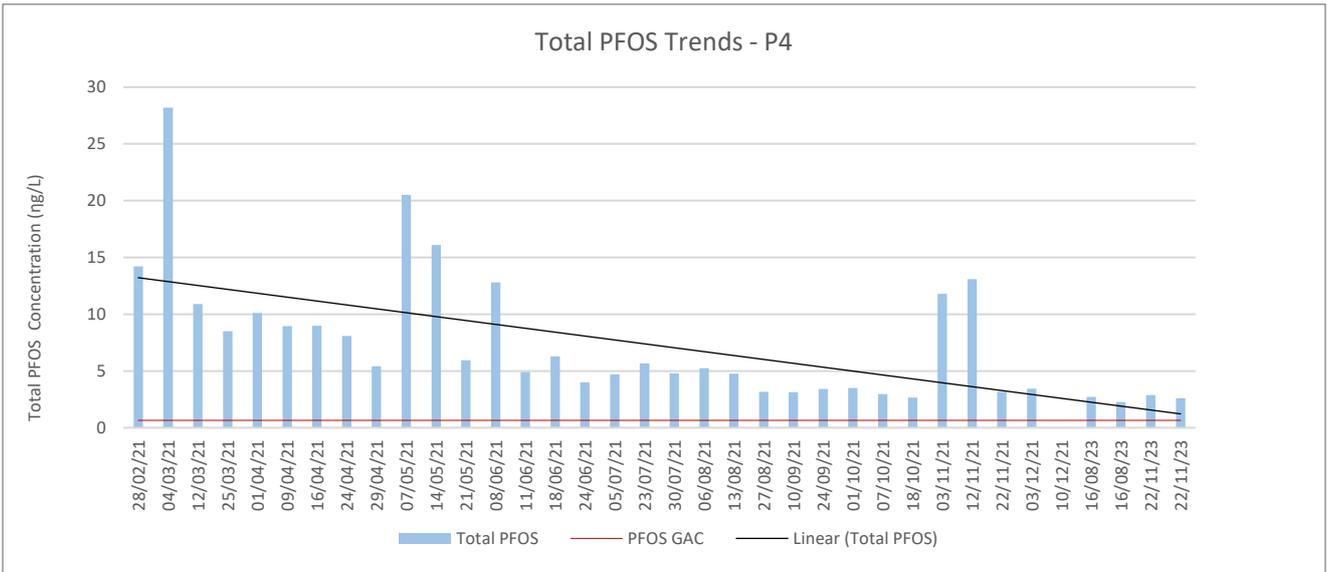


Figure 4-61: PFOS Concentrations at P4 (Above GAC)

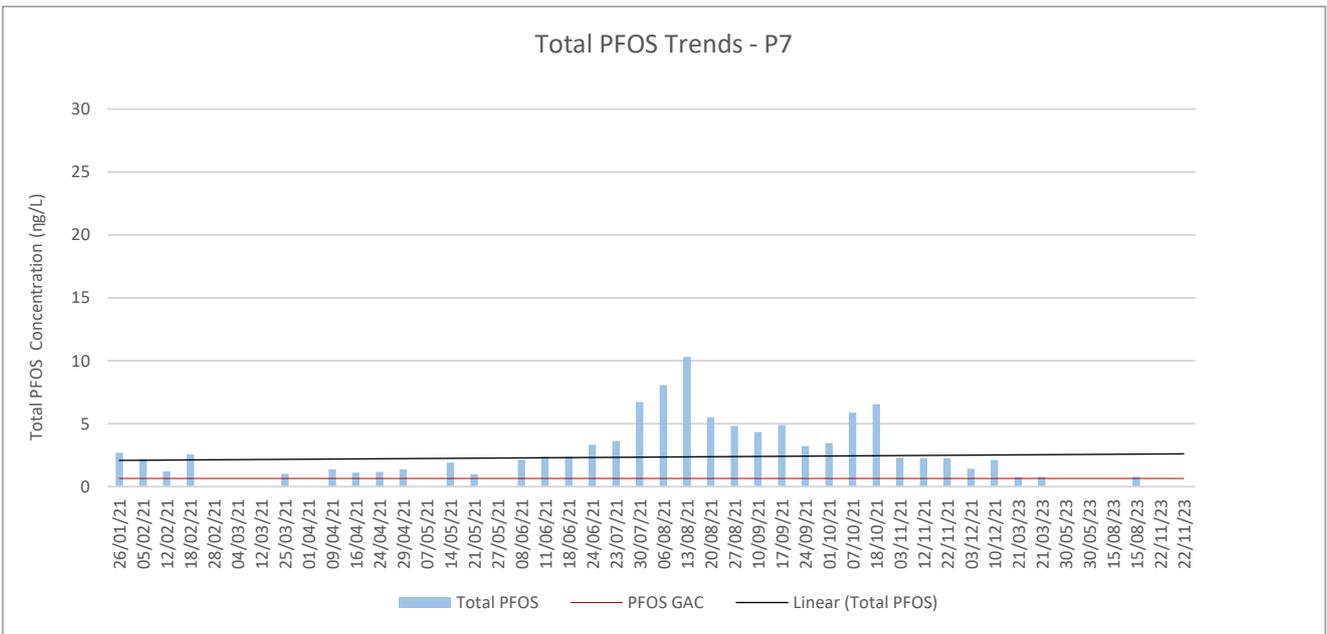


Figure 4-62: PFOS Concentrations at P7 (Below GAC)

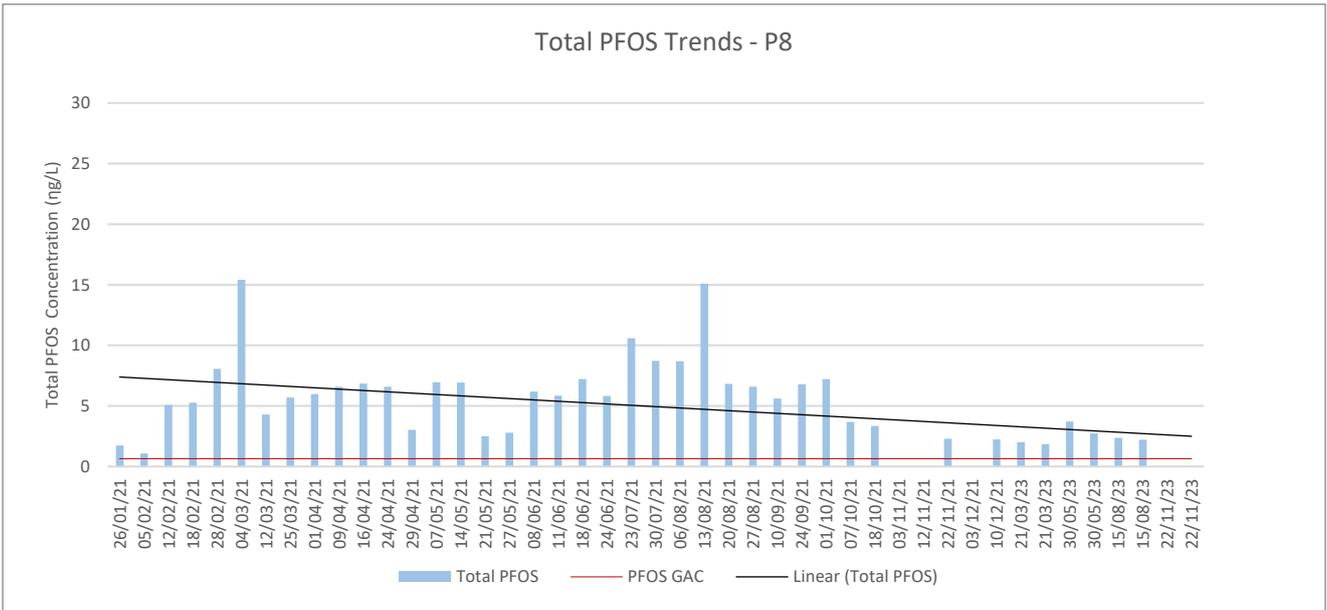


Figure 4-63: PFOS Concentrations at P8 (Below GAC)

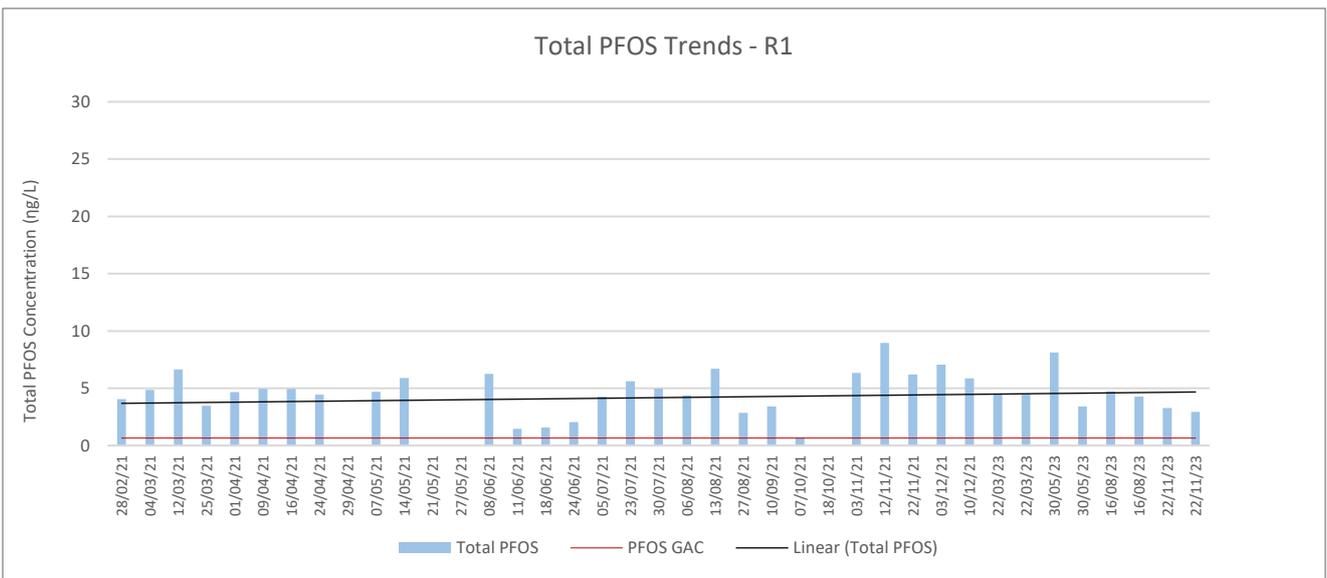


Figure 4-64: PFOS Concentrations at R1 (Above GAC)

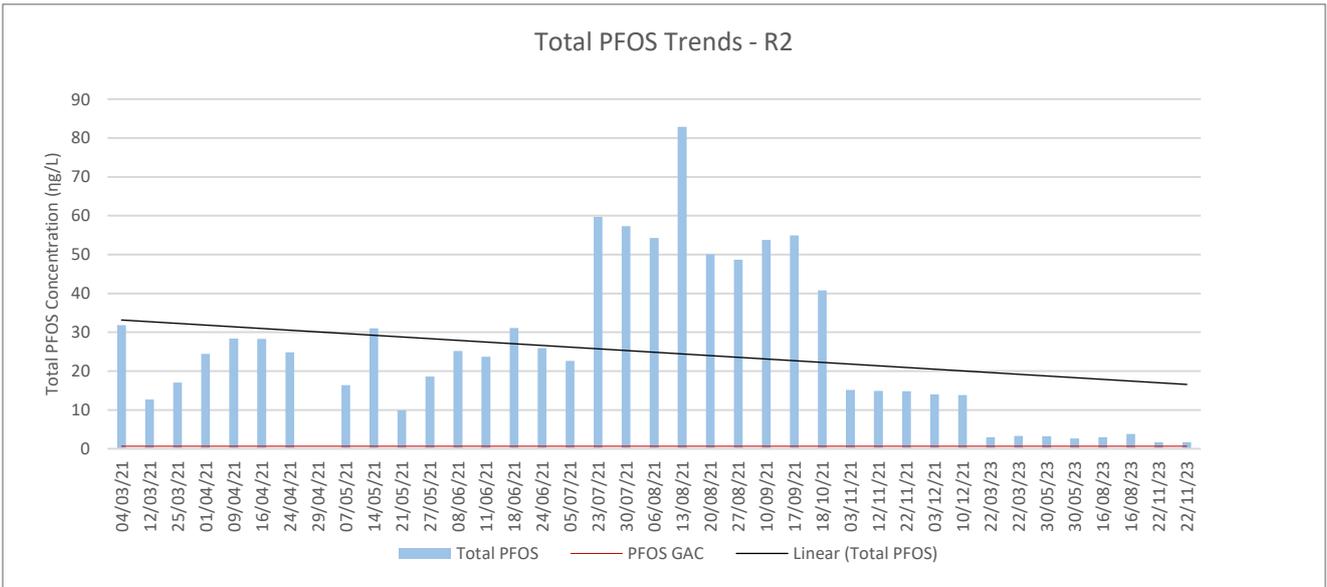


Figure 4-65: PFOS Concentrations at R2 (Above GAC)

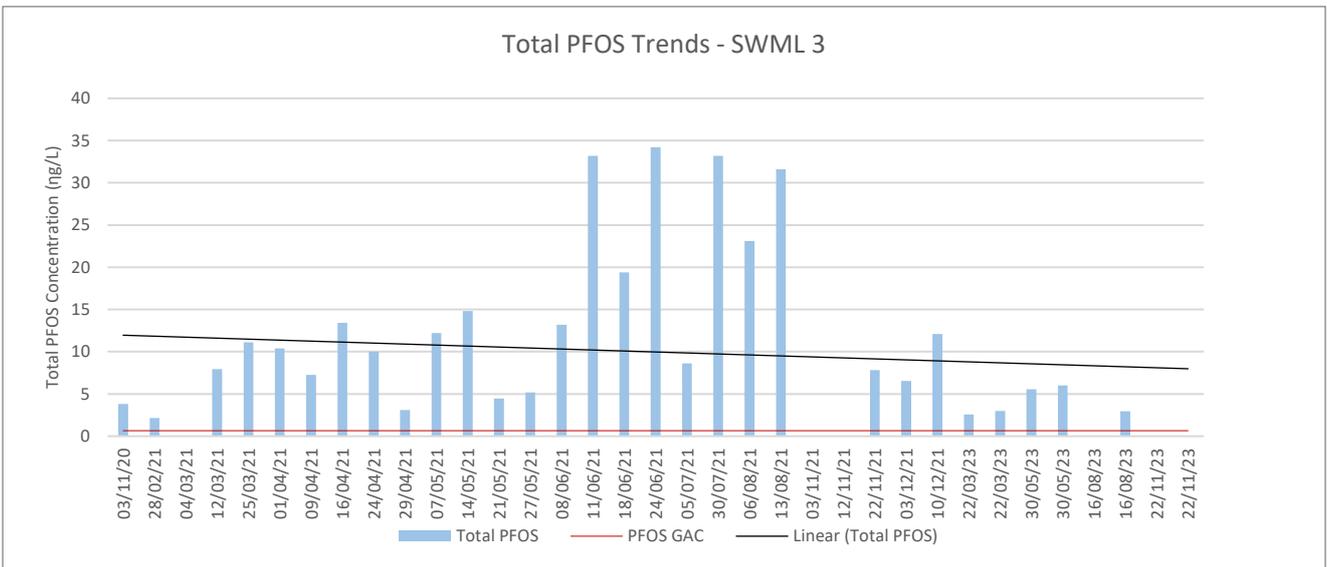


Figure 4-66: PFOS Concentrations at SWML3 (Above GAC)

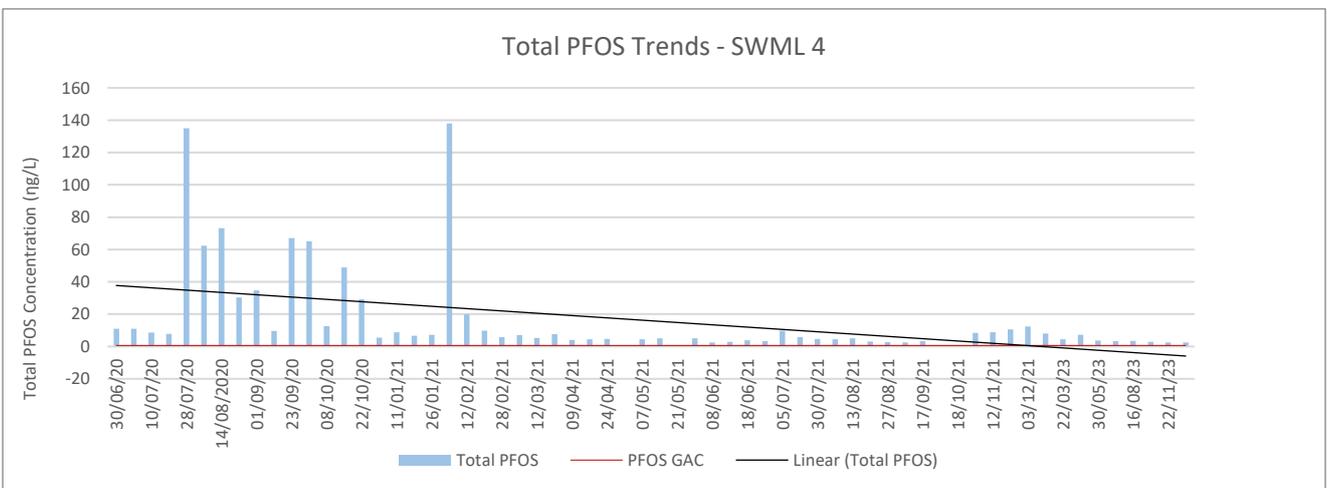


Figure 4-67: PFOS Concentrations at SWML4 (Above GAC)

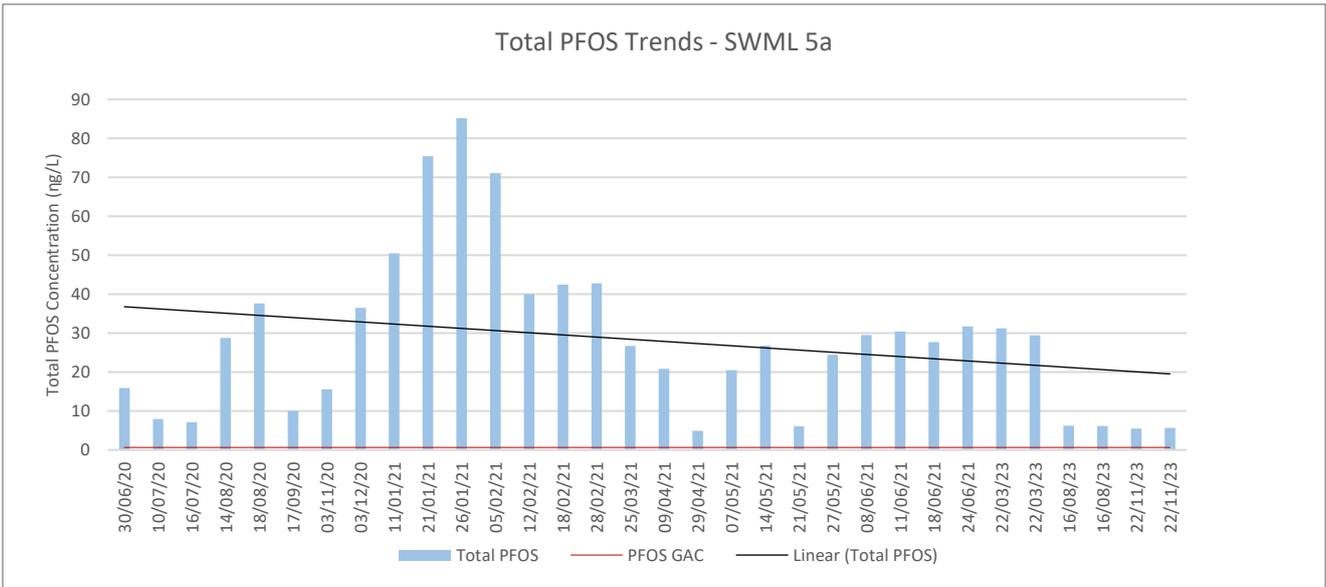


Figure 4-68: PFOS Concentrations at SWML5a (Above GAC)

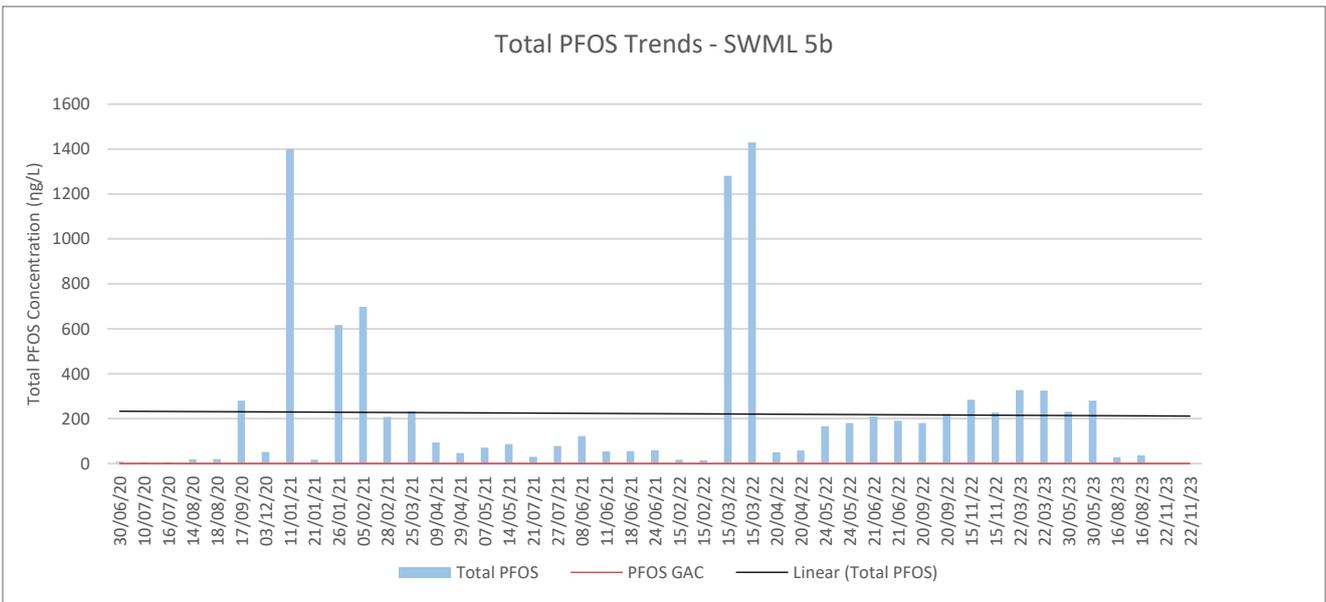


Figure 4-69: PFOS Concentrations at SWML5b (Below GAC)

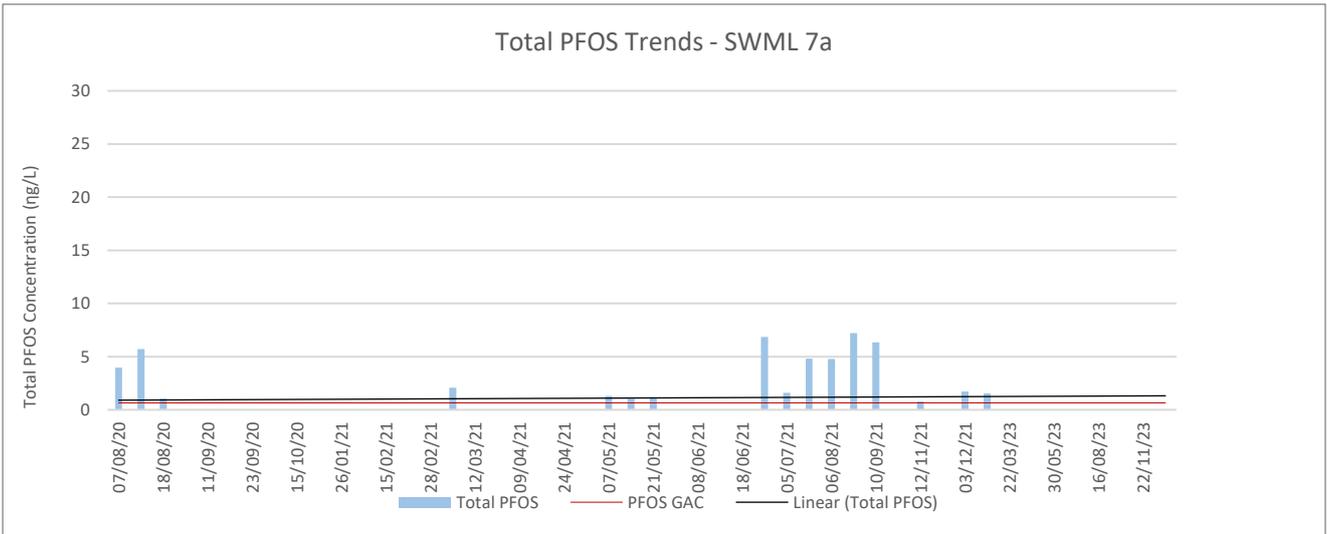


Figure 4-70: PFOS Concentrations at SWML7a (Below GAC)

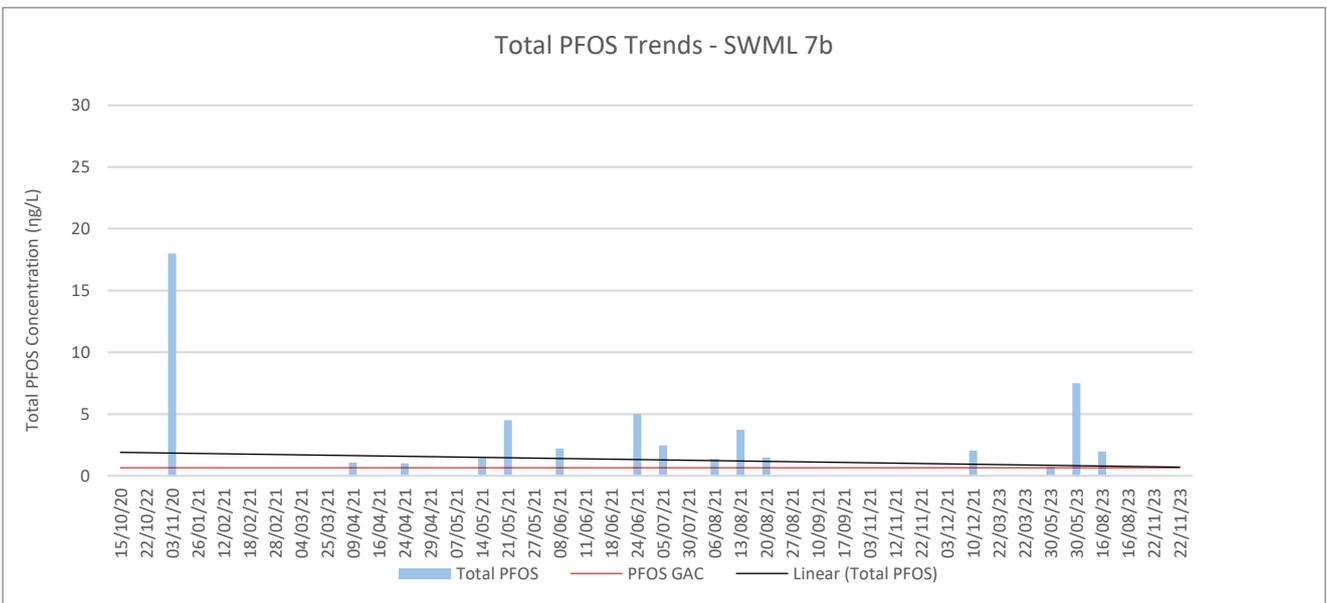


Figure 4-71: PFOS Concentrations at SWML7b (Below GAC)



4.3.3.5 North Apron Manholes

The drainage system for the airport is connected by a series of manholes and discharges via oil interceptors to surface water at various outfall points around the perimeter of the site. As the manhole locations in the area of the North Apron discharge to the nearby surface water locations, these were included in the surface water monitoring programme. Monitoring was completed on four occasions in June (by daa), August (by FT), September (by FT) and October 2021 (by FT; Table 4-20).

Table 4-20: Manhole Monitoring Rounds

ID	1 st Round	2 nd Round	3 rd Round	4 th Round
	08/06/2021	25/08/2021	30/09/2021	31/10/2021
MH1	✓	✓	✓	✓
MH2	✓	✓	✓	✓
MH3	✓	✓	✓	✓
MH4	✓	✓	✓	✓

Note. A tick denotes a sample was collected.

PFOS concentrations were detected at each manhole monitoring location during each monitoring event, ranging from 2.9ng/l to 136ng/l. Concentrations were above the 0.65ng/l AA GAC but below the 36,000ng/l PFOS MAC defined in the Surface Water Regulations (Table 4-21).

Table 4-21: Manhole Monitoring Summary Results

ID	Rounds	GAC Limit Value	Min PFOS	Max PFOS	Average PFOS
			(ng/L)	(ng/L)	(ng/L)
MH 1	4	0.65	<i>6.08</i>	<i>92.5</i>	<i>48.7</i>
MH 2	4		<i>16.5</i>	<i>88.5</i>	<i>50.5</i>
MH 3	4		<i>2.85</i>	<i>136</i>	<i>56.4</i>
MH 4	4		<i>15.1</i>	<i>133</i>	<i>66.7</i>

Note: All results are reported in ng/L. Results in **Blue** exceed the GAC (PFOS) Limit Value¹. Results in *Italics* exceed the LOD².

¹ GAC (PFOS) refers to the AA EQS Limit Value of 0.65ng/L is based on the annual average PFOS detected at a given location (refer to Section 1.2.4.2).

² The Limit of Detection (LOD) for PFOS is 0.65/l but may be higher if dilution is required by laboratory.

As discussed in Section 4.2, a CCTV survey of the North Apron drainage system was undertaken where MH1 – MH4 are located. The survey identified ingress of groundwater flow through pipe defects and unsealed joints indicating this as a potential source for PFAS (including PFOS) discharge into surface water. Concentrations of PFOS detected in the manhole monitoring locations are likely attributed to PFAS containing groundwater present at the North Apron where the source is indicated to be the Former Fire Station (Section 4.2.3.1).

4.3.3.6 North Apron Manhole Trends

Trends of PFOS concentrations across the monitoring period are presented in Figure 4-72 to Figure 4-74. No discernible trend is observed within the monitoring locations.

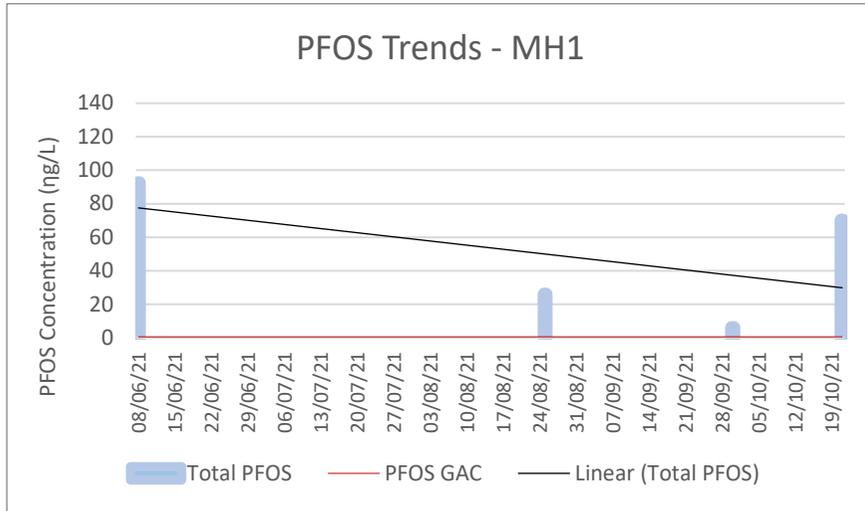


Figure 4-72: PFOS Concentrations at MH1 (Above GAC)

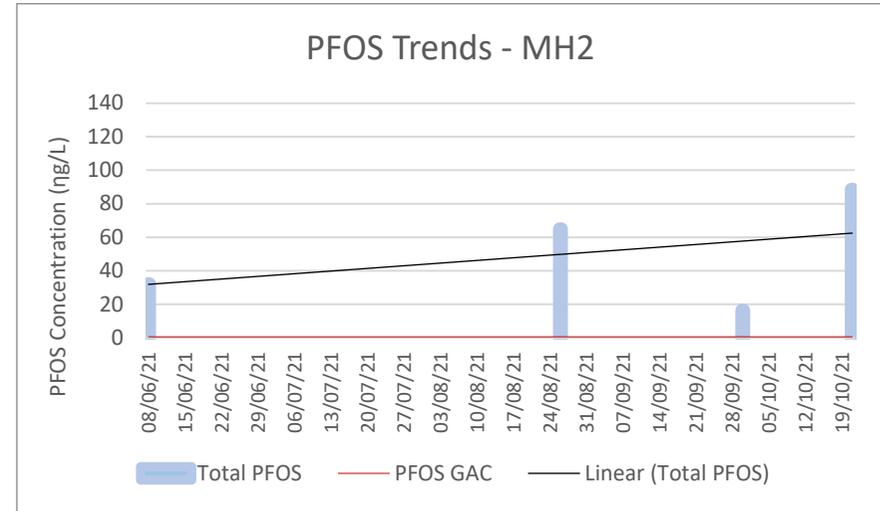


Figure 4-74: PFOS Concentrations at MH2 (Above GAC)

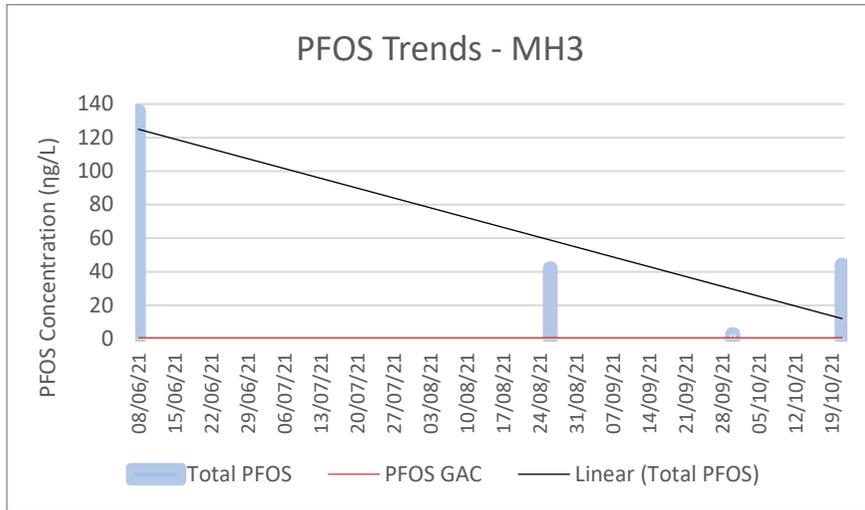


Figure 4-73: PFOS Concentrations at MH3 (Above GAC)

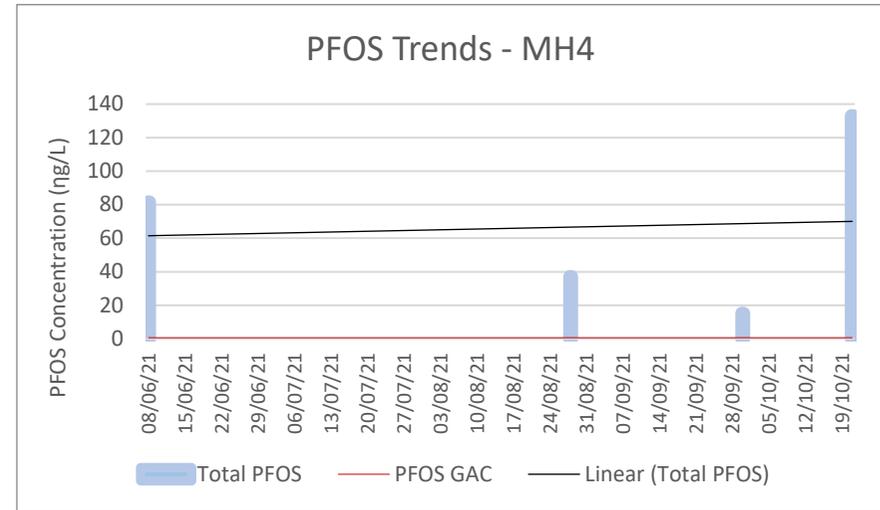


Figure 4-75: PFOS Concentrations at MH4 (Above GAC)



4.3.3.7 Fire Station and Fire Fighting Training Ground (FFTG)

In 2022 daa requested three surface water locations in the area of the current fire station and FFTG to be monitored. These locations were included to determine if any of the fire-fighting activities carried out prior to 2013 when PFAS containing foam was confirmed to be used has impacted the surface water in the area. Monitoring was completed on two occasions between May and June 2022 (Table 4-22):

Table 4-22: Fire Station & FFTG Surface Water Monitoring Rounds

ID	1 st Round	2 nd Round
	24/05/2022	21/06/2022
ACO Drain	✓	✓
Interceptor	✓	✓
Sewer	✓	✓

Note. A tick denotes a sample was collected.

Three surface water monitoring locations at the Fire Station and FFTG were sampled on two occasions. PFOS was reported above the 0.65ng/l AA GAC in two of the surface water locations (Table 4-23):

Table 4-23: Current Fire Station & FFTG Surface Water Monitoring Summary Results

ID	No. of Samples	GAC Limit Value	Min PFOS	Max PFOS	Average Total PFOS
ACO Drain	3	0.65	<i>38.5</i>	<i>116</i>	<i>83.30</i>
Interceptor	4		<i>12.3</i>	<i>16.5</i>	<i>14.00</i>
Sewer	3		<0.65	<0.65	<LOD

Note: All results are reported in ng/L. Results in *Blue* exceed the GAC (PFOS) Limit Value¹. Results in *Italics* exceed the LOD².

¹ GAC (PFOS) refers to the AA EQS Limit Value of 0.65ng/L is based on the annual average PFOS detected at a given location (refer to Section 1.2.4.2).

² The Limit of Detection (LOD) for PFOS is 0.65/l but may be higher if dilution is required by laboratory.

The ACO Drain and Interceptor monitoring locations were below the MAC of 36,000ng/l for PFOS but above the GAC of 0.65ng/l for PFOS during both monitoring events. Highest PFOS concentrations (ranging between 38.5 to 116ng/l) were reported within the ACO drain. PFOS concentrations in surface water in the interceptor ranged from 12.3ng/l to 16.5ng/l.

Fire-fighting training commenced at the current FFTG at Dublin Airport in the early 2000's. Highest PFOS concentrations were reported within the ACO drain.

4.3.4 EPA Monitoring of Surface Water

The EPA have undertaken surface water monitoring for PFOS and PFOA at the following bodies:

- Ward_030²⁴
- Sluice_010²⁵

²⁴ https://www.catchments.ie/data/#/waterbody/IE_EA_08W010300?k=ng2pyn

²⁵ https://www.catchments.ie/data/#/waterbody/IE_EA_09S071100?k=lfhj9i



The locations of National Water Monitoring Stations in the vicinity of Dublin Airport, where PFOS and PFOA monitoring in surface water was undertaken by the EPA and adjacent, upstream or downstream FT monitoring locations are shown in Figure 4-76.

4.3.4.1 Ward_030 Monitoring Results

PFOS and PFOA monitoring was undertaken by the EPA in 2023 at monitoring station RS08W010300. This monitoring station is approximately 1km downstream of surface water monitoring location SL09 where PFOS concentrations were primarily below the LOD in 2023.

EPA PFOS results can be found in Table 4-24. This indicates another source of PFOS upstream of this monitoring station, noting the levels of detection are lower than those reported by ALS (0.65ng/l).

Table 4-24: Ward_030 PFOS Results

Date	GAC Limit Value	Result (ng/l)
23/03/2023	0.65	0.25
11/05/2023		0.44
09/11/2023		0.28
10/08/2023		<0.65

There were no results elevated above the GAC Limit Value in 2023. PFOA has been detected during the monitoring period but there are currently no legal limits for PFOA in surface water or applicable GAC.

4.3.4.2 Sluice_010 Monitoring Results

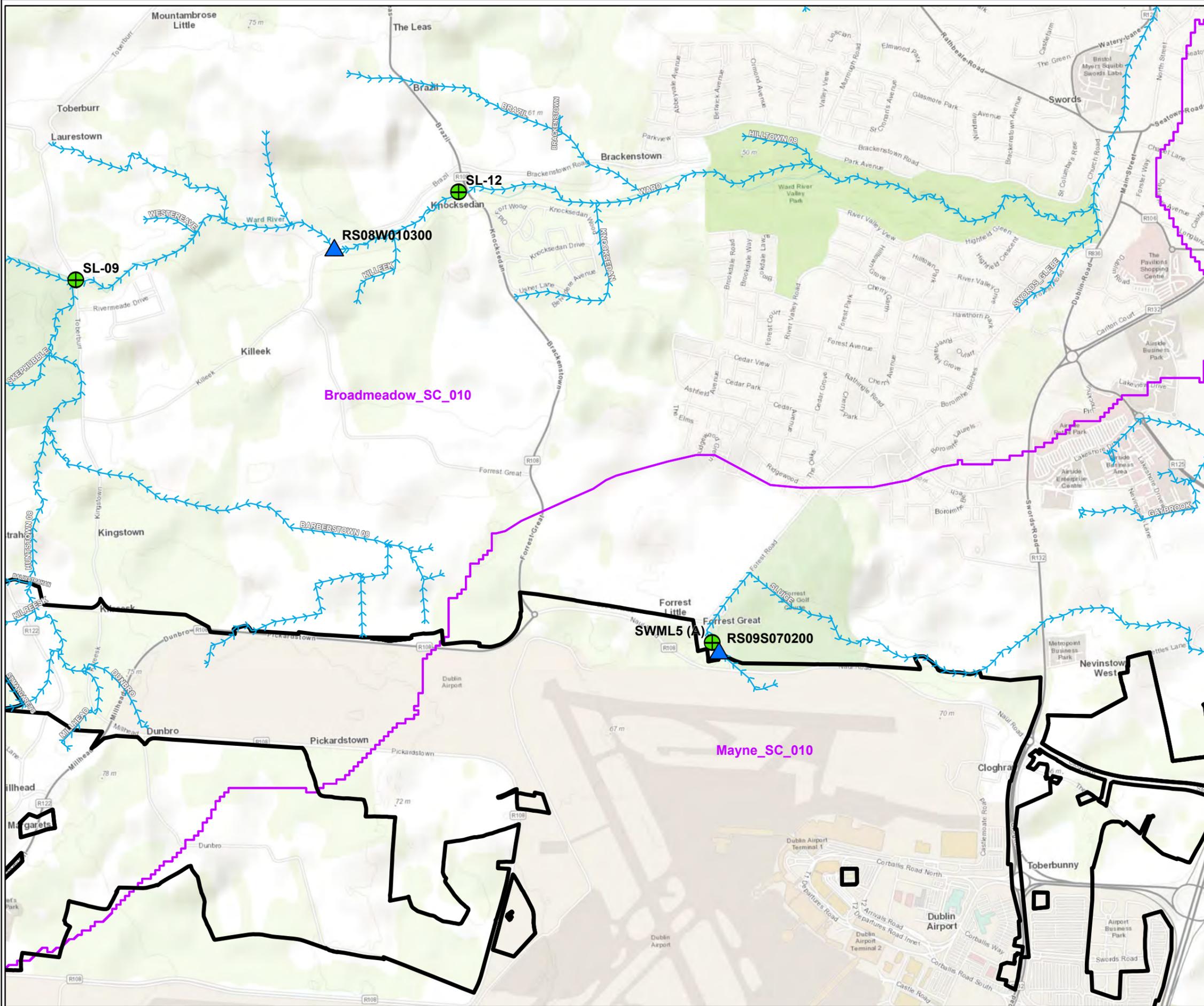
PFOS and PFOA monitoring was undertaken by the EPA in 2023 at monitoring station RS09S070200. This corresponds to surface water monitoring location SWML5a where PFOS concentrations ranged between 6.15 to 31.2ng/l in 2023.

EPA PFOS results can be found in Table 4-25. These results are comparable to SL07.

Table 4-25: Sluice_010 PFOS Results

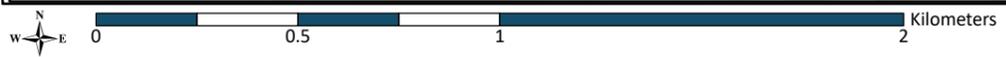
Date	GAC Limit Value	Result (ng/l)
23/03/2023	0.65	17.2
11/05/2023		21.1
10/08/2023		11.2
09/11/2023		7.78

Results were elevated above the 0.65 AA GAC Limit Value in all quarters in 2023. PFOA has been detected during the monitoring period but there are currently no legal limits for PFOA in surface water or applicable GAC.



- Legend**
- Dublin Airport Boundary
 - WFD Sub Catchments
 - Surface Water Monitoring Locations
 - EPA National Water Monitoring Stations
 - Rivers

TITLE:	
EPA PFAS Monitoring Locations	
PROJECT:	
Environmental Monitoring Report	
FIGURE NO:	
4-76	
CLIENT:	
daa	
SCALE:	REVISION:
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DATE:	PAGE SIZE:
3/26/2024	A3





4.4 Site Investigations

The site investigations completed to date across the airport curtilage has been on a project-by-project basis as directed by daa. Where soil/concrete disturbance works are proposed, it is the intention of daa to determine if the soils/concrete in these areas have been impacted by PFAS because of historic operations at the site.

The following ground investigations were completed across the airport curtilage as part of the environmental monitoring programme.

- Dublin Airport Departures Road Project;
- West Apron Underpass Project; and
- Proposed Apron 5H Development.
- North Apron South Apron Hub (NASAH)

4.4.1 Sampling Methodology

Dedicated laboratory grade 1kg plastic sample containers were used for the collection of soil samples. The monitoring methodology for each of the locations are discussed below:

All soil samples collected as part of these site investigations were submitted to ALS Global, an ISO 17025:2017 approved laboratory. Samples were submitted via courier under Chain of Custody procedures and analysed for PFAS Extended Suite by LCMS (S-PFCLMS02-C).

Summary tables with soil results are presented in Section 4.4.2 with the tabulated laboratory data available in Appendix 7.

Laboratory certificates for each site investigation are available in Appendix 8.

4.4.1.1 *Departures Road Project*

FT supervised an intrusive ground investigation for the Dublin Airport Departures Road Project.

As part of the ground investigation, 2 No. slit trench locations (ST08 & ST15) were excavated. The locations were determined by daa.

The excavation of the 2 No. slit trench locations were completed by Kilwex Limited under the supervision of FT personnel on the 31 March and 11 May, 2022 and comprised the following scope of works:

- 2 No. slit trenches (ST08 & ST15) advanced to a maximum depth of 1.5m BGL.
- Collection of representative soil samples every 0.5m below ground level for PFAS analysis.

Representative soil samples were obtained every 0.5m BGL within the excavated slit trenches (0.0-0.5m, 0.5-1.0m & 1.0-1.5m) with all samples submitted for laboratory analysis.

Site investigation locations are shown in Figure 4-7. The results of the slit trench investigation are outlined in Section 4.4.2.1.



4.4.1.2 West Apron Underpass

FT instructed Causeway Geotech Limited (Causeway) in the undertaking of an intrusive ground investigation at the West Apron Underpass of the airport.

As part of the ground investigation, 9 No. borehole locations (BH101 & BH104 – BH111) were installed. The locations were determined by daa.

The 9 No. boreholes were completed by Causeway in accordance with FT's 'BH Soil Sampling Memo' on dates between the 10th March and 18th May, 2022 and comprised the following scope of works:

- 9 No. borehole locations (BH101 & BH104 – BH111) advanced to a maximum depth of 37m BGL; and
- Collection of representative soil samples every 0.5m BGL or where a change in soil strata was observed for PFAS analysis.

Representative soil samples were obtained every 0.5m BGL or where a change in soil strata was observed within the 9 No. borehole locations. 3 No. soil samples were selected from each borehole for laboratory analysis with 2 no. samples selected from the upper profiles of the boreholes while 1 no. sample was collected at depth.

In total, 27 No. soil samples were submitted for laboratory analysis.

Site investigation locations are shown in Figure 4-8. The results of the borehole investigation are outlined in Section 4.4.2.2.

4.4.1.3 Proposed Apron 5H Development Area

In 2008, deposition of soil and crushed concrete from construction projects across the airport campus commenced in the Proposed Apron 5H Development area. This stockpiling activity created a land raise of approximately 2m above the natural ground level. During the site investigation of the stockpiled material, Made Ground consisting of topsoil, reworked clay and gravels with concrete intermixed with construction and demolition (C&D) waste was observed to a depth of 2.0m below the surface of the stockpile.

As part of the ground investigation, thirteen trial pit locations were excavated and sampled for PFAS in soil and/or concrete. The locations were determined by FT prior to works commencing.

As part of the ground investigation, 13 No. trial pit locations (TP01 – TP13) were completed. The locations were determined by FT prior to works commencing.

The 13 No. trial pits were completed by Kilwex Civil under the supervision of FT personnel on the 12th and 13th April, 2022 and comprised the following scope of works:

- 13 No. borehole locations (TP01 – TP13) advanced to a maximum depth of 2.0m BGL; and
- Collection of representative soil samples every 0.5m BGL or where a change in soil strata was observed for PFAS analysis.

Representative soil samples were obtained every 0.5m BGL or where a change in soil strata was observed within the 13 No. trial pit locations.

A total of 47 No. soil samples were selected from across the 13. No trial pit locations for laboratory analysis.



Site investigation locations undertaken by FT are shown in Figure 4-9. The results of the trial pit investigation are outlined in Section 4.4.2.3.

Between October 2022 and March 2023, WSP, on behalf of SISK/LAGAN Joint Venture who are carrying out the construction of the Apron 5H works, completed site investigations in stockpiles (containing soils and concrete) and shallow soils within the Apron 5H works area to confirm the presence and distribution of PFAS²⁶. The site investigation consisted of 197 No. trial pits, the collection of 130 No. composite samples and analysis of 114 No. samples. In August 2023, WSP undertook further testing of stockpiles, soil and concrete cover within the Apron 5H works area for potential reuse or disposal²⁷.

4.4.1.4 North Apron South Apron Hub (NASAH)

FT instructed Causeway in the undertaking of an intrusive ground investigation at the North Apron South Apron Hub of the airport.

As part of the ground investigation, 39 No. trial pits and 3 No. boreholes were completed and sampled across the North Apron and South Apron of the NASAH Project. Ground investigation locations were determined by daa.

The 42 No. ground investigation (GI) locations were completed by Causeway in accordance with FT's method statement '*PFAS Soil Sampling Methodology - NASAH Project*' between the 30th June 2022 and 24th February 2023 and comprised the following scope of works:

- 39 No. trial pit locations across the North and South Apron advanced to a maximum depth of 4m below ground level (BGL);
- 3 No. borehole locations at the South Apron; and
- Collection of representative soil samples every 0.5m BGL or where a change in soil strata was observed for PFAS analysis.

A total of 40 No. soil samples were selected at various depths from 21 No. trial pits throughout the North Apron and analysed by ALS.

A total of 21 No. soil samples were selected from 18 No. trial pits (18 No. samples) and 3 No boreholes (3 No samples) throughout the South Apron and analysed by ALS.

Site investigation locations are shown in Figure 4-10 and Figure 4-11. The results of the trial pit investigation are outlined in Section 4.4.2.4.

²⁶ WSP Reference 40000208.R1.A0

²⁷ WSP Reference 40000208.L03.A0



4.4.2 Results

4.4.2.1 Departures Road Project

Table 4-26: Dublin Airport Departures Road Project Summary Results

Slit Trench ID	Depth	Parameter	Limit of Detection (ug/kg)	Result (ug/kg)
ST08	0.0-0.5m	PFAS	<0.5	<0.5
	0.5-1.0m	PFAS	<0.5	<0.5
	1.0-1.5m	PFAS	<0.5	<0.5
ST15	0.0-0.5m	PFAS	<0.5	<0.5
	0.5-1.0m	PFAS	<0.5	<0.5
	1.0-1.5m	PFAS	<0.5	<0.5

Analysis of 35 no. PFAS compounds was conducted in surface and sub-surface soils and recorded no PFAS present.

4.4.2.2 West Apron Underpass Project

Table 4-27: West Apron Underpass Project Summary Results

Borehole ID	Sample Depth	PFAS Detected above Laboratory Limit of Detection?	Concentration (ug/kg)
BH 101	0.50m	No	-
	1.20m	No	-
	20.60m	No	-
BH 104	4.50m	No	-
	5.50m	No	-
	22.50m	No	-
BH 105	4.65m	No	-
	5.90m	No	-
	18.50m	No	-
BH 106	0.20m	No	-
	1.20m	No	-
	18.50m	No	-



Borehole ID	Sample Depth	PFAS Detected above Laboratory Limit of Detection?	Concentration (ug/kg)
BH 107	2.50m	No	-
	3.50m	No	-
	21.50m	No	-
BH 108	4.50m	No	-
	5.50m	No	-
	21.50m	No	-
BH 109	2.50m	No	-
	3.50m	No	-
	23.50m	No	-
BH 110	0.50m	No	-
	1.20m	No	-
	20.10m	No	-
BH 111	2.50m	No	-
	4.50m	No	-
	24.50m	No	-

Note: LOD for individual PFAS constituents varies between 0.5 – 5ug/kg.

Analysis of 35 no. PFAS compounds was conducted in surface and sub-surface soils and recorded no PFAS present.

4.4.2.3 Proposed Apron 5H Development Area

The highest concentrations of PFAS detected were identified in the western portion of the Proposed Apron Development area (TP7, TP8 & TP9), with maximum reported concentrations of 141µg/kg for individual PFAS constituents in TP8.

Low level PFAS was identified in the central and eastern portion of the development area and was generally isolated to the surface soils (0.0 – 0.5m below the surface of the stockpile).



Table 4-28: Proposed Apron 5H Development Area Summary Results

Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
TP01	SUR	Yes	PFOS	0.643
	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	Yes	PFOS	0.596
			PFOA	0.509
	1.5 – 2.0m	No	-	-
TP02	SUR	No	-	-
	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	Yes	PFOS	0.77
			PFOA	0.764
TP03	SUR	Yes	PFOS	6.51
			PFHxS	1.06
	0.3 – 0.8m	No	-	-
	0.8 – 1.3m	Yes	PFOS	4.49
			PFHxS	0.825
	1.3 – 1.8m	Yes	PFHpA	0.695
			PFHxS	3.37
			PFNA	0.871
			PFOA	2.4
PFOS			3.83	
TP04	SUR	Yes	PFOS	0.688
	0.5 – 1.0m		PFHxS	0.777
	1.0 – 1.5m		PFHxS	1.24
	1.5 – 2.0m	No	-	-
TP05	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	No	-	-



Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
TP06	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	No	-	-
TP07	SUR	Yes	PFOS	19.1
			PFBA	0.632
			PFHpA	2.28
			PFHxA	1.49
			PFHxS	7.56
			PFNA	3.51
			PFOA	7.67
			PFPeA	1.18
	0.3 – 0.8m	Yes	PFOS	4.33
			PFBA	0.781
			PFHpA	3.23
			PFHxA	2.26
			PFHxS	14.8
			PFNA	0.58
			PFOA	12.0
			PFPeA	1.57
	0.8 – 1.3m	Yes	PFHpA	0.63
			PFHxS	3.16
			PFOA	1.67
	1.3 – 1.8m	Yes	PFOS	0.649
PFHxS			1.02	
TP08	SUR	Yes	PFOS	93.7
			8:2 FTS	5.66
			10:2 FTS	1.51
			PFBA	2.06
			PFDA	8.36



Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
TP08	SUR	Yes	PFDODA	0.604
			PFDODS	2.38
			PFDS	4.32
			PFHpA	4.06
			PFHpS	1.05
			PFHxA	2.81
			PFHxS	4.51
			PFNA	10.1
			PFNS	1.58
			PFOA	10.8
			PFPeA	5.42
			PFTTrDA	1.85
			PFUnDA	19.4
	0.3 – 0.8m	Yes	PFOS	141
			8:2 FTS	1.67
			10:2 FTS	0.57
			PFBA	1.41
			PFDA	4.85
			PFDODS	0.63
			PFDS	1.28
			PFHpA	2.88
			PFHpS	0.87
			PFHxA	2.24
PFHxS	4.85			
PFNA	7.86			
PFNS	0.61			
PFOA	8.01			
PFPeA	4.13			
PFTTrDA	0.95			



Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
	0.3-0.8m	Yes	PFUnDA	9.08
	0.8 – 1.3m	Yes	PFOS	112
			PFBA	0.53
			PFHpA	1.70
			PFHpS	2.47
			PFHxA	1.25
			PFHxS	6.34
			PFNA	31.5
			PFOA	4.78
			PFPeA	1.24
			PFUnDA	1.46
	1.3 – 1.8m	Yes	PFHxS	0.782
			PFOS	4.12
TP09	SUR	Yes	PFOS	79.6
			8:2 FTS	2.64
			10:2 FTS	0.836
			PFBA	1.39
			PFDA	2.58
			PFDoDS	1.88
			PFDS	2.11
			PFHpA	2.32
			PFHpS	2.3
			PFHxA	2.79
			PFHxS	7.79
			PFNA	15.1
			PFNS	0.576
			PFOA	5.98
			PFPeA	4.16
PFTTrDA	1.42			



Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
TP09	SUR	Yes	PFUnDA	18.8
	0.5 – 1.0m	Yes	PFOS	74.3
			8:2 FTS	1.85
			PFBA	0.675
			PFDA	1.81
			PFDoDS	1.2
			PFDS	0.792
			PFHpA	1.35
			PFHpS	4.42
			PFHxA	1.66
			PFHxS	9.19
			PFNA	25.4
			PFOA	5.44
			PFPeA	2.33
			PFTTrDA	1.07
PFUnDA	10.1			
TP10	SUR	No	-	-
	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	No	-	-
TP11	SUR	Yes	PFOS	0.536
	0.3 – 0.8m	No	-	-
	0.8 – 1.3m	No	-	-
	1.3 – 1.8m	No	-	-
TP12	SUR	Yes	PFOS	1.470
	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	No	-	-



Trail Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (ug/kg)
TP13	SUR	No	-	-
	0.5 – 1.0m	No	-	-
	1.0 – 1.5m	No	-	-
	1.5 – 2.0m	No	-	-

Note: Results in Italics exceed the LOD. LOD for individual constituents varies between 0.5 – 5ug/kg.

Analysis of 35 no. PFAS compounds was conducted in surface and sub-surface soils and recorded levels in the range 0.536 to 141µg/kg for individual constituents, with the western portion of the proposed development area recording the highest concentrations.

During the initial WSP site investigations (October 2022 to March 2023), where 114 No. samples were analysed for PFAS, PFAS was detected in 40 No. of 57 No. samples between 0-1.0m below ground level (bgl) and in 31 No. of 57 No. samples between 1.0-2.0m bgl. Concentrations of PFOS recorded in the samples recovered during these investigations ranged from non-detect to 568 ug/kg and concentrations of summed PFAS (excluding PFOS) ranged from non-detectable to 416µg/kg. The distribution of PFAS in soil across the Apron 5H works area was widespread. In August 2023, PFAS was detected in all composite samples collected and analysed.

4.4.2.4 North Apron South Apron Hub (NASAH)

Table 4-29: North Apron Summary Results

Trial Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (µg/kg)
CP204 ¹	1.0	No	-	-
CP207 ¹	4.0	No	-	-
CP204A ¹	1.2	No	-	-
	4.0	No	-	-
TP101 ¹	1.2	No	-	-
TP109 ¹	1.6	Yes	PFHxA	0.966
			PFHxS	1.86
			PFOS	113
			6:2 FTS	1.49
			8:2 FTS	1.78
	3.0	Yes	PFHxS	2.89
			PFOS	5.16
		6:2 FTS	0.602	



Trial Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (µg/kg)
TP111 ¹	3.0	No	-	-
TP113	0.5	Yes	PFHxS	2.44
			PFOS	11.9
	1.5	Yes	PFHxS	0.727
			PFOS	5.68
TP122 ¹	0.5	No	-	-
	3.4	No	-	-
TP123 ¹	0.3	Yes	PFOS	1.52
	2.0	No	-	-
	3.0	No	-	-
TP124 ¹	1.7	No	-	-
	2.3	No	-	-
TP126	0.5	Yes	8:2 FTS	0.923
	2.0	Yes	PFPeA	1.8
			PFHxA	0.673
TP129	0.5	No	-	-
	1.0	No	-	-
	1.5	No	-	-
	2.2	Yes	PFOS	0.656
TP131 ¹	0.5	Yes	PFHxS	0.831
			PFOS	0.564
	2.5	No	-	-
TP133 ¹	1.2	Yes	PFOS	0.651
	2.5	No	-	-
TP135 ¹	1.0	No	-	-
	2.3	No	-	-
TP137 ¹	1.4	No	-	-
	1.6	No	-	-
TP139	0.5	Yes	6:2 FTS	1.71
			8:2 FTS	1.28
	2.5	Yes	PFPeA	2.69



Trial Pit ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection	Concentration (µg/kg)
TP144 ¹	0.5	No	-	-
	2.5	No	-	-
TP144A ¹	0.5	No	-	-
	2.5	No	-	-
TP145 ¹	3.3	No	-	-
TP213 ¹	1.0	No	-	-
	2.0	No	-	-

Note 1. Samples collected prior to issuing of method statement. LOD for individual PFAS constituents varies between 0.5 – 5µg/kg.

PFAS was detected above the laboratory LOD in 12 No. samples across 8 No. trial pit locations across the North Apron, including TP109 (1.6, 3.0m), TP113 (0.5, 1.5m), TP123 (0.3m), TP126 (0.5, 2.0m), TP129 (2.2m), TP131 (0.5m), TP133 (1.2m) and TP 139 (0.5, 2.5m).

Reported concentrations of individual PFAS constituents ranged from 0.564 to 113µg/kg, with the SI locations closest to the Former Fire-Station (TP109 at 1.6m BGL) reporting the highest concentrations (113µg/kg for PFOS).

Table 4-30: South Apron Summary Results

Trial Pit/ Borehole ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection
TP02	0.5	No	-
TP05	0.5	No	-
TP08	0.5	No	-
TP09	0.5	No	-
TP13	0.5	No	-
TP21	0.5	No	-
TP23	0.5	No	-
TP25	0.5	No	-
TP39	0.5	No	-
TP41	0.5	No	-
TP43	0.5	No	-
TP44	0.5	No	-
TP47	0.5	No	-
TP48	0.5	No	-



Trial Pit/ Borehole ID	Sample Depth (m)	PFAS Detected above Laboratory Limit of Detection?	PFAS Compound Detected Above Laboratory Limit of Detection
TP50	0.5	No	-
TP59	0.5	No	-
CE18 TP01	0.5	No	-
CE18 TP02	0.5	No	-
CE18 BH1	0.5	No	-
CE18 BH2	0.5	No	-
CE18 BH3	0.5	No	-

Note: LOD for individual PFAS constituents varies between 0.5 – 5ug/kg.

All PFAS analyses were below their respective laboratory LOD in all 21 No. samples analysed across the South Apron.



4.5 Quality Assurance/Quality Control

Special handling and care must be taken when collecting samples for PFAS analysis to avoid cross contamination of the samples. PFAS is detected at extremely low concentrations and is susceptible to cross contamination. The routine analysis of trip and field blanks is to ensure handling and sampling procedures in the field are not contributing to cross contamination of samples and help ensure the validity of the sample results.

Trip blanks are provided by ALS. These blanks consist of de-ionized water which is purchased commercially (Honeywell) with PFAS listed as one of the components certified for analysis. The trips blanks are provided by ALS in sample HDPE bottles. FT bring trip blank bottles during each sampling visit, but they are never opened. They are then returned, unopened along with the water samples and analysed for the PFAS suite.

Field blanks are provided by ALS in a similar fashion. De-ionized water is provided by ALS in 1 litre HDPE bottles which is transported to site. Using the same field sampling techniques for collecting samples, and wearing same site gear, the de-ionized water is transferred into the sample containers by the FT sampler and stored along with the water samples. These are then returned to the laboratory along with the water samples and analysed for the PFAS suite.

ALS have two sources of de-ionized water:

- Commercially produced de-ionised water by Honeywell, that ALS sends to customers for use. This is referred to below as the standard de-ionised water.
- In-house ALS generated de-ionised water which is used for laboratory trip blanks in sampling runs.

Concentrations of PFAS were detected above the LOD in trip and field blank samples during the monitoring period (Table 4-31):

Table 4-31: Trip and Field Blank Samples with Detections of PFAS

Sample ID	Date	PFAS Compound	LOD (ng/L)	Concentration (ng/L)
TB SW1130	15/11/2021	Branched PFOS	<0.65 ng/L	1.34 ng/L
		Linear PFOS	<0.65 ng/L	2.3 ng/L
GWTB	24/05/2022	Linear PFOS	<0.65 ng/L	0.71 ng/L
GWFB	14/02/2023	PFOA	<0.65 ng/L	0.819ng/L
SWFB 1	14/03/2022	Branched PFOS	<0.65 ng/L	0.944 ng/L
		Linear PFOS	<0.65 ng/L	1.0 ng/L
PFBA		<2 ng/L	3.06 ng/L	
PFHxA		<1 ng/L	1.28 ng/L	
PFOA		<0.65 ng/L	1.13 ng/L	
	26/05/2022	6:2 FTS	<1 ng/L	2.21 ng/L
PFOA		<0.65 ng/L	0.794 ng/L	



Sample ID	Date	PFAS Compound	LOD (ng/L)	Concentration (ng/L)
SWFB 2	14/03/2022	Linear PFOS	<0.65 ng/L	0.72 ng/L
		PFHxA	<1 ng/L	1.21 ng/L
		PFOA	<0.65 ng/L	0.958 ng/L
		PFPA	<1 ng/L	1.64 ng/L

ALS undertook an internal investigation into the methodology carried out at their laboratory to determine the cause of the anomalies. ALS recommended the below methodology which was designed to isolate any aspect of the routine analysis causing the anomalies. This methodology was undertaken in November 2022.

- ALS analysed their standard de-ionized trip blank water and in-house batch blank de-ionized water, both in triplicate, to ensure a base reading was available. This was carried out before shipment to ensure the de-ionized water was not contaminated before leaving the laboratory.
- ALS had 3x bottles of de-ionized water standing in the prep area for a couple of days. These were then analysed to ensure the samples were not impacted from airborne contamination in the lab.
- ALS issued a cool box of the standard de-ionized trip blank water in 3x 500ml HDPE plastic bottles. Ice packs were included in the cool box. The cool box and blanks were to be taken to site and remain closed for the duration of the works before being returned to ALS for analysis of the PFAS suite.
- ALS issued a cool box of the standard de-ionized trip blank water in 3x 500ml HDPE plastic bottles. No ice packs were present in this cool box. The cool box and blanks were to be taken to site and remain closed for the duration of the works before being returned to ALS for analysis of the PFAS suite.
- ALS issued a cool box of the standard de-ionized trip blank water in 3x 500ml HDPE plastic bottles. Ice packs were included in the cool box. The cool box and blanks were to remain in the FT offices until the field investigation was completed. All samples were then returned to ALS for analysis of the PFAS suite.
- ALS issued a cool box of the in-house batch blank de-ionized water in 3x 500ml HDPE plastic bottles. Ice packs were included in the cool box. The cool box and blanks were to be taken to site and remain closed for the duration of the works before being returned to ALS for analysis of the PFAS suite.
- As per standard delivery, 3x 500ml HDPE plastics containing standard de-ionized trip blank water were included with samples containers. These containers were handled and analysed as per the normal trip blank procedure. Ice packs were included in the cool box.

Analysis of the above samples completed by ALS reported no PFAS in any of the blank samples analysed as part of the quality control procedures implemented by the lab. The anomalies noted in the blank samples can likely be attributed to the mishandling of samples in the field, resulting in cross contamination of blank samples.

Further to the above, FT have adopted a change to the field sampling methodology with a dedicated sampling pole being assigned to all surface water sampling at the airport. The sampling pole is rinsed using de-ionized water before and after each sampling location to avoid cross contamination.



4.6 Conceptual Site Model

The conceptual site model (CSM) is presented following a collective review of all available information and reported results from the environmental monitoring programme and site investigations. A CSM is used to identify all possible sources (S), pathways (P) and receptors (R) as well as the processes that are likely to occur along each of the source-pathway-receptor (S-P-R) linkages and uncertainties.

A plan view of the CSM is presented in Figure 4-77 and a regional section is presented in Figure 4-78.

4.6.1 Source

There are six potential sources of PFAS at Dublin Airport. These include:

1. The FFTG/APEC 5. Residual PFAS remains in soil and bedrock following the construction of the North Runway. A sectional CSM of this source is presented in Figure 4-79.
2. The Former Fire Station within the North Apron. Groundwater monitoring and site investigations have identified PFAS in groundwater and soil. PFAS could also be present in concrete. Sectional CSMs of this source is presented in Figure 4-80, Figure 4-81 and Figure 4-82.
3. Apron 5H. Site investigations undertaken by FT and WSP confirm PFAS is present within stockpiles, concrete and made ground. A sectional CSM of this source is presented Figure 4-81.
4. A second location at the North Apron separate to the area within the Former Fire Station. PFAS is present in soil and groundwater. PFAS could also be present in concrete. A sectional CSM of this source is presented in Figure 4-82.
5. The current fire station. PFAS is present in surface water within the drainage infrastructure.
6. Castlemoate House. Groundwater monitoring has identified PFAS in groundwater.

4.6.2 Pathway

Identified pathways across the site include:

- Vertical and lateral migration of PFAS via groundwater. Two aquifers have been identified towards the east of the airport campus within the overburden and in bedrock. PFAS is present in both aquifers with decreasing concentrations away from the likely sources.
- Preferential pathways within the drainage systems. Ingress of groundwater flow of the storm and foul sewer lines at Hangar 2 and Hangar 3 at the North Apron was confirmed during a CCTV survey. The drainage system conveys water away from the site and via oil interceptors to surface water at various outfall points around the perimeter of the site.
- Leaching of PFAS from soils and concrete via rainwater infiltration. The recharge mechanisms of the Swords and Dublin GWBs are described in Section 3.2.1.2 and Section 3.2.1.3, respectively.
- Migration of PFAS downstream of the airport campus via surface waters. Monitoring has identified PFOS (currently the only regulated PFAS in surface water) in surface waters.

Other pathways may include the following, but further investigation(s) are required to confirm or exclude:

- Basal recharge of surface water or soils by shallow groundwater.
- Faults diverting flow paths.



4.6.3 Receptor

Available information indicates there are likely not any groundwater abstraction points or drinking water users. The main receptors will arise from interactions with surface water.

All surface waters ultimately discharge into the Irish Sea, receptors include:

- Special Areas of Conservation:
 - Malahide Estuary (Site code 000205)
 - Baldoyle Bay (Site code 000199)
 - North Dublin Bay (Site code 000206)
- Special Protection Areas:
 - Malahide Estuary (Site code 004025)
 - Baldoyle Bay (Site code 004016)
 - North-West Irish Sea (Site code 004236)
 - North Bull Island (Site code 004006)

Dilution of PFOS is occurring in surface waters downstream of Dublin Airport, however, the extent of dilution at the SACs and SPAs requires further investigating.

4.6.4 Limitations

The conceptual site model is based on all available information and will be modified to continually evaluate the relationship between sources of PFAS, migration pathways, and receptors as new data become available.

With the exception of the North Runway groundwater monitoring network, monitoring locations were not targeted for PFAS investigations.

Recommendations are presented in Section 5.

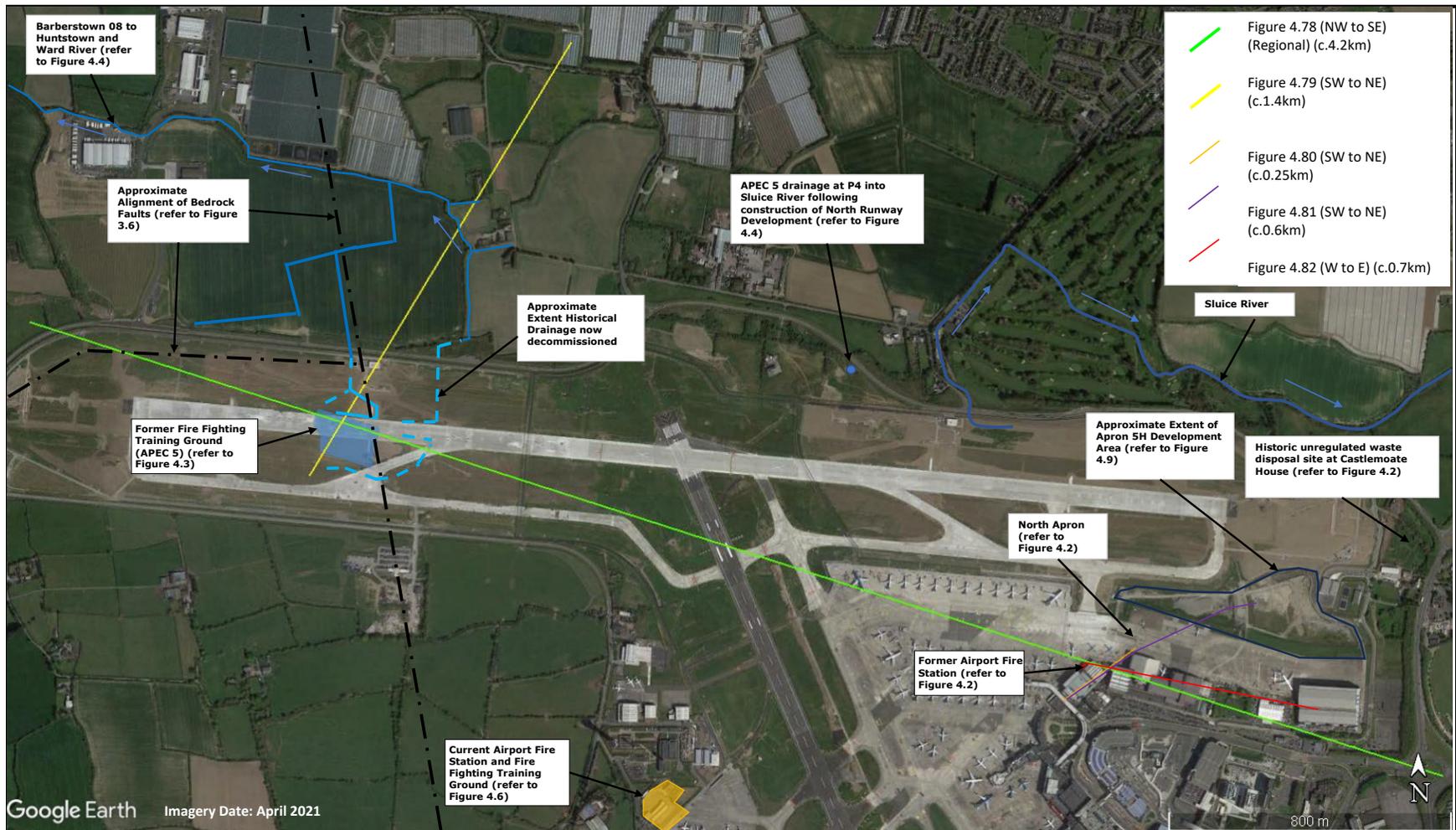


FIGURE 4.77
CONCEPTUAL SITE MODEL (Plan)

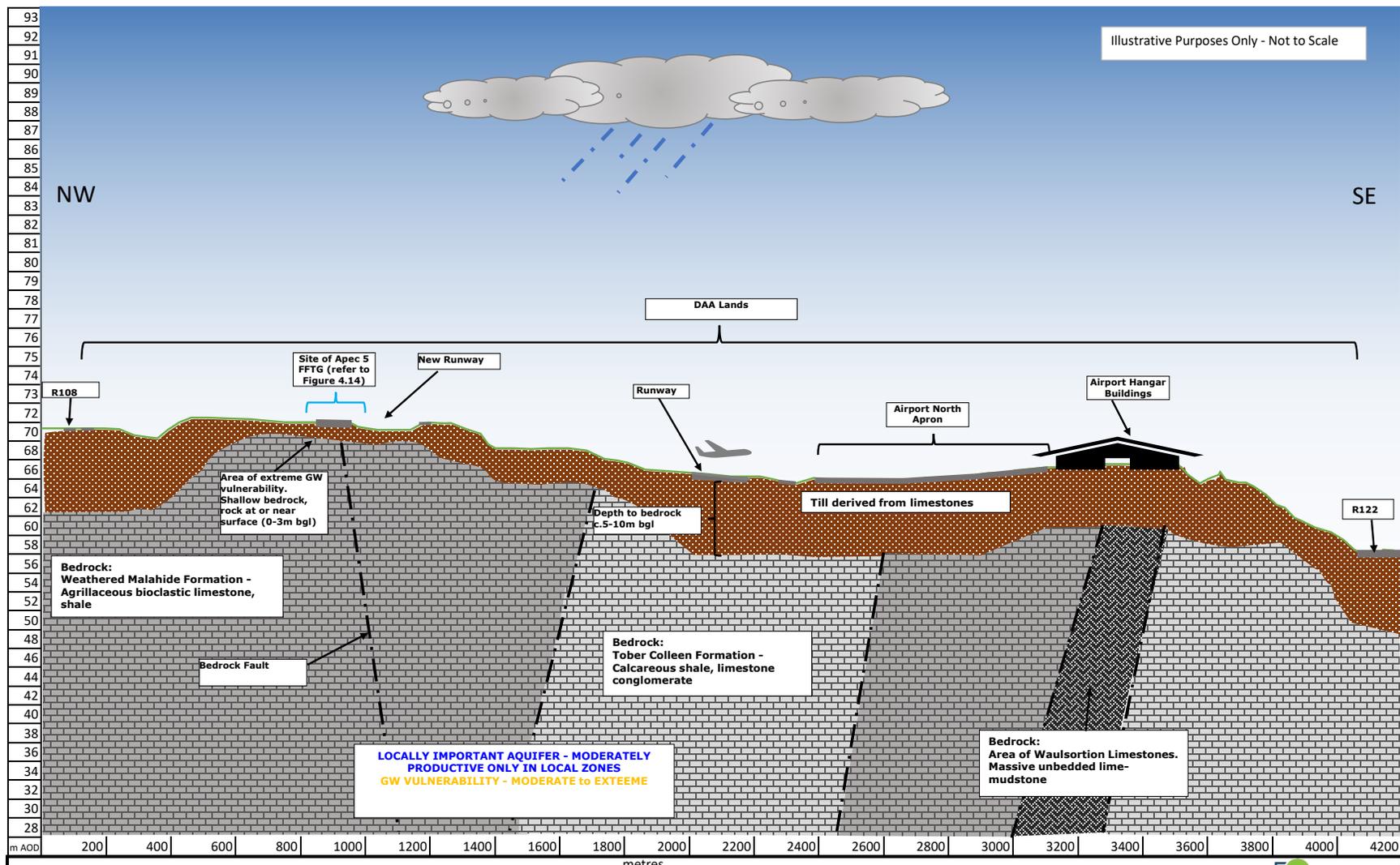


FIGURE 4.78
CONCEPTUAL SITE MODEL (NW - SE) (Regional)

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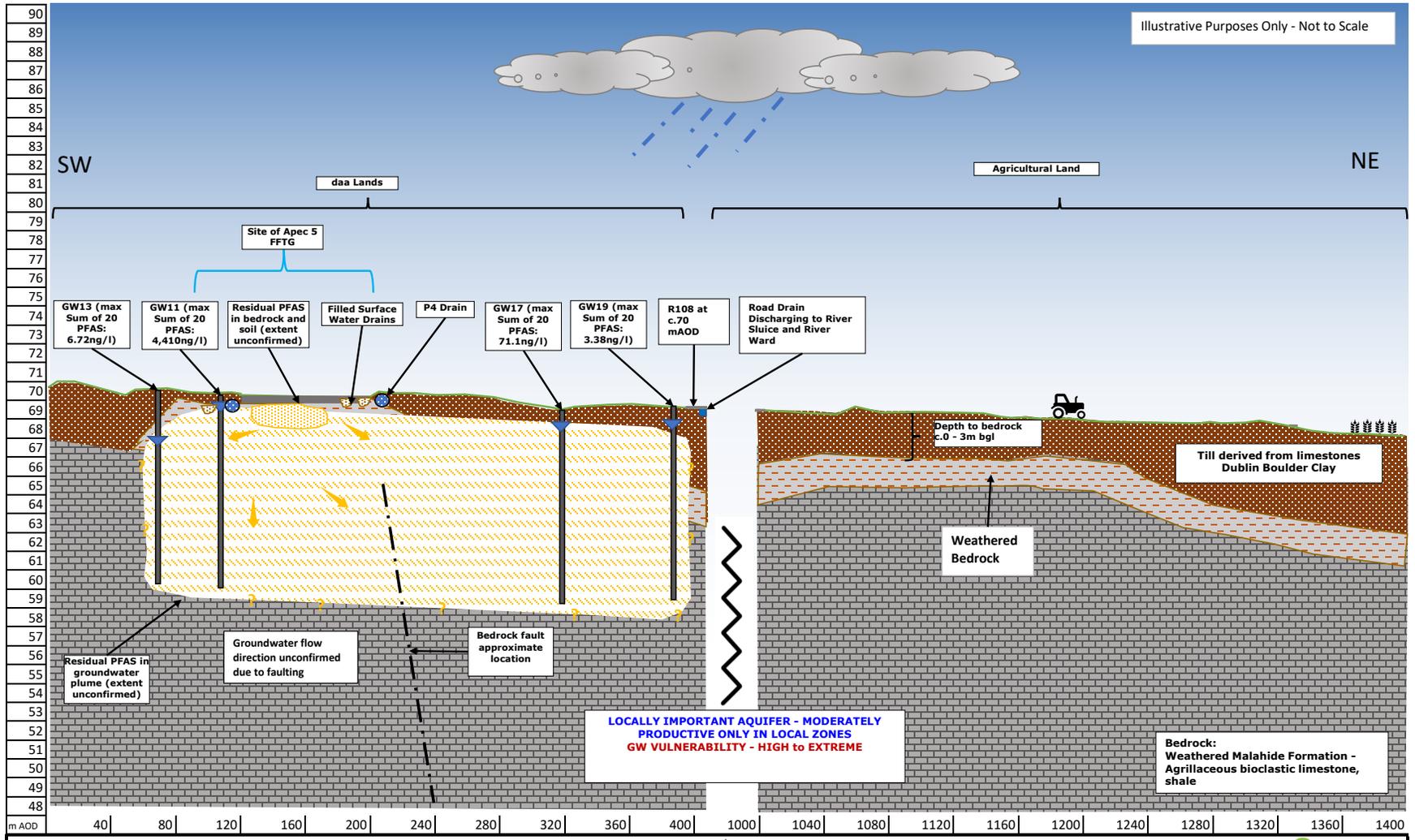


FIGURE 4.79
CONCEPTUAL SITE MODEL (SW - NE)

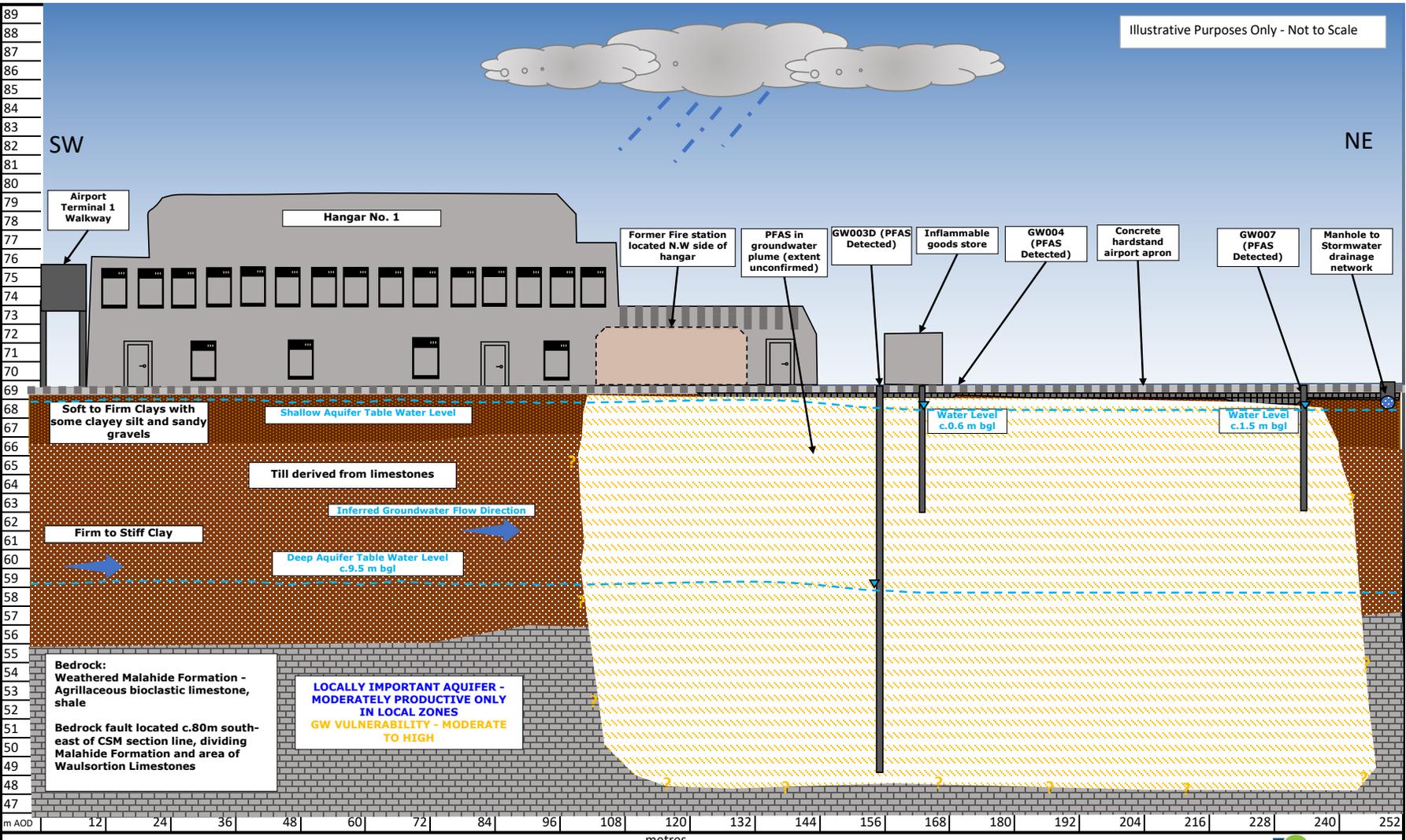


FIGURE 4.80
CONCEPTUAL SITE MODEL (South-West - North-East)

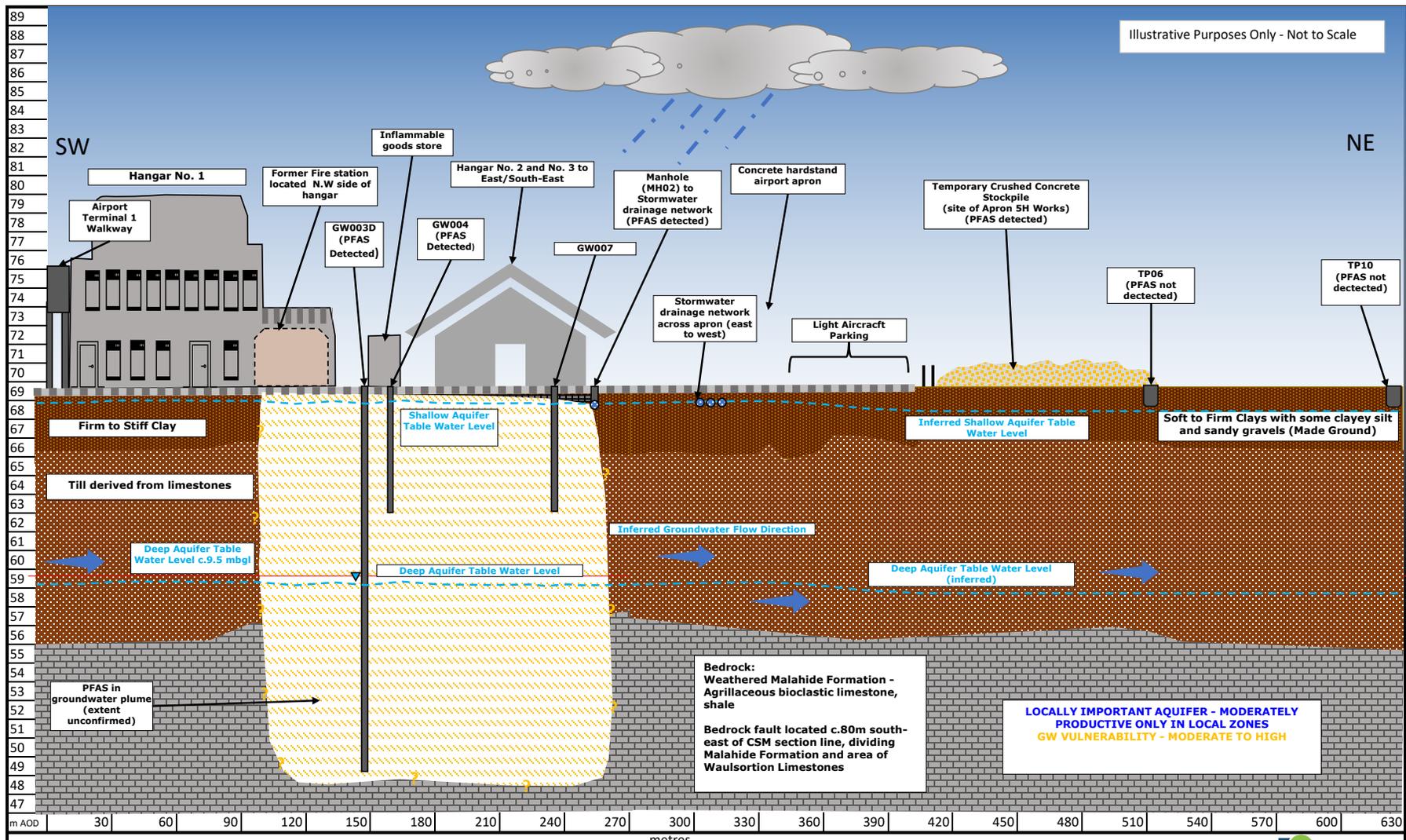


FIGURE 4.81
CONCEPTUAL SITE MODEL (South-West to North-East)

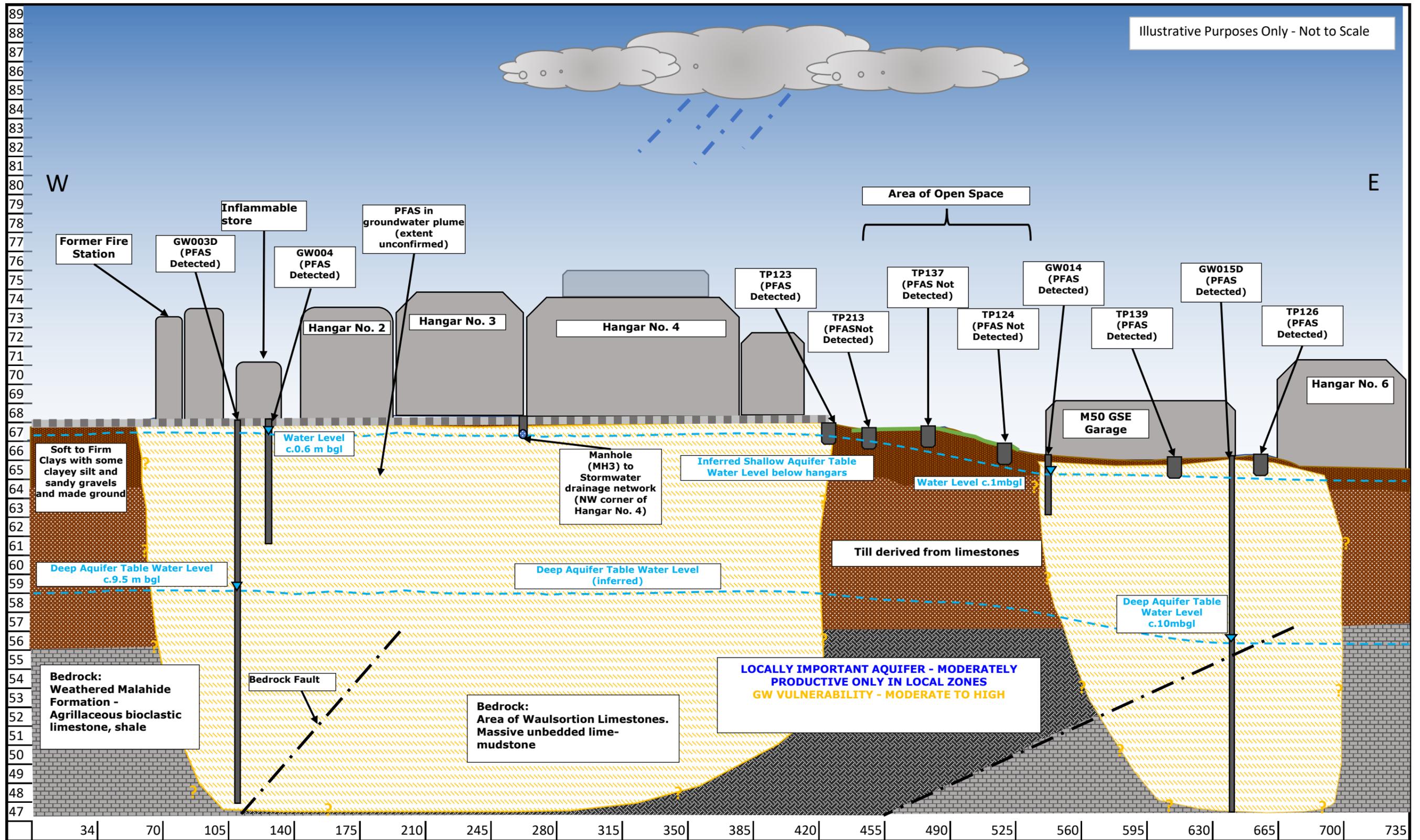


FIGURE 4.82
CONCEPTUAL SITE MODEL (West - East)



5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Between June 2021 and November 2023, a comprehensive environmental monitoring programme consisting of groundwater, surface water and soil sampling has been undertaken within and external to Dublin Airport by both daa and FT. This report has gathered and presented all the monitoring results undertaken during the reporting period.

Varying concentrations of PFAS were detected in groundwater (Sum of 20 PFAS), surface water (PFOS), and soil/concrete (individual PFAS constituents), with highest groundwater concentrations detected closer to areas where PFAS firefighting foam was used historically. The highest concentrations of Sum of 20 PFAS (groundwater), PFOS (surface water) and individual PFAS constituents (soil/concrete) reported during the monitoring period are summarised below.

- Groundwater:
 - The highest Sum of 20 PFAS concentrations in groundwater were detected at the site of a former firefighting training ground, where maximum concentrations of 4,111ng/l were reported.
- Surface Water:
 - The highest PFOS concentration in surface water was detected in the Cuckoo Stream at 50.6ng/l (May 2023).
 - The highest PFOS concentration in airside surface water (1,430ng/l in March 2022) was recorded in a manhole to the north of the North Apron. The source of PFOS is indicated to be from the Former Fire Station at the North Apron.
- Soil/Concrete:
 - The highest concentrations of individual PFAS constituents in soils/concrete reported by FT was 141µg/kg in Apron 5H. WSP reported PFOS concentrations up to 568µg/kg in Apron 5H.

5.1.1 Groundwater

PFAS is detected in groundwater within the North Apron, Castlemoate House and APEC 5 (North Runway).

Two localised groundwater sources of PFAS were detected during monitoring conducted at the North Apron, namely the Former Fire Station and the eastern extent of the North Apron in the vicinity of GW015D. The highest Sum of 20 PFAS concentrations in groundwater in the North Apron was at GW015D. The highest Sum of 20 PFAS concentrations in the vicinity of the Fire Station were in monitoring locations closest to the Fire Station. The results indicate PFAS has mobilised but owing to the low permeability overburden and poorly productive bedrock, the extent of the plume appears to be localised.

Historic unregulated waste disposal took place at Castlemoate House, it is considered that the presence of PFAS is likely associated with the deposition of waste materials and not related to firefighting activities. Sum of 20 PFAS concentrations are very localised in this area.

At APEC 5, results indicate the highest residual concentrations (4,111 ng/l) of Sum of 20 PFAS remain within the original source, i.e. within the APEC 5 boundary.



5.1.2 Surface Water

In 2021, a CCTV survey of the storm and foul sewer lines at Hangar 2 and Hangar 3 at the North Apron was carried out. The survey identified ingress of groundwater flow through pipe defects and unsealed joints. An examination of Sum of 20 PFAS concentrations in manholes in the North Apron indicate groundwater containing PFAS attributed to the historical use of the Former Fire Station is conveyed to the manholes. The drainage system for the airport is connected by a series of manholes and discharges via oil interceptors to surface water at various outfall points around the perimeter of the site.

The highest average PFOS concentrations (up to 22.08ng/l against the EQS of 0.65ng/l) in landside surface waters are located to the east of the airport in the Sluice (SL02, SL06), Cuckoo Stream (SL03, SL07 and SL13) and Kealy's Stream. Surface water in the vicinity of the North Apron which includes MH1 – MH4 and SWML5(B) is directed to the Sluice upstream of SL02 and SL06. New drainage constructed beneath the North Runway and APEC 5 (where residual PFAS is confirmed) also discharges to the Sluice upstream of SL02 and SL06.

In the Sluice, maximum PFOS concentrations in downstream monitoring location SL06 are approximately half of upstream monitoring location SL02. This indicates PFOS concentrations are being diluted in the Sluice. In the Cuckoo Stream, PFOS concentrations in surface water generally decrease downstream as dilution occurs, but not to a significant extent.

Tributaries of the River Ward contain low levels of PFOS concentrations but are elevated above the GAC.

Fire-fighting training commenced at the current FFTG at Dublin Airport in the early 2000's. Current fire-fighting training practices are carried out on an impermeable concrete base surrounded by ACO open channel grating. The ACO Drain surface water monitoring location consistently recorded the highest concentrations of PFOS at the current FFTG. Surface water from the Fire Station and FFTG discharges via the Dublin Airport drainage network to the Cuckoo Stream.

5.1.3 Site Investigations

Site investigations completed as part of the Departures Road Project, West Apron Underpass and South Apron of the NASAH Project did not report any detectable concentrations of PFAS in soil.

In 2008, deposition of soil and crushed concrete from construction projects across the airport campus commenced in the Proposed Apron 5H Development area. This stockpiling activity created a land raise of approximately 2m above the natural ground level. During the site investigation of the stockpiled material, Made Ground consisting of topsoil, reworked clay and gravels with concrete intermixed with construction and demolition (C&D) waste was observed to a depth of 2.0m below the surface of the stockpile. Low level PFAS was identified in the central and eastern portion of the development area and was generally isolated to the surface soils (0.0 – 0.5m below the surface of the stockpile). Analysis of 35 no. PFAS compounds was conducted in surface and sub-surface soils and recorded levels in the range 0.536 to 141µg/kg with the western portion of the proposed development area recording the highest concentrations.

PFAS was detected above the laboratory LOD in 12 No. samples across 8 No. trial pit locations across the North Apron for the NASAH Project. Reported PFAS concentrations ranged from 0.564 to 113µg/kg, with the GI locations closest to the Former Fire-Station (TP109 at 1.6m BGL) reporting the highest concentrations (113 µg/kg for PFOS).

During subsequent site investigations (October 2022 to March 2023) carried out by the works contractor at the Apron 5H site, concentrations of summed PFAS (excluding PFOS) recorded ranged from non-detectable to 416µg/kg. The distribution of PFAS in soil across the Apron 5H works area was widespread.



5.2 Recommendations

Based on the findings of this report, it is recommended to quantify the risk from PFAS present in soil, concrete, groundwater and surface water at the airport and further investigations should be carried out having regard to the process outlined in the EPA's Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites. This is likely to include further site investigations to assist in the further development of the Conceptual Site Model (CSM) to assess potential source, pathway and receptor linkages, together with a Detailed Quantitative Risk Assessment (DQRA) to inform future mitigation options, if required.

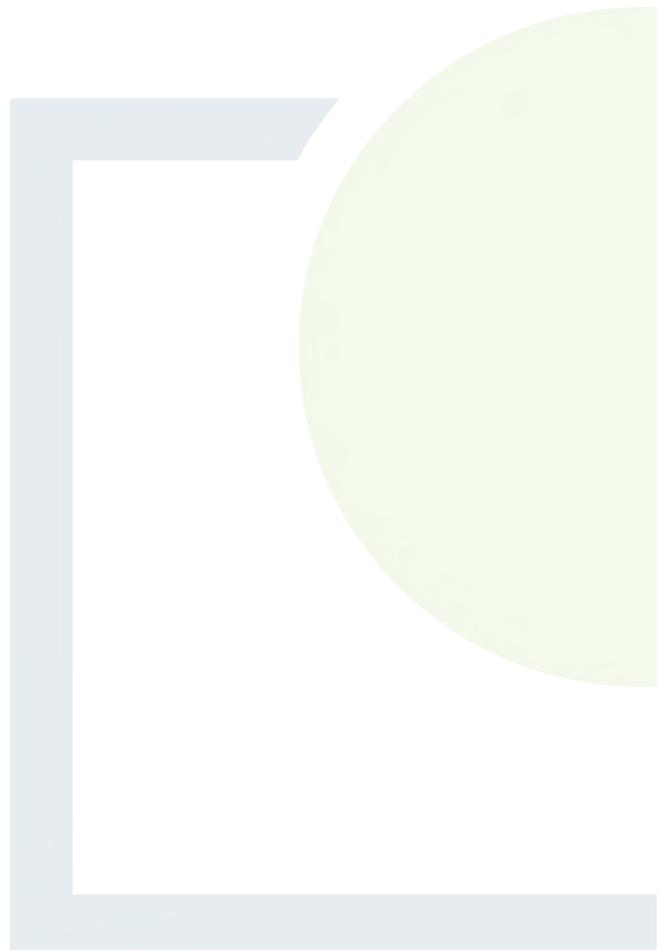
It is recommended that engagement with the regulators (Fingal County Council and EPA) continues to assist in informing the scope of the further studies and investigations.



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APPENDIX 1

List of 20 PFAS
Compounds



Sum of 20 PFAS compounds listed in Annex III Part B of Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the Quality of Water Intended for Human Consumption (recast) (the Directive):

- Perfluorobutanoic acid (PFBA)
- Perfluoropentanoic acid (PFPA/PFPeA)
- Perfluorohexanoic acid (PFHxA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorooctanoic acid (PFOA)
- Perfluorononanoic acid (PFNA)
- Perfluorodecanoic acid (PFDA)
- Perfluoroundecanoic acid (PFUdA) / (PFUnA)/(PFUnDA)
- Perfluorododecanoic acid (PFDoA)/(PFDoDA)
- Perfluorotridecanoic acid (PFTrDA)
- Perfluorobutane sulfonic acid (PFBS)
- Perfluoropentane sulfonic acid (PFPeS) / (PFPS)
- Perfluorohexane sulfonic acid (PFHxS)
- Perfluoroheptane sulfonic acid (PFHpS)
- Perfluorooctane sulfonic acid (PFOS)
- Perfluorononane sulfonic acid (PFNS)
- Perfluorodecane sulfonic acid (PFDS)
- Perfluoroundecane sulfonic acid (PFUnDS)
- Perfluorododecane sulfonic acid (PFDoDS)/(PFDoS)
- Perfluorotridecane sulfonic acid (PFTrDS)

Definition of Sum of 20 PFAS according to the Directive:

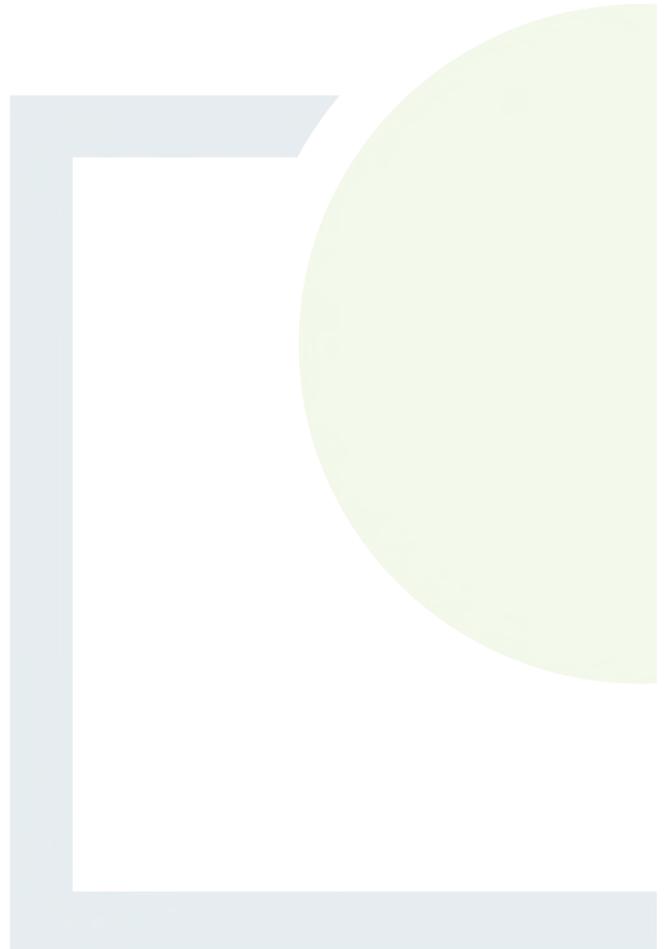
'Sum of PFAS' means the sum of per- and polyfluoroalkyl substances considered a concern as regards water intended for human consumption listed in point 3 of Part B of Annex III. This is a subset of 'PFAS Total' substances that contain a perfluoroalkyl moiety with three or more carbons (i.e. $-C_nF_{2n}-$, $n \geq 3$) or a perfluoroalkylether moiety with two or more carbons (i. e. $-C_nF_{2n}OC_mF_{2m}-$, n and $m \geq 1$).



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APPENDIX 2

Sampling Methodologies



Sampling Methodology

This method statement should be read, understood and adhered to by the sampling personnel to ensure the correct procedures are followed. The collection, storage, and coordination of PFAS sampling is the full responsibility of the sampling personnel.

PFAS is detected at extremely low concentrations and is susceptible to cross contamination, therefore it is important that this sampling methodology is followed during the environmental sampling at each designated testing location.

It is required that all environmental sampling is undertaken by a person trained in line with this procedure and has been approved by the Project Manager.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should be laundered multiple times. Appropriate rain gear should be used that does not contain PFAS e.g. PVC, polyurethane, or rubber rain gear is acceptable. Random oversight and spot checks will be conducted to ensure these procedures are being adhered to.

On the day of sample collection do not use cosmetics, moisturisers, hand cream, sunscreen or insect repellent. In summer months, where possible, the sampler should adopt wrist to ankle cover and utilise sun hats to avoid the use of sunscreen.

Do not label the sampling containers with waterproof markers (e.g. Sharpies) as they may contain PFAS, ballpoint pens are acceptable.

1. Take sampling equipment, handheld meters and sampling bottles to each sampling location. Ensure you are wearing mandatory FT PPE and site mandatory PPE.

Surface Water Sampling

1. The sample handler must avoid PFAS contamination during sampling by thoroughly washing their hands and wearing nitrile gloves.
2. If sampling at a difficult location e.g. river edge, ensure another person (from FT or site) is present.
3. For surface water samples when at a safe location to sample from, rinse out sampling scoop three times in the surface water before collecting the sample.
4. When filling any sample container, care should be taken that splashing drops of water from the ground do not enter either the bottle or cap.
5. For collection of duplicate samples partially fill 2 sample bottles, 1 at a time, switching between the two bottles until suitable volume of sample is obtained in both bottles. i.e. fill 1/3 of one bottle and 1/3 of another and repeat until bottle are full.
6. Between sampling locations, rinse grab sample scoop with deionised water to flush beaker and avoid cross contamination of next location.
7. Keep sample sealed and place sample on ice for shipment. Samples to remain <4°C.

Groundwater Sampling

1. The sample handler must avoid PFAS contamination during sampling by thoroughly washing their hands and wearing nitrile gloves.
2. Groundwater levels are determined at each borehole using an electronic dip meter.
3. Purge at least three well/ borehole volumes of water from the well before sampling. This is carried out to remove any stagnant water in the well casing to ensure stable sampling conditions of the aquifer. Dedicated purging/sampling material (e.g. Waterra tubing and foot valve) is to be used at each monitoring location.
4. Dedicated bottleware supplied by the laboratory to be used to take the groundwater samples.
5. Fill necessary bottles with sample and label according to site plan. Place sample containers in a cooler box.
6. For collection of duplicate samples partially fill 2 sample bottles, 1 at a time, switching between the two bottles until suitable volume of sample is obtained in both bottles. i.e. fill 1/3 of one bottle and 1/3 of another and repeat until bottle are full.
7. Between sampling locations, rinse groundwater pump with deionised water to flush pump and avoid cross contamination of next location.
8. Keep sample sealed and place sample on ice for shipment. Samples to remain <4°C.

Soil Sampling

Sample Equipment

The following equipment specific to PFAS sampling is required:

- Disposable Nitrile Gloves
- 1kg Laboratory Supplied Plastic Containers

Acceptable materials for sample collection include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. No sampling equipment components or sample containers should come in to contact with aluminium foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions:

- stainless steel spoon
- stainless steel bowl
- steel shovel/trowel without any coatings

Sample Container

Laboratory approved containers for the analysis of PFAS.

Sample Collection

The sampling method employed will require the collection of representative samples of the soil profile at depths of 0.5m below ground level (BGL) or where a change in soil strata is observed through made ground until the required depth of test location has been achieved. Once natural ground has been encountered, the frequency of sampling can be increased to every 1.0m BGL. The location and depth of the PFAS testing locations will be predetermined by the daa's project team prior to work commencing.

- Containers should only be opened immediately prior to sampling.
- Representative samples collected from each test location will be prepared, as outlined below and placed directly into the appropriate laboratory container.
- Representative samples should be deposited into a stainless steel bowl (circa 3L) for mixing prior to filling the sampling container. The soil should be placed directly into the bowl and mixed thoroughly the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.
- The collection and mixing of samples can be completed by hand using nitrile gloves, which are to be replaced for each sample collected or by pre-cleaned trowel or shovel. The container should be filled to ensure there is sufficient sample to complete the laboratory analysis.
- Decontamination of all sampling equipment must be completed between each sample event to avoid cross contamination.
- The sampling method employed will require the collection of representative samples of the soil profile at depths of 0.5m BGL or where a change in soil strata is observed through made ground until the required depth of test location has been achieved. Once natural ground has been encountered, the frequency of sampling can be increased to every 1.0m BGL.
- As with all other samples, do not place the sample container lid on any surface when collecting the sample, and avoid all contact with the inside of the sample container or its lid.
- Ensure clean nitrile gloves are worn when handling each sample.
- All soil sampling is to be undertaken by a person trained in line with this procedure and has been approved by the client to ensure these procedures are followed at each test location.
- All sample will be submitted for PFAS analysis to an approved laboratory.

Equipment Decontamination

Special handling and care must be taken when collecting samples for PFAS analysis to avoid cross contamination of the samples. PFAS is detected at extremely low concentrations and is susceptible to cross contamination.

Decontamination procedures should include the scrubbing of all sampling equipment using polyethylene or polyvinylchloride (PVC) brush to ensure that all residual soils are removed followed by triple rinsing of equipment with PFAS-free water between each sample event. Commercially available deionized water in a HDPE container may be used for decontamination if the water is verified to be PFAS-free.

The excavator/drill rig undertaking the S.I works should be thoroughly cleaned prior to and following the completion of the trial pit investigation to avoid the potential for cross contamination with other areas of the airport.

Cleaning procedures should be conducted in such a manner as to ensure that all residual soils are removed from the excavator/drill rig, in particular the excavator bucket between test locations. Any equipment that was in contact with the contaminated material should be thoroughly cleaned at the point of excavation to avoid transporting potentially contaminated soil to the next test location.

Sample Packaging

All sample containers are to be placed directly into the laboratory cooler box following the collection of the sample in order to protect samples from damage. The samples will be packaged with appropriate packing material to avoid breakages during transport and the lid of the cooler box securely closed and sealed using packing tape.

Storage

The laboratory cooler box and samples are to be stored in a safe and secure location within the site compound or contractors facility. Samples do not require to be kept on ice, but coolers should be stored in a cool, dry location.

Disposing of samples

Following receipt of the laboratory results and report being issued, FT personnel will instruct on whether or not the remaining samples can be disposed of or if further analysis is required.

Samples not sent for analysis are to be held for a period of 12 months unless specified by the client. Any samples which are to be disposed of will be instructed by FT and will be subject to client approval prior to disposal.

Surface Water and Groundwater Trip and Field Blanks

Special handling and care must be taken when collecting samples for PFAS analysis to avoid cross contamination of the samples. PFAS is detected at extremely low concentrations and is susceptible to cross contamination. The routine analysis of trip and field blanks is to ensure handling and sampling procedures in the field are not contributing to cross contamination of samples and help ensure the validity of the sample results.

Trip blanks are provided by ALS Global (ALS). These blanks consist of de-ionized water which is purchased commercially (Honeywell) with PFAS listed as one of the components certified for analysis. The trips blanks are provided by ALS in sample HDPE bottles. FT bring trip blank bottles during each sampling visit, but they are never opened. They are then returned, unopened along with the water samples and analysed for the PFAS suite.

Field blanks are provided by ALS in a similar fashion. De-ionized water is provided by ALS in 1 litre HDPE bottles which is transported to site. Using the same field sampling techniques for collecting samples, and wearing same site gear, the de-ionized water is transferred into the sample containers by the FT sampling person and stored along with the water samples. These are then returned to the laboratory along with the water samples and analysed for the PFAS suite.

Soil Sampling Quality Assurance/Quality Control

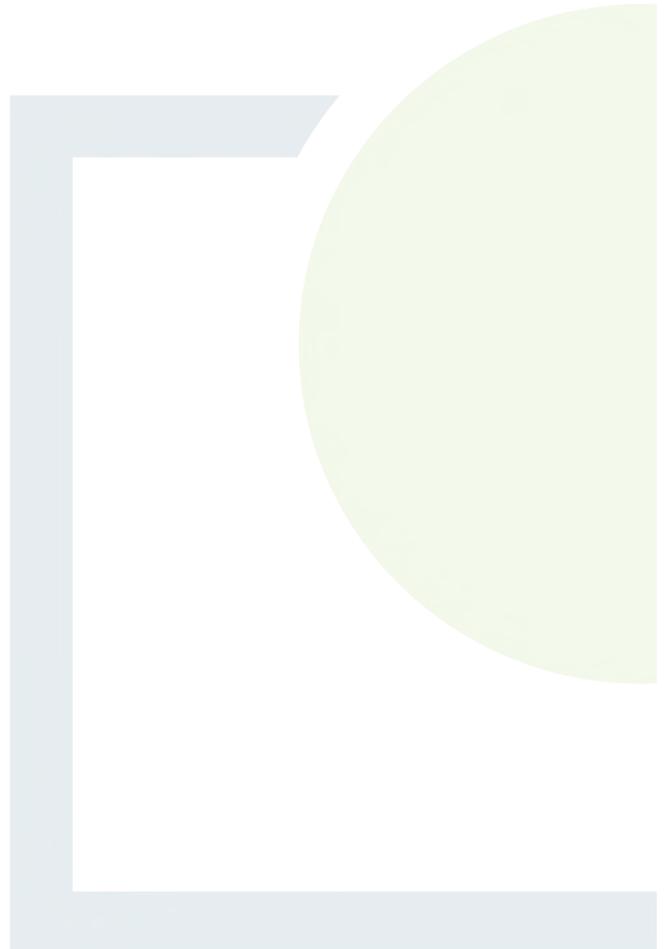
A minimum of 1 duplicate per 20 samples collected in the field is required for quality assurance/quality control purposes. The duplicate shall consist of an additional sample collected from the sample substrate at a given location. The purpose of the duplicate sample is to assess the variance in the sampling method undertaken in the field as well as the analysis in the laboratory. The duplicate sample is to be labelled identically to it corresponding sample.



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APPENDIX 3

Groundwater Results

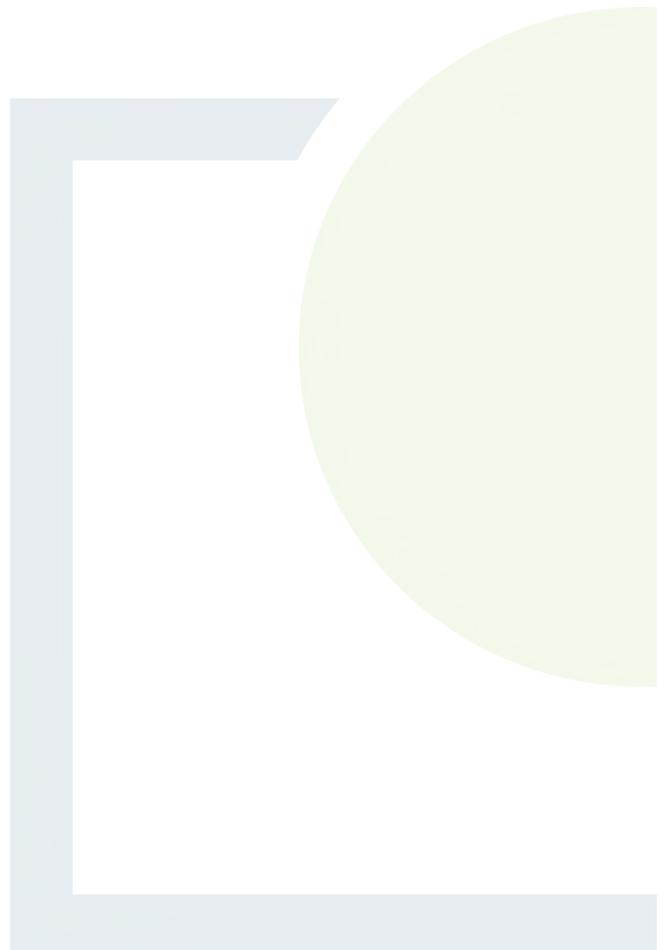




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APPENDIX 4

Groundwater Laboratory
Certificates





Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 September 2021
Customer: Fehily Timoney
Sample Delivery Group (SDG): 210826-126
Your Reference: P21-195
Location: Dublin Airport
Report No: 611389

We received 5 samples on Thursday August 26, 2021 and 5 of these samples were scheduled for analysis which was completed on Wednesday September 01, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24875807	Gardeners Well		0.00 - 0.00	25/08/2021
24875781	Manhole 1		0.00 - 0.00	25/08/2021
24875789	Manhole 2		0.00 - 0.00	25/08/2021
24875800	Manhole 3		0.00 - 0.00	25/08/2021
24875802	Manhole 4		0.00 - 0.00	25/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	24875807	24875781	24875789	24875800	24875802
Customer Sample Reference	Gardeners Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4
AGS Reference					
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Container	1 plastic (ALE221)				
Sample Type	SW	SW	SW	SW	SW

PFAS Liquids	All	NDPs: 0 Tests: 5	X	X	X	X	X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Results Legend			Customer Sample Ref.		Gardeners Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4			
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Sample Type		Surface Water (SW)							
aq	Aqueous / filtered sample.		Date Sampled		25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021			
diss.filt	Dissolved / filtered sample.		Sample Time									
tot.unfilt	Total / unfiltered sample.		Date Received		26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021			
-	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		210826-126	210826-126	210826-126	210826-126	210826-126			
--	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		24875807	24875781	24875789	24875800	24875802			
(F)	Trigger breach confirmed		AGS Reference									
1-4*5@	Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (357-22-4) Perfluoro-n-butyric acid	<2 ng/l	TM337	<2	#	48.7	#	1470	#	28.8	#	401	#
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<1 ng/l	TM337	<1	#	11.4	#	15.4	#	13.6	#	17	#
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<1 ng/l	TM337	<1	#	10.7	#	28	#	23.3	#	33.8	#
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<1 ng/l	TM337	<1	#	3.79	#	18.2	#	5.54	#	8.17	#
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 ng/l	TM337	<1	#	14.9	#	12.6	#	47.7	#	9.63	#
6:2FTS (27619-97-2) Perfluoro-octane sulfonate 6:2	<1 ng/l	TM337	<1	#	3.44	#	17.9	#	<1	#	13.3	#
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.65 ng/l	TM337	<0.65	#	8.21	#	13	#	37.3	#	6.58	#
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<1 ng/l	TM337	<1	#	5.94	#	16.1	#	6.83	#	12.2	#
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 ng/l	TM337	<1	#	1.45	#	<5	#	1.8	#	<5	#
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<1 ng/l	TM337	<1	#	<1	#	<5	#	<1	#	<5	#
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 ng/l	TM337	<2	#	<2	#	<5	#	<2	#	<10	#
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	<0.65	#	16	#	40.9	#	21.1	#	21.8	#
Branched PFOS Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	<0.65	#	10.1	#	24	#	21.2	#	15.3	#
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 ng/l	TM337	<1	#	<1	#	<5	#	<1	#	<5	#
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 ng/l	TM337	<1	#	<1	#	<5	#	<1	#	<5	#
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<2 ng/l	TM337	<2	#	<2	#	<10	#	<2	#	<10	#
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<1 ng/l	TM337	<1	#	<1	#	<5	#	<1	#	<5	#
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<1 ng/l	TM337	<1	#	<1	#	<5	#	<1	#	<5	#
Total PFOS	<0.65 ng/l	TM337	<0.65	#	26.1	#	64.9	#	42.3	#	37.1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126 **Client Reference:** P21-195 **Report Number:** 611389
Location: Dublin Airport **Order Number:** **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24875807	24875781	24875789	24875800	24875802
Customer Sample Ref.	Gardeners Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021



CERTIFICATE OF ANALYSIS

SDG: 210826-126 Client Reference: P21-195 Report Number: 611389
 Location: Dublin Airport Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Fehily Timoney
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 08 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 211117-86
Your Reference: P21-195
Location: Dublin Airport
Report No: 671370
Order Number: Z2852

This report has been revised and directly supersedes 641549 in its entirety.

We received 12 samples on Wednesday November 17, 2021 and 12 of these samples were scheduled for analysis which was completed on Thursday December 02, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25350909	GW001-A		0.00 - 0.00	15/11/2021
25350934	GW004-A		0.00 - 0.00	15/11/2021
25350927	GW007-A		0.00 - 0.00	15/11/2021
25350917	GW008-A		0.00 - 0.00	15/11/2021
25350912	GW001-B		0.00 - 0.00	15/11/2021
25350932	GW004-B		0.00 - 0.00	15/11/2021
25350930	GW007-B		0.00 - 0.00	15/11/2021
25350925	GW008-B		0.00 - 0.00	15/11/2021
25350904	GW002D-A		0.00 - 0.00	15/11/2021
25350936	GW015D-A		0.00 - 0.00	15/11/2021
25350906	GW002D-B		0.00 - 0.00	15/11/2021
27279603	GW015D-B		0.00 - 0.00	15/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type										
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	25350909	GW001-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350934	GW004-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350927	GW007-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350917	GW008-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350912	GW001-B		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350932	GW004-B		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350930	GW007-B		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350925	GW008-B		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350904	GW002D-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350936	GW015D-A		0.00 - 0.00	1|plastic (ALE221)	GW										
	25350906	GW002D-B		0.00 - 0.00	1|plastic (ALE221)	GW										
	27279603	GW015D-B		0.00 - 0.00	1|plastic (ALE221)	GW										
PFAS Liquids	All	NDPs: 0 Tests: 12	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Results Legend		Customer Sample Ref.	Customer Sample Ref.					
# ISO17025 accredited.	M mCERTS accredited.		GW001-A	GW004-A	GW007-A	GW008-A	GW001-B	GW004-B
aq Aqueous / settled sample.	dis.filt Dissolved / filtered sample.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfilt Total / unfiltered sample.	Subcontracted - refer to subcontractor report for accreditation status.	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Trigger breach confirmed	Date Sampled	15/11/2021	15/11/2021	15/11/2021	15/11/2021	15/11/2021	15/11/2021
1-4* Sample deviation (see appendix)	AGS Reference	Sample Time	17/11/2021	17/11/2021	17/11/2021	17/11/2021	17/11/2021	17/11/2021
	Lab Sample No.(s)	Date Received	211117-86	211117-86	211117-86	211117-86	211117-86	211117-86
	AGS Reference	SDG Ref	25350909	25350934	25350927	25350917	25350912	25350932
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<20	<2	<10	<20
8:2 FTS (39108-34-4)	<2 ng/l	TM337	32.4	64.9	<20	<2	25.9	<20
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<200	<20	<100	<200
PFBA (375-22-4)	<2 ng/l	TM337	<91.5	24.6	<22	4.34	<18	28.1
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	55.9	57.1	13.5	3.2	34	19.2
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	36.6	39.5	13.4	4.61	44.8	18.7
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	6.16	2.3	<10	1.52	12.3	<10
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	74.4	68.2	<10	3.26	38	19.7
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	67.5	38	23	<1	97.6	30.1
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	20.4	22.7	8.48	2.33	25.8	17.8
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	42.5	26.1	14.2	12	52.2	14.2
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	6.72	7.89	<10	<1	7.79	<10
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	3.96	1.87	<10	1.35	<5	<10
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	1.28	3.28	<10	<1	<5	<10
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	70.7	48.1	11.3	27.5	83.1	46.8
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	63.4	27.4	9.49	16.4	68.1	21.9
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<10	<1	<5	<10
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1	<10	<1	<5	<10
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<20	<2	<10	<20
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<10	<1	<5	<10
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	5.71	2.04	<10	1.41	9.11	<10
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	134	75.5	20.8	44	151	68.8
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Results Legend		Customer Sample Ref.	GW007-B	GW008-B	GW002D-A	GW015D-A	GW002D-B	GW015D-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fltr Dissolved / filtered sample. tot.unfltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 15/11/2021					
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<2	<2	<2	<4	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<2	8.68	2.96	14.1	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<20	<20	<20	<40	<20
PFBA (375-22-4)	<2 ng/l	TM337	<19.5	5.54	27.9	335	25.7	340
PFPA (2706-90-3)	<1 ng/l	TM337	15.9	2.07	61.2	1870	57.7	1170
PFHxA (307-24-4)	<1 ng/l	TM337	11.1	3.27	58.2	669	60.2	626
PFBS (375-73-5)	<1 ng/l	TM337	<5	1.78	2.98	<1	3.25	<3
PFHpA (375-85-9)	<1 ng/l	TM337	6.61	2.25	79	207	76.1	257
6:2 FTS (27619-97-2)	<1 ng/l	TM337	20.1	<1	5.02	14.7	5.52	14.1
PFOA (335-67-1)	<0.65 ng/l	TM337	4.91	2	29.5	80.2	34.6	72.6
PFHxS (355-46-4)	<1 ng/l	TM337	17.3	12.4	25.1	5.53	29.4	4.99
PFNA (375-95-1)	<1 ng/l	TM337	<5	<1	6.45	7.87	10.2	7.49
PFHpS (375-92-8)	<1 ng/l	TM337	<5	1.42	2.86	<1	3.59	<1
PFDA (335-76-2)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	8.85	26.2	48.5	3.33	57.9	3.62
Branched PFOS	<0.65 ng/l	TM337	12.8	16.4	42.3	2.51	50.2	2.6
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<2	<2	<2	<4	<2
PFDS (335-77-3)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	1.45	2.36	<1	2.53	<1
Total PFOS	<0.65 ng/l	TM337	21.7	42.6	90.8	5.84	108	6.21



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-86
Client Ref.: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Test Completion Dates

Lab Sample No(s)	25350909	25350934	25350927	25350917	25350912	25350932	25350930	25350925	25350904	25350936
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW001-B	GW004-B	GW007-B	GW008-B	GW002D-A	GW015D-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Nov-2021	30-Nov-2021	29-Nov-2021	30-Nov-2021	29-Nov-2021	29-Nov-2021	30-Nov-2021	30-Nov-2021	30-Nov-2021	02-Dec-2021

Lab Sample No(s)	25350906	27279603
Customer Sample Ref.	GW002D-B	GW015D-B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	30-Nov-2021	01-Dec-2021

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
211117-86	25350936	GW016-A	08/04/2022	Sample ID Change	GW016-A	GW015D	623985
211117-86	25350914	GW016-B	08/04/2022	Sample ID Change	GW016-B	GW015D	623985

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
211117-86	25350936	GW015D	02/12/2022	Sample ID Change	GW015D	GW015D-A	641549
211117-86	25350914	GW015D	02/12/2022	Sample ID Change	GW015D	GW015D-B	641549



CERTIFICATE OF ANALYSIS

SDG: 211117-86
Client Ref: P21-195

Report Number: 671370
Location: Dublin Airport

Superseded Report: 641549

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 December 2021
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	211117-80
Your Reference:	P21-195
Location:	Castlemoate
Report No:	623766
Order Number:	Z2852

We received 7 samples on Wednesday November 17, 2021 and 7 of these samples were scheduled for analysis which was completed on Wednesday December 01, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-80
Client Ref.: P21-195

Report Number: 623766
Location: Castlemoate

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25350676	BH5-A		0.00 - 0.00	12/11/2021
25350684	BH6-A		0.00 - 0.00	12/11/2021
25350682	BH7-A		0.00 - 0.00	12/11/2021
25350679	BH5-B		0.00 - 0.00	12/11/2021
25350686	BH6-B		0.00 - 0.00	12/11/2021
25350666	8D-A		0.00 - 0.00	12/11/2021
25350672	8D-B		0.00 - 0.00	12/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-80
Client Ref.: P21-195

Report Number: 623766
Location: Castlemoate

Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	25350676	25350684	25350682	25350679	25350686	25350666	25350672				
Customer Sample Reference	BH5-A	BH6-A	BH7-A	BH5-B	BH6-B	8D-A	8D-B				
AGS Reference											
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
Container	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)				
Sample Type	GW	GW	GW	GW	GW	GW	GW				
PFAS Liquids	All		NDPs: 0 Tests: 7		X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-80
Client Ref.: P21-195

Report Number: 623766
Location: Castlemoate

Superseded Report:

Results Legend		Customer Sample Ref.	8D-B			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 12/11/2021 17/11/2021 211117-80 25350672			
Component	LOD/Units	Method				
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2			
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2			
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20			
PFBA (375-22-4)	<2 ng/l	TM337	4.61	#		
PFPA (2706-90-3)	<1 ng/l	TM337	1.37	#		
PFHxA (307-24-4)	<1 ng/l	TM337	<1	#		
PFBS (375-73-5)	<1 ng/l	TM337	<1	#		
PFHpA (375-85-9)	<1 ng/l	TM337	<1	#		
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1	#		
PFOA (335-67-1)	<0.65 ng/l	TM337	<0.65	#		
PFHxS (355-46-4)	<1 ng/l	TM337	<1	#		
PFNA (375-95-1)	<1 ng/l	TM337	<1	#		
PFHpS (375-92-8)	<1 ng/l	TM337	<1	#		
PFDA (335-76-2)	<1 ng/l	TM337	<1	#		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65	#		
Branched PFOS	<0.65 ng/l	TM337	<0.65	#		
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	#		
PFDoA (307-55-1)	<1 ng/l	TM337	<1	#		
PFOSA (754-91-6)	<2 ng/l	TM337	<2	#		
PFDS (335-77-3)	<1 ng/l	TM337	<1	#		
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	#		
Total PFOS	<0.65 ng/l	TM337	<0.65	#		



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-80
Client Ref.: P21-195

Report Number: 623766
Location: Castlemoate

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-80
Client Ref.: P21-195

Report Number: 623766
Location: Castlemoate

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25350676	25350684	25350682	25350679	25350686	25350666	25350672
Customer Sample Ref.	BH5-A	BH6-A	BH7-A	BH5-B	BH6-B	8D-A	8D-B
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Nov-2021	30-Nov-2021	30-Nov-2021	30-Nov-2021	30-Nov-2021	01-Dec-2021	30-Nov-2021



CERTIFICATE OF ANALYSIS

SDG: 211117-80	Client Reference: P21-195	Report Number: 623766
Location: Castlemoate	Order Number: Z2852	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Declan Morrisey

CERTIFICATE OF ANALYSIS

Date of report Generation: 21 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 211117-84
Your Reference: P21-195
Location: Offsite Reservoir
Report No: 673041
Order Number: Z2852

This report has been revised and directly supersedes 672665 in its entirety.

We received 2 samples on Wednesday November 17, 2021 and 2 of these samples were scheduled for analysis which was completed on Monday November 22, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-84
Client Ref.: P21-195

Report Number: 673041
Location: Offsite Reservoir

Superseded Report: 672665

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25350819	Offsite Reservoir - A		0.00 - 0.00	15/11/2021
25350823	Offsite Reservoir - B		0.00 - 0.00	15/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-84
Client Ref.: P21-195

Report Number: 673041
Location: Offsite Reservoir

Superseded Report: 672665

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	25350819	25350823		
	Customer Sample Reference	A	B	Offsite Reservoir -	
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	1plastic (ALE221)	1plastic (ALE221)		
	Sample Type	GW	GW		
PFAS Liquids	All	NDPs: 0 Tests: 2		X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-84
Client Ref.: P21-195

Report Number: 673041
Location: Offsite Reservoir

Superseded Report: 672665

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-84
Client Ref.: P21-195

Report Number: 673041
Location: Offsite Reservoir

Superseded Report: 672665

Test Completion Dates

Lab Sample No(s)	25350819	25350823
Customer Sample Ref.	Offsite Reservoir - A	Offsite Reservoir - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	22-Nov-2021	22-Nov-2021

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
211117-84	25350819	As report issue -672665	21/12/2022	Sample ID Change	As report issue -672665	Offsite Reservoir - A	672665
211117-84	25350823	As report issue -672665	21/12/2022	Sample ID Change	As report issue -672665	Offsite Reservoir - B	672665



CERTIFICATE OF ANALYSIS

SDG: 211117-84
Client Ref: P21-195

Report Number: 673041
Location: Offsite Reservoir

Superseded Report: 672665

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 24 February 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220215-88
Your Reference: P21-195
Location: Daa Potable Reservoir
Report No: 634930
Order Number:

We received 2 samples on Tuesday February 15, 2022 and 2 of these samples were scheduled for analysis which was completed on Thursday February 24, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25823650	Gardeners Well - A		0.00 - 0.00	10/02/2022
25823654	Gardeners Well - B		0.00 - 0.00	10/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:

Results Legend <div style="margin-top: 10px;"> X Test </div> <div style="margin-top: 10px;"> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	25823650	25823654
	Customer Sample Reference	Gardeners Well - A	Gardeners Well - B
	AGS Reference		
	Depth (m)	0.00 - 0.00	0.00 - 0.00
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)
	Sample Type	GW	GW
PFAS Liquids	All	NDPs: 0 Tests: 2	<div style="display: flex; justify-content: space-around;"> X X </div>



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:

			Gardeners Well - A	Gardeners Well - B
			0.00 - 0.00 Ground Water (GW) 10/02/2022 15/02/2022	0.00 - 0.00 Ground Water (GW) 10/02/2022 15/02/2022
PFBA (375-22-4)	<2 ng/l	TM337	<2 #	<2 #
PFPA (2706-90-3)	<1 ng/l	TM337	<1 #	<1 #
PFHxA (307-24-4)	<1 ng/l	TM337	<1 #	<1 #
PFBS (375-73-5)	<1 ng/l	TM337	<1 #	<1 #
PFHpA (375-85-9)	<1 ng/l	TM337	<1 #	<1 #
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1 #	<1 #
PFOA (335-67-1)	<0.65 ng/l	TM337	<0.65 #	<0.65 #
PFHxS (355-46-4)	<1 ng/l	TM337	<1 #	<1 #
PFNA (375-95-1)	<1 ng/l	TM337	<1 #	<1 #
PFHpS (375-92-8)	<1 ng/l	TM337	<1 #	<1 #
PFDA (335-76-2)	<1 ng/l	TM337	<1 #	<1 #
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65 #	<0.65 #
Branched PFOS	<0.65 ng/l	TM337	<0.65 #	<0.65 #
PFUnA (2058-94-8)	<1 ng/l	TM337	<1 #	<1 #
PFDoA (307-55-1)	<1 ng/l	TM337	<1 #	<1 #
PFOSA (754-91-6)	<2 ng/l	TM337	<2 #	<2 #
PFDS (335-77-3)	<1 ng/l	TM337	<1 #	<1 #
PFPeS (2706-91-4)	<1 ng/l	TM337	<1 #	<1 #
Total PFOS	<0.65 ng/l	TM337	<0.65 #	<0.65 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:



CERTIFICATE OF ANALYSIS

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SDG: 220215-88
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CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-88
Client Ref.: P21-195

Report Number: 634930
Location: Daa Potable Reservoir

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25823650	25823654
Customer Sample Ref.	Gardeners Well - A	Gardeners Well - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	24-Feb-2022	24-Feb-2022



CERTIFICATE OF ANALYSIS

SDG: 220215-88 Client Reference: P21-195 Report Number: 634930
 Location: Daa Potable Reservoir Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 16 February 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220210-98
Your Reference: P21-195
Location: Dublin Airport
Report No: 633815
Order Number: Z3164

We received 17 samples on Thursday February 10, 2022 and 17 of these samples were scheduled for analysis which was completed on Wednesday February 16, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-98
Client Ref.: P21-195

Report Number: 633815
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25796571	BH1A		0.00 - 0.00	09/02/2022
25796609	BH5A		0.00 - 0.00	09/02/2022
25796614	BH6A		0.00 - 0.00	09/02/2022
25796622	BH7A		0.00 - 0.00	09/02/2022
25796591	BH9A		0.00 - 0.00	09/02/2022
25796607	BH1B		0.00 - 0.00	09/02/2022
25796611	BH5B		0.00 - 0.00	09/02/2022
25796619	BH6B		0.00 - 0.00	09/02/2022
25796624	BH7B		0.00 - 0.00	09/02/2022
25796594	BH9B		0.00 - 0.00	09/02/2022
25796587	BH8DA		0.00 - 0.00	09/02/2022
25796589	BH8DB		0.00 - 0.00	09/02/2022
25796627	BH8SA		0.00 - 0.00	09/02/2022
25796584	BH8SB		0.00 - 0.00	09/02/2022
25796596	GWFB1		0.00 - 0.00	09/02/2022
25796598	GWFB2		0.00 - 0.00	09/02/2022
25796601	GWTB		0.00 - 0.00	09/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-98
Client Ref.: P21-195

Report Number: 633815
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	25796601	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796698	GWFB2		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796696	GWFB1		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796584	BH8SB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796627	BH8SA		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796589	BH8DB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796587	BH8DA		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796694	BH9B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796624	BH7B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796619	BH6B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796611	BH5B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796607	BH1B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796691	BH9A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796622	BH7A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796614	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796609	BH5A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	25796571	BH1A		0.00 - 0.00	500ml Plastic (ALE208)	GW
PFAS Liquids	All	NDPs: 0 Tests: 17				



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-98
Client Ref.: P21-195

Report Number: 633815
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-98
Client Ref.: P21-195

Report Number: 633815
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25796571	25796609	25796614	25796622	25796591	25796607	25796611	25796619	25796624	25796594
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	16-Feb-2022									

Lab Sample No(s)	25796587	25796589	25796627	25796584	25796596	25796598	25796601
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB	GWFB1	GWFB2	GWTB
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water						
PFAS Liquids	16-Feb-2022						



CERTIFICATE OF ANALYSIS

SDG: 220210-98	Client Reference: P21-195	Report Number: 633815
Location: Dublin Airport	Order Number: Z3164	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Declan Morrisey

CERTIFICATE OF ANALYSIS

Date of report Generation: 21 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220215-86
Your Reference: P21-195
Location: Offsite Reservoir
Report No: 673038
Order Number: Z3164

This report has been revised and directly supersedes 672669 in its entirety.

We received 2 samples on Tuesday February 15, 2022 and 2 of these samples were scheduled for analysis which was completed on Thursday March 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-86
Client Ref.: P21-195

Report Number: 673038
Location: Offsite Reservoir

Superseded Report: 672669

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25823602	Offsite Reservoir - A		0.00 - 0.00	10/02/2022
25823598	Offsite Reservoir - B		0.00 - 0.00	10/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-86
Client Ref.: P21-195

Report Number: 673038
Location: Offsite Reservoir

Superseded Report: 672669

Results Legend <input checked="" type="checkbox"/> Test <input type="checkbox"/> No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	258233598 258233602	258233598 258233602
	Customer Sample Reference	Offsite Reservoir - A	Offsite Reservoir - B
	AGS Reference		
	Depth (m)	0.00 - 0.00	0.00 - 0.00
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)
	Sample Type	GW	GW
PFAS Liquids	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-86
Client Ref.: P21-195

Report Number: 673038
Location: Offsite Reservoir

Superseded Report: 672669

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-86
Client Ref.: P21-195

Report Number: 673038
Location: Offsite Reservoir

Superseded Report: 672669

Test Completion Dates

Lab Sample No(s)	25823602	25823598
Customer Sample Ref.	Offsite Reservoir - A	Offsite Reservoir - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	17-Mar-2022	17-Mar-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220215-86	25823602	As report issue - 672669	21/12/2022	Sample ID Change	As report issue - 672669	Offsite Reservoir - A	672669
220215-86	25823598	As report issue - 672669	21/12/2022	Sample ID Change	As report issue - 672669	Offsite Reservoir - B	672669



CERTIFICATE OF ANALYSIS

SDG: 220215-86
Client Ref: P21-195

Report Number: 673038
Location: Offsite Reservoir

Superseded Report: 672669

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 08 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220215-85
Your Reference: P21-195
Location: Dublin Airport
Report No: 671372
Order Number: Z3164

This report has been revised and directly supersedes 641568 in its entirety.

We received 17 samples on Tuesday February 15, 2022 and 17 of these samples were scheduled for analysis which was completed on Friday March 18, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25823572	GW001-A		0.00 - 0.00	10/02/2022
25823563	GW004-A		0.00 - 0.00	10/02/2022
25823558	GW007-A		0.00 - 0.00	10/02/2022
25823551	GW008-A		0.00 - 0.00	10/02/2022
25823577	GW014-A		0.00 - 0.00	10/02/2022
25823574	GW001-B		0.00 - 0.00	10/02/2022
25823565	GW004-B		0.00 - 0.00	10/02/2022
25823561	GW007-B		0.00 - 0.00	10/02/2022
25823554	GW008-B		0.00 - 0.00	10/02/2022
25823579	GW014-B		0.00 - 0.00	10/02/2022
25823568	GW002D-A		0.00 - 0.00	10/02/2022
25823546	GW015D-A		0.00 - 0.00	10/02/2022
25823570	GW002D-B		0.00 - 0.00	10/02/2022
27279673	GW015D-B		0.00 - 0.00	10/02/2022
25823581	GWFB-1		0.00 - 0.00	10/02/2022
25823585	GWFB-2		0.00 - 0.00	10/02/2022
25823590	GWTB		0.00 - 0.00	10/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
25823590	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823585	GWFB-2		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823581	GWFB-1		0.00 - 0.00	500ml Plastic (ALE208)	GW
27279673	GW015D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823570	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823546	GW015D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823568	GW002D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823579	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823554	GW008-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823561	GW007-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823565	GW004-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823574	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823577	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823551	GW008-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823558	GW007-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823563	GW004-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
25823572	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW

PFAS Liquids	All	NDPs: 0 Tests: 17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Results Legend			Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B
#	ISO17025 accredited.			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		Depth (m)	10/02/2022	10/02/2022	10/02/2022	10/02/2022	10/02/2022	10/02/2022
diss.filt	Dissolved / filtered sample.		Sample Type	15/02/2022	15/02/2022	15/02/2022	15/02/2022	15/02/2022	15/02/2022
tot.unfilt	Total / unfiltered sample.		Date Sampled	220215-85	220215-85	220215-85	220215-85	220215-85	220215-85
	Subcontracted - refer to subcontractor report for accreditation status.		Sample Time	25823572	25823563	25823558	25823551	25823577	25823574
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Date Received						
	Trigger breach confirmed		SDG Ref						
	1-4*% Sample deviation (see appendix)		Lab Sample No.(s)						
			AGS Reference						
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337		<10	<20	<20	<20	<10	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337		21.7	<20	<20	<20	<10	7.11
5:3 FTCA (914637-49-3)	<20 ng/l	TM337		<100	<200	<200	<200	<100	<20
PFBA (375-22-4)	<2 ng/l	TM337		<10	<20	<20	<20	<10	<10
				#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337		34.5	<10	16.3	<10	<5	43.6
				#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337		59	<10	22.2	<10	<5	47.7
				#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337		13.2	<10	<10	<10	<5	9.73
				#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337		38.9	<10	<10	<10	<5	41.2
				#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337		119	<10	20.2	<10	<5	89.6
				#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337		29.7	9.31	14	<6.5	<3.25	19.1
				#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337		49.3	10.6	27.9	12.8	<5	44.8
				#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337		8.05	<10	<10	<10	<5	6.21
				#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337		<5	<10	<10	<10	<5	2.04
				#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337		<5	<10	<10	<10	<5	<1
				#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337		75.4	81.9	11.5	24.4	<3.25	80.5
				#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337		61.9	76.3	15.4	18.3	<3.25	41.5
				#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337		<5	<10	<10	<10	<5	<1
				#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337		<5	<10	<10	<10	<5	<1
				#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337		<10	<20	<20	<20	<10	<2
				#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337		<5	<10	<10	<10	<5	<1
				#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337		8.23	<10	<10	<10	<5	4.73
				#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337		137	158	26.9	42.7	<3.25	122
				#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Results Legend		Customer Sample Ref.	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW015D-A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fltr Dissolved / filtered sample. tot.unfltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 10/02/2022					
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<20	<2	<2	<10	<10
8:2 FTS (39108-34-4)	<2 ng/l	TM337	2.79	<20	<2	<2	<10	<10
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<200	<20	<20	<100	<100
PFBA (375-22-4)	<2 ng/l	TM337	<20	<20	4.34	5.64	31.4	166
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	7.76	15.8	1.45	<1	76.7	541
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	4.76	21.2	3.33	<1	63.1	215
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	5.58	<10	2.2	<1	<5	<5
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	3.55	<10	1.12	<1	81.8	88.2
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	7.27	19.2	<1	<1	7.86	8.6
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	4.01	9.46	1.87	<0.65	36.2	17.2
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	6.46	26.3	8.76	<1	27.5	<5
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<1	<10	<1	<1	9.71	5.91
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<1	<10	<1	<1	<5	<5
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<1	<10	<1	<1	<5	<5
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	77.3	10.8	23	<0.65	38.9	3.55
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	38.2	14.3	9.46	<0.65	55.5	<3.25
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<10	<1	<1	<5	<5
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<10	<1	<1	<5	<5
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<20	<2	<2	<10	<10
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<10	<1	<1	<5	<5
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	<10	1.55	<1	<5	<5
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	116	25.1	32.5	<0.65	94.4	3.55
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220215-85
Client Ref.: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Test Completion Dates

Lab Sample No(s)	25823572	25823563	25823558	25823551	25823577	25823574	25823565	25823561	25823554	25823579
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	18-Mar-2022									

Lab Sample No(s)	25823568	25823546	25823570	27279673	25823581	25823585	25823590
Customer Sample Ref.	GW002D-A	GW015D-A	GW002D-B	GW015D-B	GWFB-1	GWFB-2	GWFB
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	18-Mar-2022	18-Mar-2022	18-Mar-2022	18-Mar-2022	18-Mar-2022	18-Mar-2022	16-Mar-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220215-85	25823546	GW016-A	08/04/2022	Sample ID Change	GW016-A	GW015D	638191
220215-85	25823549	GW016-B	08/04/2022	Sample ID Change	GW016-B	GW015D	638191

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220215-85	25823546	GW015D	08/12/2022	Sample ID Change	GW015D	GW015D-A	641 568
220215-85	25823549	GW015D	08/12/2022	Sample ID Change	GW015D	GW015D-B	641 568



CERTIFICATE OF ANALYSIS

SDG: 220215-85
Client Ref: P21-195

Report Number: 671372
Location: Dublin Airport

Superseded Report: 641568

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 February 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220217-104
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	635209
Order Number:	Z3164

We received 2 samples on Thursday February 17, 2022 and 2 of these samples were scheduled for analysis which was completed on Friday February 25, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-104
Client Ref.: P21-195

Report Number: 635209
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25836495	GW03D-A		0.00 - 0.00	15/02/2022
25836498	GW03D-B		0.00 - 0.00	15/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-104
Client Ref.: P21-195

Report Number: 635209
Location: Dublin Airport

Superseded Report:

Results Legend <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; width: 20px; height: 20px; background-color: yellow; display: flex; align-items: center; justify-content: center; font-weight: bold;">X</div> Test <div style="border: 1px solid black; width: 20px; height: 20px; background-color: red; display: flex; align-items: center; justify-content: center; font-weight: bold;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	25836495	25836498		
	Customer Sample Reference	GW03PD-A	GW03PD-B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	GW	GW		
PFAS Liquids	All	NDPs: 0 Tests: 2	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center; background-color: yellow;">X</td> <td style="width: 50%; text-align: center; background-color: yellow;">X</td> </tr> </table>	X	X
X	X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-104
Client Ref.: P21-195

Report Number: 635209
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-104
Client Ref.: P21-195

Report Number: 635209
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25836495	25836498
Customer Sample Ref.	GW03D-A	GW03D-B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	25-Feb-2022	24-Feb-2022



CERTIFICATE OF ANALYSIS

SDG:	220217-104	Client Reference:	P21-195	Report Number:	635209
Location:	Dublin Airport	Order Number:	Z3164	Superseded Report:	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Declan Morrisey

CERTIFICATE OF ANALYSIS

Date of report Generation: 21 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220316-131
Your Reference: P21-195
Location: Offsite Reservoir
Report No: 673035
Order Number: P3164

This report has been revised and directly supersedes 672668 in its entirety.

We received 2 samples on Wednesday March 16, 2022 and 2 of these samples were scheduled for analysis which was completed on Friday March 25, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-131
Client Ref.: P21-195

Report Number: 673035
Location: Offsite Reservoir

Superseded Report: 672668

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25979652	Offsite Reservoir - A		0.00 - 0.00	15/03/2022
25979643	Offsite Reservoir - B		0.00 - 0.00	15/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-131
Client Ref.: P21-195

Report Number: 673035
Location: Offsite Reservoir

Superseded Report: 672668

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></div> X Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: red; color: white; margin-right: 5px;"></div> N No Determination Possible </div> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	25979652	25979643	
	Customer Sample Reference	A	B	Offsite Reservoir -
	AGS Reference			
	Depth (m)	0.00 - 0.00	0.00 - 0.00	
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)	
	Sample Type	GW	GW	
PFAS Liquids	All	NDPs: 0 Tests: 2	X X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-131
Client Ref.: P21-195

Report Number: 673035
Location: Offsite Reservoir

Superseded Report: 672668

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-131
Client Ref.: P21-195

Report Number: 673035
Location: Offsite Reservoir

Superseded Report: 672668

Test Completion Dates

Lab Sample No(s)	25979652	25979643
Customer Sample Ref.	Offsite Reservoir - A	Offsite Reservoir - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids	24-Mar-2022	25-Mar-2022
PFAS Liquids (EU specified)	25-Mar-2022	25-Mar-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220316-131	25979652	As report issue -672668	21/12/2022	Sample ID Change	As report issue -672668	Offsite Reservoir - A	672668
220316-131	25979643	As report issue -672668	21/12/2022	Sample ID Change	As report issue -672668	Offsite Reservoir - B	672668



CERTIFICATE OF ANALYSIS

SDG: 220316-131
Client Ref: P21-195

Report Number: 673035
Location: Offsite Reservoir

Superseded Report: 672668

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Post Certification Report

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11
Attention: Declan Morrisey

Date:	19/12/2022	Location:	Dublin Airport
Customer:	Fehily Timoney	No. Of Samples Received:	2
Your Reference:	P21-195	Samples Scheduled:	2

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25979675	Gardeners Well - A		0.00 - 0.00	15/03/2022
25979677	Gardeners Well - B		0.00 - 0.00	15/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)					25979677	25979675
Customer Sample Reference					Gardeners Well - B	Gardeners Well - A
AGS Reference						
Depth (m)					0.00 - 0.00	0.00 - 0.00
Container					500ml Plastic	500ml Plastic
PFAS Liquids	All	NDPs: 0 Tests: 2			X	X
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2			X	X

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Test Completion Dates

Lab Sample No(s)	25979675	25979677
Customer Sample Ref.	Gardeners Well - A	Gardeners Well - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	GROUND_W	GROUND_W
PFAS Liquids	25-Mar-2022	25-Mar-2022
PFAS Liquids (EU specified)	25-Mar-2022	25-Mar-2022



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 April 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220408-47
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	642894
Order Number:	Z3164

We received 15 samples on Friday March 18, 2022 and 15 of these samples were scheduled for analysis which was completed on Wednesday April 20, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220408-47
Client Ref.: P21-195

Report Number: 642894
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26102805	BH1A		0.00 - 0.00	16/03/2022
26102801	BH5A		0.00 - 0.00	16/03/2022
26102797	BH6A		0.00 - 0.00	16/03/2022
26102821	BH7A		0.00 - 0.00	16/03/2022
26102809	BH9A		0.00 - 0.00	16/03/2022
26102803	BH1B		0.00 - 0.00	16/03/2022
26102799	BH5B		0.00 - 0.00	16/03/2022
26102795	BH6B		0.00 - 0.00	16/03/2022
26102819	BH7B		0.00 - 0.00	16/03/2022
26102807	BH9B		0.00 - 0.00	16/03/2022
26102813	BH8DA		0.00 - 0.00	16/03/2022
26102811	BH8DB		0.00 - 0.00	16/03/2022
26102817	BH8SA		0.00 - 0.00	16/03/2022
26102815	BH8SB		0.00 - 0.00	16/03/2022
26102793	SWTB		0.00 - 0.00	16/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220408-47
Client Ref.: P21-195

Report Number: 642894
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.	Date Sampled	16/03/2022	16/03/2022	16/03/2022	16/03/2022	16/03/2022	16/03/2022
diss.filt	Dissolved / filtered sample.	Sample Time						
tot.unfilt	Total / unfiltered sample.	Date Received	18/03/2022	18/03/2022	18/03/2022	18/03/2022	18/03/2022	18/03/2022
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		SDG Ref	220408-47	220408-47	220408-47	220408-47	220408-47	220408-47
		Lab Sample No.(s)	26102805	26102801	26102797	26102821	26102809	26102803
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<10
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<10
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<100	<100	<200	<200	<100
PFBA (375-22-4)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<10
			@ #	@ #	@ #	@ #	@ #	@ #
PFPA (2706-90-3)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFHxA (307-24-4)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFBS (375-73-5)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFHpA (375-85-9)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFOA (335-67-1)	<0.65 ng/l	TM337	<6	<4	<4.5	<6.5	<7	<6
			@ #	@ #	@ #	@ #	@ #	@ #
PFHxS (355-46-4)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFNA (375-95-1)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFDA (335-76-2)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25
			@ #	@ #	@ #	@ #	@ #	@ #
Branched PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25
			@ #	@ #	@ #	@ #	@ #	@ #
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<10
			@ #	@ #	@ #	@ #	@ #	@ #
PFDS (335-77-3)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5
			@ #	@ #	@ #	@ #	@ #	@ #
Total PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25
			@ #	@ #	@ #	@ #	@ #	@ #
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<10	<10	<20	<10	<10
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<10	<10	<20	<10	<10
PFDoS (79780-39-5)	<1 ng/l	TM433	<15	<15	<15	<30	<20	<15
PFTrDS (174675-49-1)	<1 ng/l	TM433	<15	<15	<15	<30	<30	<15



CERTIFICATE OF ANALYSIS

Validated

SDG: 220408-47
Client Ref.: P21-195

Report Number: 642894
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220408-47
Client Ref.: P21-195

Report Number: 642894
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26102805	26102801	26102797	26102821	26102809	26102803	26102799	26102795	26102819	26102807
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	20-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	20-Apr-2022	19-Apr-2022
PFAS Liquids (EU specified)	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	20-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	20-Apr-2022	19-Apr-2022

Lab Sample No(s)	26102813	26102811	26102817	26102815	26102793
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB	SWTB
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022
PFAS Liquids (EU specified)	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022	19-Apr-2022



CERTIFICATE OF ANALYSIS

SDG: 220408-47
Client Ref: P21-195

Report Number: 642894
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 April 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220316-130
Your Reference: P21-195
Location: Dublin Airport
Report No: 640547
Order Number: P3164

We received 19 samples on Wednesday March 16, 2022 and 19 of these samples were scheduled for analysis which was completed on Friday April 01, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-130
Client Ref.: P21-195

Report Number: 640547
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25979634	GW001-A		0.00 - 0.00	15/03/2022
25979592	GW004-A		0.00 - 0.00	15/03/2022
25979600	GW007-A		0.00 - 0.00	15/03/2022
25979606	GW008-A		0.00 - 0.00	15/03/2022
25979629	GW014-A		0.00 - 0.00	15/03/2022
25979631	GW001-B		0.00 - 0.00	15/03/2022
25979644	GW004-B		0.00 - 0.00	15/03/2022
25979595	GW007-B		0.00 - 0.00	15/03/2022
25979603	GW008-B		0.00 - 0.00	15/03/2022
25979626	GW014-B		0.00 - 0.00	15/03/2022
25979641	GW002D-A		0.00 - 0.00	15/03/2022
25979618	GW03D-A		0.00 - 0.00	15/03/2022
25979613	GW05D-A		0.00 - 0.00	15/03/2022
25979611	GW015D-A		0.00 - 0.00	15/03/2022
25979637	GW002D-B		0.00 - 0.00	15/03/2022
25979615	GW05D-B		0.00 - 0.00	15/03/2022
25979608	GW015D-B		0.00 - 0.00	15/03/2022
25979621	GWFB		0.00 - 0.00	15/03/2022
25979589	GWTB		0.00 - 0.00	15/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-130
Client Ref.: P21-195

Report Number: 640547
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Customer Sample Ref.						
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fltr Dissolved / filtered sample. tot.unfltr Total / unfiltered sample.	LOD/Units		Method	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A
Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979644	0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979695	0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979603	0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979626	0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979641	0.00 - 0.00 Ground Water (GW) 15/03/2022 16/03/2022 220316-130 25979618	
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<20	<10	<20	<4	<100	
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	<20	<10	<20	<4	<100	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<200	<100	<200	<40	<1000	
PFBA (375-22-4)	<2 ng/l	TM337	<30	20.6	<10	<20	30	<250	
PFPA (2706-90-3)	<1 ng/l	TM337	4.8	19.5	<5	11.4	66.2	<50	
PFHxA (307-24-4)	<1 ng/l	TM337	4.28	26.1	<5	<10	57.1	<50	
PFBS (375-73-5)	<1 ng/l	TM337	4.12	<10	<5	<10	3.83	<50	
PFHpA (375-85-9)	<1 ng/l	TM337	3.97	<10	<5	<10	48.7	<50	
6:2 FTS (27619-97-2)	<1 ng/l	TM337	4.78	14.8	<5	<10	2.41	<50	
PFOA (335-67-1)	<0.65 ng/l	TM337	2.98	10.7	3.78	<6.5	27.1	<32.5	
PFHxS (355-46-4)	<1 ng/l	TM337	6.03	32.5	10.2	<10	22.4	<50	
PFNA (375-95-1)	<1 ng/l	TM337	<1	<10	<5	<10	6.94	<50	
PFHpS (375-92-8)	<1 ng/l	TM337	<1	<10	<5	<10	<2	<50	
PFDA (335-76-2)	<1 ng/l	TM337	<1	<10	<5	<10	<2	<50	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	71.4	13.5	17.2	<6.5	28.1	<32.5	
Branched PFOS	<0.65 ng/l	TM337	49.8	15.6	11.4	<6.5	40.8	<32.5	
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<10	<5	<10	<2	<50	
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<10	<5	<10	<2	<50	
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<20	<10	<20	<4	<100	
PFDS (335-77-3)	<1 ng/l	TM337	<1	<10	<5	<10	<2	<50	
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	<10	<5	<10	2.22	<50	
Total PFOS	<0.65 ng/l	TM337	121	29.1	28.5	<6.5	68.9	<32.5	
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<1	<10	<5	<10	<3	<50	
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<10	<5	<10	<2	<50	
PFUnDS (749786-16-1)	<1 ng/l	TM433	<2	<10	<5	<10	<4	<100	
PFDoS (79780-39-5)	<1 ng/l	TM433	<2	<10	<5	<10	<4	<100	
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<2	<10	<5	<10	<4	<100	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-130
Client Ref.: P21-195

Report Number: 640547
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-130
Client Ref.: P21-195

Report Number: 640547
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25979634	25979592	25979600	25979606	25979629	25979631	25979644	25979595	25979603	25979626
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	01-Apr-2022	01-Apr-2022	24-Mar-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	24-Mar-2022	01-Apr-2022	01-Apr-2022
PFAS Liquids (EU specified)	01-Apr-2022	01-Apr-2022	25-Mar-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	01-Apr-2022	25-Mar-2022	01-Apr-2022	01-Apr-2022

Lab Sample No(s)	25979641	25979618	25979613	25979611	25979637	25979615	25979608	25979621	25979589
Customer Sample Ref.	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B	GW05D-B	GW015D-B	GWFB	GWTB
AGS Ref.									
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	01-Apr-2022	01-Apr-2022	01-Apr-2022	25-Mar-2022	01-Apr-2022	01-Apr-2022	24-Mar-2022	25-Mar-2022	24-Mar-2022
PFAS Liquids (EU specified)	01-Apr-2022	01-Apr-2022	01-Apr-2022	25-Mar-2022	01-Apr-2022	01-Apr-2022	25-Mar-2022	25-Mar-2022	25-Mar-2022



CERTIFICATE OF ANALYSIS

SDG: 220316-130	Client Reference: P21-195	Report Number: 640547
Location: Dublin Airport	Order Number: P3164	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Post Certification Report

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11
Attention: Declan Morrisey

Date:	15/12/2022	Location:	Dublin Airport
Customer:	Fehily Timoney	No. Of Samples Received:	2
Your Reference:	P21-195	Samples Scheduled:	2

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26169247	Gardeners Well - A		0.00 - 0.00	20/04/2022
26169250	Gardeners Well - B		0.00 - 0.00	20/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)					26169250 26169247
Customer Sample Reference					Gardeners Well - B Gardeners Well - A
AGS Reference					
Depth (m)					0.00 - 0.00 0.00 - 0.00
Container					500ml Plastic 500ml Plastic
PFAS Liquids	All	NDPs: 0 Tests: 2			X X
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2			X X

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Test Completion Dates

Lab Sample No(s)	26169247	26169250
Customer Sample Ref.	Gardeners Well - A	Gardeners Well - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	GROUND_W	GROUND_W
PFAS Liquids	29-Apr-2022	28-Apr-2022
PFAS Liquids (EU specified)	29-Apr-2022	28-Apr-2022



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 10 May 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220422-97
Your Reference: P21-195
Location: Dublin Airport
Report No: 645496
Order Number: Z3164

This report has been revised and directly supersedes 644704 in its entirety.

We received 16 samples on Friday April 22, 2022 and 16 of these samples were scheduled for analysis which was completed on Tuesday May 10, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-97
Client Ref.: P21-195

Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26169207	BH1A		0.00 - 0.00	21/04/2022
26169201	BH5A		0.00 - 0.00	21/04/2022
26169195	BH6A		0.00 - 0.00	21/04/2022
26169238	BH7A		0.00 - 0.00	21/04/2022
26169216	BH9A		0.00 - 0.00	21/04/2022
26169204	BH1B		0.00 - 0.00	21/04/2022
26169198	BH5B		0.00 - 0.00	21/04/2022
26169193	BH6B		0.00 - 0.00	21/04/2022
26169234	BH7B		0.00 - 0.00	21/04/2022
26169212	BH9B		0.00 - 0.00	21/04/2022
26169221	BH8DA		0.00 - 0.00	21/04/2022
26169218	BH8DB		0.00 - 0.00	21/04/2022
26169226	BH8SA		0.00 - 0.00	21/04/2022
26169223	BH8SB		0.00 - 0.00	21/04/2022
26169209	GWFB		0.00 - 0.00	21/04/2022
26169190	GWTB		0.00 - 0.00	21/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-97
Client Ref.: P21-195

Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	26169207	BH1A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169201	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169195	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169238	BH7A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169216	BH9A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169204	BH1B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169198	BH5B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169193	BH6B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169234	BH7B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169212	BH9B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169221	BH8DA		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169218	BH8DB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169226	BH8SA		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169223	BH8SB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169209	GWFB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	26169190	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW
PFAS Liquids	All					NDPs: 0 Tests: 16
						X X X X X X X X X X X X X X X X X X
PFAS Liquids (EU specified)	All					NDPs: 0 Tests: 16
						X X X X X X X X X X X X X X X X X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-97
Client Ref.: P21-195

Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Results Legend		Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.	Date Sampled	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022
diss.filt	Dissolved / filtered sample.	Sample Time						
tot.unfilt	Total / unfiltered sample.	Date Received	22/04/2022	22/04/2022	22/04/2022	22/04/2022	22/04/2022	22/04/2022
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		SDG Ref	220422-97	220422-97	220422-97	220422-97	220422-97	220422-97
		Lab Sample No.(s)	26169207	26169201	26169195	26169238	26169216	26169204
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<20	<20	<20	<20	<10
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	<20	<20	<20	<20	<10
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<200	<200	<200	<200	<100
PFBA (375-22-4)	<2 ng/l	TM337	<30	<42	<44	<37	<30	<35
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	<16	<12	<13.5	<12.5	<8	<10
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<20	<20	<20	<20	<20
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
			#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-97
Client Ref.: P21-195

Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



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SDG: 220422-97
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Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Test Completion Dates

Lab Sample No(s)	26169207	26169201	26169195	26169238	26169216	26169204	26169198	26169193	26169234	26169212
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	28-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	04-May-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022
PFAS Liquids (EU specified)	28-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	04-May-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022

Lab Sample No(s)	26169221	26169218	26169226	26169223	26169209	26169190
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB	GWFB	GWTB
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	10-May-2022	28-Apr-2022
PFAS Liquids (EU specified)	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	10-May-2022	28-Apr-2022



CERTIFICATE OF ANALYSIS

SDG: 220422-97
Client Ref: P21-195

Report Number: 645496
Location: Dublin Airport

Superseded Report: 644704

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 April 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220422-94
Your Reference: P21-195
Location: Dublin Airport
Report No: 644321
Order Number: P3164

We received 20 samples on Friday April 22, 2022 and 20 of these samples were scheduled for analysis which was completed on Friday April 29, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-94
Client Ref.: P21-195

Report Number: 644321
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26169086	GW001-A		0.00 - 0.00	19/04/2022
26169070	GW004-A		0.00 - 0.00	19/04/2022
26169134	GW007-A		0.00 - 0.00	19/04/2022
26169128	GW008-A		0.00 - 0.00	19/04/2022
26169095	GW014-A		0.00 - 0.00	19/04/2022
26169091	GW001-B		0.00 - 0.00	19/04/2022
26169073	GW004-B		0.00 - 0.00	19/04/2022
26169136	GW007-B		0.00 - 0.00	19/04/2022
26169130	GW008-B		0.00 - 0.00	19/04/2022
26169103	GW014-B		0.00 - 0.00	19/04/2022
26169079	GW002D-A		0.00 - 0.00	19/04/2022
26169068	GW03D-A		0.00 - 0.00	19/04/2022
26169119	GW05D-A		0.00 - 0.00	19/04/2022
26169122	GW015D-A		0.00 - 0.00	19/04/2022
26169084	GW002D-B		0.00 - 0.00	19/04/2022
26169115	GW03D-B		0.00 - 0.00	19/04/2022
26169112	GW05D-B		0.00 - 0.00	19/04/2022
26169124	GW015D-B		0.00 - 0.00	19/04/2022
26169107	GWFB		0.00 - 0.00	19/04/2022
26169109	GWTB		0.00 - 0.00	19/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-94
Client Ref.: P21-195

Report Number: 644321
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type														
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	26169107	GWFB		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169124	GW015D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169112	GW05D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169115	GW03D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169084	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169122	GW015D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169119	GW05D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169068	GW03D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169079	GW002D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169103	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169130	GW008-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169136	GW007-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169073	GW004-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169091	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	26169095	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
26169128	GW008-A		0.00 - 0.00	500ml Plastic (ALE208)	GW															
26169134	GW007-A		0.00 - 0.00	500ml Plastic (ALE208)	GW															
26169070	GW004-A		0.00 - 0.00	500ml Plastic (ALE208)	GW															
26169086	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW															
PFAS Liquids	All	NDPs: 0 Tests: 20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

26169109	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-94
Client Ref.: P21-195

Report Number: 644321
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-94
Client Ref.: P21-195

Report Number: 644321
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26169086	26169070	26169134	26169128	26169095	26169091	26169073	26169136	26169130	26169103
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022
PFAS Liquids (EU specified)	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022

Lab Sample No(s)	26169079	26169068	26169119	26169122	26169084	26169115	26169112	26169124	26169107	26169109
Customer Sample Ref.	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B	GWFB	GWTB
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	28-Apr-2022	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022
PFAS Liquids (EU specified)	28-Apr-2022	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	29-Apr-2022	29-Apr-2022	28-Apr-2022	29-Apr-2022	28-Apr-2022



CERTIFICATE OF ANALYSIS

SDG: 220422-94
Client Ref: P21-195

Report Number: 644321
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Post Certification Report

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11
Attention: Declan Morrisey

Date:	19/12/2022	Location:	Dublin Airport
Customer:	Fehily Timoney	No. Of Samples Received:	2
Your Reference:	P21-195	Samples Scheduled:	2

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26344112	Gardeners Well - A		0.00 - 0.00	24/05/2022
26344109	Gardeners Well - B		0.00 - 0.00	24/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)	26344109	26344112			
Customer Sample Reference	Gardeners Well - B				
AGS Reference	Gardeners Well - A				
Depth (m)	0.00 - 0.00				
Container	500ml Plastic				
PFAS Liquids	All	NDPs: 0	Tests: 2	X	X
PFAS Liquids (EU specified)	All	NDPs: 0	Tests: 2	X	X

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Test Completion Dates

Lab Sample No(s)	26344112	26344109
Customer Sample Ref.	Gardeners Well - A	Gardeners Well - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	GROUND_W	GROUND_W
PFAS Liquids	07-Jun-2022	07-Jun-2022
PFAS Liquids (EU specified)	07-Jun-2022	07-Jun-2022



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

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1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
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Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 June 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220526-57
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	649437
Order Number:	Z3164

We received 14 samples on Wednesday May 25, 2022 and 14 of these samples were scheduled for analysis which was completed on Tuesday June 07, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-57
Client Ref.: P21-195

Report Number: 649437
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26344161	BH1A		0.00 - 0.00	24/05/2022
26344178	BH5A		0.00 - 0.00	24/05/2022
26344184	BH6A		0.00 - 0.00	24/05/2022
26344190	BH7A		0.00 - 0.00	24/05/2022
26344171	BH9A		0.00 - 0.00	24/05/2022
26344176	BH1B		0.00 - 0.00	24/05/2022
26344182	BH5B		0.00 - 0.00	24/05/2022
26344186	BH6B		0.00 - 0.00	24/05/2022
26344192	BH7B		0.00 - 0.00	24/05/2022
26344173	BH9B		0.00 - 0.00	24/05/2022
26344167	BH8DA		0.00 - 0.00	24/05/2022
26344169	BH8DB		0.00 - 0.00	24/05/2022
26344194	BH8SA		0.00 - 0.00	24/05/2022
26344165	BH8SB		0.00 - 0.00	24/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-57
Client Ref.: P21-195

Report Number: 649437
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-57
Client Ref.: P21-195

Report Number: 649437
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26344161	26344178	26344184	26344190	26344171	26344176	26344182	26344186	26344192	26344173
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	07-Jun-2022									
PFAS Liquids (EU specified)	07-Jun-2022									

Lab Sample No(s)	26344167	26344169	26344194	26344165
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	07-Jun-2022	07-Jun-2022	07-Jun-2022	07-Jun-2022
PFAS Liquids (EU specified)	07-Jun-2022	07-Jun-2022	07-Jun-2022	07-Jun-2022



CERTIFICATE OF ANALYSIS

SDG: 220526-57
Client Ref: P21-195

Report Number: 649437
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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North Park Business Park
North Road
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 June 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220526-53
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	649436
Order Number:	P3164

We received 20 samples on Wednesday May 25, 2022 and 20 of these samples were scheduled for analysis which was completed on Tuesday June 07, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-53
Client Ref.: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26344019	GW001-A		0.00 - 0.00	24/05/2022
26344011	GW004-A		0.00 - 0.00	24/05/2022
26344054	GW007-A		0.00 - 0.00	24/05/2022
26344047	GW008-A		0.00 - 0.00	24/05/2022
26344026	GW014-A		0.00 - 0.00	24/05/2022
26344023	GW001-B		0.00 - 0.00	24/05/2022
26344013	GW004-B		0.00 - 0.00	24/05/2022
26344057	GW007-B		0.00 - 0.00	24/05/2022
26344049	GW008-B		0.00 - 0.00	24/05/2022
26344029	GW014-B		0.00 - 0.00	24/05/2022
26344015	GW002D-A		0.00 - 0.00	24/05/2022
26344009	GW03D-A		0.00 - 0.00	24/05/2022
26344041	GW05D-A		0.00 - 0.00	24/05/2022
26344043	GW015D-A		0.00 - 0.00	24/05/2022
26344017	GW002D-B		0.00 - 0.00	24/05/2022
26344039	GW03D-B		0.00 - 0.00	24/05/2022
26344037	GW05D-B		0.00 - 0.00	24/05/2022
26344045	GW015D-B		0.00 - 0.00	24/05/2022
26344032	GWFB		0.00 - 0.00	24/05/2022
26344035	GWTB		0.00 - 0.00	24/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26344035	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-53
Client Ref.: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type		Ground Water (GW)					
			Date Sampled		24/05/2022	24/05/2022	24/05/2022	24/05/2022	24/05/2022	24/05/2022
			Sample Time							
			Date Received		25/05/2022	25/05/2022	25/05/2022	25/05/2022	25/05/2022	25/05/2022
			SDG Ref		220526-53	220526-53	220526-53	220526-53	220526-53	220526-53
			Lab Sample No.(s)		26344019	26344011	26344054	26344047	26344026	26344023
			AGS Reference							
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<10	<10	<4	<10	<10	<10	
8:2 FTS (39108-34-4)	<2 ng/l	TM337	16.5	<10	<10	<4	<10	<10	24.6	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<100	<100	<40	<100	<100	<100	
PFBA (375-22-4)	<2 ng/l	TM337	<35	<30	67.3	8.31	<20	<30	<30	
			#	#	#	#	#	#	#	
PFPA (2706-90-3)	<1 ng/l	TM337	29.5	5.51	26.6	2.61	14.3	59.2	59.2	
			#	#	#	#	#	#	#	
PFHxA (307-24-4)	<1 ng/l	TM337	37	<5	31.9	6.33	8.76	65.1	65.1	
			#	#	#	#	#	#	#	
PFBS (375-73-5)	<1 ng/l	TM337	9.69	<5	10.1	4.54	<5	16.8	16.8	
			#	#	#	#	#	#	#	
PFHpA (375-85-9)	<1 ng/l	TM337	25.2	5.17	12.2	<2	5.88	46.9	46.9	
			#	#	#	#	#	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM337	67.6	11.9	16.6	<2	<5	101	101	
			#	#	#	#	#	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM337	27.5	7.79	20.2	3.63	14.8	40.3	40.3	
			#	#	#	#	#	#	#	
PFHxS (355-46-4)	<1 ng/l	TM337	38	6.31	34.6	17.4	<5	57.5	57.5	
			#	#	#	#	#	#	#	
PFNA (375-95-1)	<1 ng/l	TM337	6.98	<5	<5	<2	<5	9.51	9.51	
			#	#	#	#	#	#	#	
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFDA (335-76-2)	<1 ng/l	TM337	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	56.6	73.1	13.2	36.1	<3.25	84.5	84.5	
			#	#	#	#	#	#	#	
Branched PFOS	<0.65 ng/l	TM337	49.6	43	14.4	17.1	<3.25	81	81	
			#	#	#	#	#	#	#	
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<10	<10	<4	<10	<10	<10	
			#	#	#	#	#	#	#	
PFDS (335-77-3)	<1 ng/l	TM337	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM337	6.33	<5	6.45	2.57	<5	9.04	9.04	
			#	#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM337	106	116	27.6	53.1	<3.25	166	166	
			#	#	#	#	#	#	#	
PFTrDA (72629-94-8)	<1 ng/l	TM433	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<5	<5	<2	<5	<5	<5	
			#	#	#	#	#	#	#	
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<5	<10	<2	<10	<10	<10	
			#	#	#	#	#	#	#	
PFTrDS (174675-49-1)	<1 ng/l	TM433	<5	<5	<25	<4	<25	<25	<25	
			#	#	#	#	#	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-53
Client Ref.: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 24/05/2022					
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<4	<4	<4	<10	<10
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	6.88	<4	<4	<10	<10
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<40	<40	<40	<100	<100
PFBA (375-22-4)	<2 ng/l	TM337	<13	17.5	13.8	17.1	46.6	38.5
PFPA (2706-90-3)	<1 ng/l	TM337	<5	21	2.73	10.9	128	9.2
PFHxA (307-24-4)	<1 ng/l	TM337	<5	32.8	5.62	7.06	88.1	7.96
PFBS (375-73-5)	<1 ng/l	TM337	<5	10.1	4.17	<2	6.39	<5
PFHpA (375-85-9)	<1 ng/l	TM337	5.65	9.6	<2	4.3	84.5	6.13
6:2 FTS (27619-97-2)	<1 ng/l	TM337	8.25	14.5	<2	<2	24.8	6.32
PFOA (335-67-1)	<0.65 ng/l	TM337	5.99	8.87	4.38	4.56	45.7	13.9
PFHxS (355-46-4)	<1 ng/l	TM337	7.33	32.6	16.5	<2	35.9	7.47
PFNA (375-95-1)	<1 ng/l	TM337	<5	<2	<2	<2	10.5	<5
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<2	<2	<2	<5	<5
PFDA (335-76-2)	<1 ng/l	TM337	<5	<2	<2	<2	<5	<5
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	78.5	11.6	35	<1.3	45.3	16.2
Branched PFOS	<0.65 ng/l	TM337	48.4	8.21	16.4	<1.3	66.4	10.2
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<2	<2	<2	<5	<5
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<2	<2	<2	<5	<5
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<4	<4	<4	<10	<10
PFDS (335-77-3)	<1 ng/l	TM337	<5	<2	<2	<2	<5	<5
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	6.26	2.68	<2	<5	<5
Total PFOS	<0.65 ng/l	TM337	127	19.8	51.4	<1.3	112	26.4
PFTrDA (72629-94-8)	<1 ng/l	TM433	<5	<2	<2	<2	<15	<15
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<2	<2	<2	<5	<5
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<2	<2	<2	<10	<10
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<2	<2	<2	<40	<40
PFTrDS (174675-49-1)	<1 ng/l	TM433	<5	<4	<4	<2	<40	<40



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-53
Client Ref.: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-53
Client Ref.: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26344019	26344011	26344054	26344047	26344026	26344023	26344013	26344057	26344049	26344029
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	06-Jun-2022	06-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	06-Jun-2022	06-Jun-2022	06-Jun-2022
PFAS Liquids (EU specified)	06-Jun-2022	06-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	06-Jun-2022	06-Jun-2022	06-Jun-2022

Lab Sample No(s)	26344015	26344009	26344041	26344043	26344017	26344039	26344037	26344045	26344032	26344035
Customer Sample Ref.	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B	GWFB	GWTB
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	07-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	06-Jun-2022	06-Jun-2022
PFAS Liquids (EU specified)	07-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	07-Jun-2022	06-Jun-2022	07-Jun-2022	06-Jun-2022	06-Jun-2022



CERTIFICATE OF ANALYSIS

SDG: 220526-53
Client Ref: P21-195

Report Number: 649436
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g. volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Declan Morrisey

CERTIFICATE OF ANALYSIS

Date of report Generation: 21 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220606-26
Your Reference: P21-195
Location: Offsite Reservoir
Report No: 673033
Order Number: P3164

This report has been revised and directly supersedes 651102 in its entirety.

We received 2 samples on Monday June 06, 2022 and 2 of these samples were scheduled for analysis which was completed on Friday June 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220606-26
Client Ref.: P21-195

Report Number: 673033
Location: Offsite Reservoir

Superseded Report: 651102

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26388921	Offsite Reservoir - A		0.00 - 0.00	03/06/2022
26388919	Offsite Reservoir - B		0.00 - 0.00	03/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220606-26
Client Ref.: P21-195

Report Number: 673033
Location: Offsite Reservoir

Superseded Report: 651102

Results Legend					
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)				
			26388921	26388919	
	Customer Sample Reference		A	B	Offsite Reservoir -
	AGS Reference				
	Depth (m)		0.00 - 0.00	0.00 - 0.00	
	Container		500ml Plastic (ALE208)	500ml Plastic (ALE208)	
Sample Type		SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220606-26
Client Ref.: P21-195

Report Number: 673033
Location: Offsite Reservoir

Superseded Report: 651102

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220606-26
Client Ref.: P21-195

Report Number: 673033
Location: Offsite Reservoir

Superseded Report: 651102

Test Completion Dates

Lab Sample No(s)	26388921	26388919
Customer Sample Ref.	Offsite Reservoir - A	Offsite Reservoir - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	12-Jun-2022	17-Jun-2022
PFAS Liquids (EU specified)	12-Jun-2022	17-Jun-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220606-26	26388921	As report issue -651102	21/12/2022	Sample ID Change	As report issue -651102	Offsite Reservoir - A	651102
220606-26	26388919	As report issue -651102	21/12/2022	Sample ID Change	As report issue -651102	Offsite Reservoir - B	651102



CERTIFICATE OF ANALYSIS

SDG: 220606-26
Client Ref: P21-195

Report Number: 673033
Location: Offsite Reservoir

Superseded Report: 651102

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 July 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220622-97
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	653315
Order Number:	P3393

We received 11 samples on Wednesday June 22, 2022 and 11 of these samples were scheduled for analysis which was completed on Wednesday July 06, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220622-97
Client Ref.: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26472201	GW001-A		0.00 - 0.00	21/06/2022
26472195	GW014-A		0.00 - 0.00	21/06/2022
26472198	GW001-B		0.00 - 0.00	21/06/2022
26472192	GW014-B		0.00 - 0.00	21/06/2022
26472184	GW03D-A		0.00 - 0.00	21/06/2022
26472175	GW05D-A		0.00 - 0.00	21/06/2022
26472208	GW002D-B		0.00 - 0.00	21/06/2022
26472182	GW03D-B		0.00 - 0.00	21/06/2022
26472179	GW05D-B		0.00 - 0.00	21/06/2022
26472187	GWFB		0.00 - 0.00	21/06/2022
26472171	GWTB		0.00 - 0.00	21/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220622-97
Client Ref.: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type													
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	26472201	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472195	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472198	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472192	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472184	GW03D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472175	GW05D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472208	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472182	GW03D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW													
	26472179	GW05D-B		0.00 - 0.00	500ml Plastic (ALE227)	GW													
	26472171	GWTB		0.00 - 0.00	0.5l glass bottle (ALE208)	GW													
PFAS Liquids	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220622-97
Client Ref.: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Customer Sample Ref.					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		GW001-A	GW014-A	GW001-B	GW014-B	GW03D-A	GW05D-A
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<20	<20	<20	<20	<20
8:2 FTS (39108-34-4)	<2 ng/l	TM337	59.1	<20	52.2	<20	<20	<20
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<200	<200	<200	<200	<200
PFBA (375-22-4)	<2 ng/l	TM337	<20	<20	<20	<20	<20	13.2
PFPA (2706-90-3)	<1 ng/l	TM337	53.2	<10	44.5	<10	<10	28.9
PFHxA (307-24-4)	<1 ng/l	TM337	60.3	<10	52	<10	<10	32
PFBS (375-73-5)	<1 ng/l	TM337	13.8	<10	12.6	<10	<10	9.08
PFHpA (375-85-9)	<1 ng/l	TM337	31.8	<10	28.9	<10	<10	9.3
6:2 FTS (27619-97-2)	<1 ng/l	TM337	105	<10	94.3	<10	<10	20.3
PFOA (335-67-1)	<0.65 ng/l	TM337	27	<6.5	23	<6.5	<6.5	3.75
PFHxS (355-46-4)	<1 ng/l	TM337	53.5	<10	48.6	<10	<10	16.2
PFNA (375-95-1)	<1 ng/l	TM337	<10	<10	<10	<10	<10	1.8
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<10	<10	<10	<10	1.09
PFDA (335-76-2)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	72.8	<6.5	61.9	<6.5	10.6	1.67
Branched PFOS	<0.65 ng/l	TM337	65.3	<6.5	55.9	<6.5	<6.5	12.2
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<20	<20	<20	<20	<2
PFDS (335-77-3)	<1 ng/l	TM337	<10	<10	<10	<10	<10	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	<10	<10	<10	<10	5.09
Total PFOS	<0.65 ng/l	TM337	138	<6.5	118	<6.5	10.6	13.8
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<2
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<1
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<10	<10	<10	<10	<1
PFDoS (79780-39-5)	<1 ng/l	TM433	<20	<20	<20	<20	<20	<1
PFTrDS (174675-49-1)	<1 ng/l	TM433	<20	<20	<20	<20	<20	<1



CERTIFICATE OF ANALYSIS

Validated

SDG: 220622-97
Client Ref.: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220622-97
Client Ref.: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26472201	26472195	26472198	26472192	26472184	26472175	26472208	26472182	26472179	26472187
Customer Sample Ref.	GW001-A	GW014-A	GW001-B	GW014-B	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	06-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022
PFAS Liquids (EU specified)	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	06-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022	05-Jul-2022

Lab Sample No(s)	26472171
Customer Sample Ref.	GWTB
AGS Ref.	
Depth	0.00 - 0.00
Type	Ground Water
PFAS Liquids	05-Jul-2022
PFAS Liquids (EU specified)	05-Jul-2022



CERTIFICATE OF ANALYSIS

SDG: 220622-97
Client Ref: P21-195

Report Number: 653315
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 13 July 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220627-19
Your Reference: P21-195
Location: Castlemoate
Report No: 654076
Order Number: Z3393

This report has been revised and directly supersedes 653967 in its entirety.

We received 14 samples on Monday June 27, 2022 and 14 of these samples were scheduled for analysis which was completed on Tuesday July 12, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-19
Client Ref.: P21-195

Report Number: 654076
Location: Castlemoate

Superseded Report: 653967

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26495536	BH1A		0.00 - 0.00	24/06/2022
26495568	BH5A		0.00 - 0.00	24/06/2022
26495539	BH6A		0.00 - 0.00	24/06/2022
26495544	BH7A		0.00 - 0.00	24/06/2022
26495560	BH9A		0.00 - 0.00	24/06/2022
26495565	BH1B		0.00 - 0.00	24/06/2022
26495570	BH5B		0.00 - 0.00	24/06/2022
26495541	BH6B		0.00 - 0.00	24/06/2022
26495547	BH7B		0.00 - 0.00	24/06/2022
26495563	BH9B		0.00 - 0.00	24/06/2022
26495555	BH8DA		0.00 - 0.00	24/06/2022
26495557	BH8DB		0.00 - 0.00	24/06/2022
26495549	BH8SA		0.00 - 0.00	24/06/2022
26495553	BH8SB		0.00 - 0.00	24/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-19
Client Ref.: P21-195

Report Number: 654076
Location: Castlemoate

Superseded Report: 653967

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-19
Client Ref.: P21-195

Report Number: 654076
Location: Castlemoate

Superseded Report: 653967

Test Completion Dates

Lab Sample No(s)	26495536	26495568	26495539	26495544	26495560	26495565	26495570	26495541	26495547	26495563
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	06-Jul-2022	12-Jul-2022	01-Jul-2022	06-Jul-2022						
PFAS Liquids (EU specified)	06-Jul-2022	12-Jul-2022	01-Jul-2022	06-Jul-2022						

Lab Sample No(s)	26495555	26495557	26495549	26495553
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	04-Jul-2022	06-Jul-2022	06-Jul-2022	06-Jul-2022
PFAS Liquids (EU specified)	04-Jul-2022	06-Jul-2022	06-Jul-2022	06-Jul-2022



CERTIFICATE OF ANALYSIS

SDG: 220627-19
Client Ref: P21-195

Report Number: 654076
Location: Castlemoate

Superseded Report: 653967

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	30 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220922-79
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	663098
Order Number:	P3393

We received 22 samples on Thursday September 22, 2022 and 21 of these samples were scheduled for analysis which was completed on Friday September 30, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26909466	Gardeners Well A		0.00 - 0.00	20/09/2022
26909470	Gardeners Well B		0.00 - 0.00	20/09/2022
26909448	GW001-A		0.00 - 0.00	20/09/2022
26909493	GW004-A		0.00 - 0.00	20/09/2022
26909488	GW007-A		0.00 - 0.00	20/09/2022
26909483	GW008-A		0.00 - 0.00	20/09/2022
26909453	GW014-A		0.00 - 0.00	20/09/2022
26909450	GW001-B		0.00 - 0.00	20/09/2022
26909497	GW004-B		0.00 - 0.00	20/09/2022
26909490	GW007-B		0.00 - 0.00	20/09/2022
26909486	GW008-B		0.00 - 0.00	20/09/2022
26909436	GW013-B	A		
26909443	GW002D-A		0.00 - 0.00	20/09/2022
26909440	GW03D-A		0.00 - 0.00	20/09/2022
26909479	GW05D-A		0.00 - 0.00	20/09/2022
26909446	GW002D-B		0.00 - 0.00	20/09/2022
26909463	GW03D-B		0.00 - 0.00	20/09/2022
26909468	GW05D-B		0.00 - 0.00	20/09/2022
26909456	GWFB		0.00 - 0.00	20/09/2022
26909458	GWTB		0.00 - 0.00	20/09/2022
26909473	SWML5B-A		0.00 - 0.00	20/09/2022
26909475	SWML5B-B		0.00 - 0.00	20/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26909475	SWML 5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X
26909473	SWML 5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB
# ISO17025 accredited.	M mCERTS accredited.		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
aq Aqueous / settled sample.	dis.filter Dissolved / filtered sample.	Depth (m)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
tot.unfilt Total / unfiltered sample.	Subcontracted - refer to subcontractor report for accreditation status.	Sample Type	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Trigger breach confirmed	Date Sampled	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022
1-4*% Sample deviation (see appendix)	AGS Reference	Date Received	220922-79	220922-79	220922-79	220922-79	220922-79	220922-79
	Lab Sample No.(s)	SDG Ref	26909440	26909479	26909446	26909463	26909468	26909456
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	<2	12	<20	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<20	<20	<200	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	2180	<14	<34	903	<14	<5
PFPA (2706-90-3)	<1 ng/l	TM337	14.7	15.8	55.8	<10	15.3	<1
PFHxA (307-24-4)	<1 ng/l	TM337	<10	23.2	59.6	<10	21.6	<1
PFBS (375-73-5)	<1 ng/l	TM337	<10	10.4	5.37	<10	9.3	<1
PFHpA (375-85-9)	<1 ng/l	TM337	<10	5.84	71.4	<10	5.53	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	6.78	35.8	<10	6.77	<1
PFOA (335-67-1)	<0.65 ng/l	TM337	<17	2	33.6	<13.5	2.03	<0.65
PFHxS (355-46-4)	<1 ng/l	TM337	<10	5.72	30.1	<10	5.39	<1
PFNA (375-95-1)	<1 ng/l	TM337	<10	<1	8.7	<10	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<1	2.53	<10	<1	<1
PFDA (335-76-2)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	11.2	<0.65	49.8	9.36	<1	<0.65
Branched PFOS	<0.65 ng/l	TM337	<6.5	<2.5	62.4	<6.5	<2.5	<0.65
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
PFDS (335-77-3)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	3.85	2.88	<10	3.77	<1
Total PFOS	<0.65 ng/l	TM337	11.2	<2.5	112	9.36	<2.5	<0.65
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<1	<1	<10	<1	<1
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26909466	26909470	26909448	26909493	26909488	26909483	26909453	26909450	26909497	26909490
Customer Sample Ref.	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909486	26909443	26909440	26909479	26909446	26909463	26909468	26909456	26909458	26909473
Customer Sample Ref.	GW008-B	GW002D-A	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB	GWTB	SWML5B-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909475
Customer Sample Ref.	SWML5B-B
AGS Ref.	
Depth	0.00 - 0.00
Type	Surface Water
PFAS Liquids	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022



CERTIFICATE OF ANALYSIS

SDG: 220922-79
Client Ref: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	30 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220922-80
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	663099
Order Number:	P3393

We received 14 samples on Thursday September 22, 2022 and 14 of these samples were scheduled for analysis which was completed on Friday September 30, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-80
Client Ref.: P21-195

Report Number: 663099
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26909529	BH1A		0.00 - 0.00	20/09/2022
26909553	BH5A		0.00 - 0.00	20/09/2022
26909559	BH6A		0.00 - 0.00	20/09/2022
26909567	BH7A		0.00 - 0.00	20/09/2022
26909545	BH9A		0.00 - 0.00	20/09/2022
26909550	BH1B		0.00 - 0.00	20/09/2022
26909555	BH5B		0.00 - 0.00	20/09/2022
26909563	BH6B		0.00 - 0.00	20/09/2022
26909571	BH7B		0.00 - 0.00	20/09/2022
26909547	BH9B		0.00 - 0.00	20/09/2022
26909538	BH8DA		0.00 - 0.00	20/09/2022
26909542	BH8DB		0.00 - 0.00	20/09/2022
26909573	BH8SA		0.00 - 0.00	20/09/2022
26909535	BH8SB		0.00 - 0.00	20/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-80
Client Ref.: P21-195

Report Number: 663099
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type											
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	26909529	BH1A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909553	BH5A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909559	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909567	BH7A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909545	BH9A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909550	BH1B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909555	BH5B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909563	BH6B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909571	BH7B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	26909547	BH9B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
26909538	BH8DA		0.00 - 0.00	500ml Plastic (ALE208)	GW												
26909542	BH8DB		0.00 - 0.00	500ml Plastic (ALE208)	GW												
26909573	BH8SA		0.00 - 0.00	500ml Plastic (ALE208)	GW												
26909535	BH8SB		0.00 - 0.00	500ml Plastic (ALE208)	GW												
PFAS Liquids	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-80
Client Ref.: P21-195

Report Number: 663099
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-80
Client Ref.: P21-195

Report Number: 663099
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26909529	26909553	26909559	26909567	26909545	26909550	26909555	26909563	26909571	26909547
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	30-Sep-2022	26-Sep-2022	27-Sep-2022							
PFAS Liquids (EU specified)	27-Sep-2022	26-Sep-2022	27-Sep-2022							

Lab Sample No(s)	26909538	26909542	26909573	26909535
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	27-Sep-2022	27-Sep-2022	27-Sep-2022	30-Sep-2022
PFAS Liquids (EU specified)	27-Sep-2022	27-Sep-2022	27-Sep-2022	27-Sep-2022



CERTIFICATE OF ANALYSIS

SDG: 220922-80
Client Ref: P21-195

Report Number: 663099
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Deeside
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 221117-114
Your Reference: P21-195
Location: Dublin Airport
Report No: 670800
Order Number: Z3689

This report has been revised and directly supersedes 670128 in its entirety.

We received 25 samples on Thursday November 17, 2022 and 25 of these samples were scheduled for analysis which was completed on Tuesday November 29, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176024	ASFB		0.00 - 0.00	15/11/2022
27176026	ASTB1		0.00 - 0.00	15/11/2022
27176043	ASTB2		0.00 - 0.00	16/11/2022
27176032	Gardeners Well A		0.00 - 0.00	15/11/2022
27176037	Gardeners Well B		0.00 - 0.00	15/11/2022
27176014	GW001-A		0.00 - 0.00	15/11/2022
27176063	GW004-A		0.00 - 0.00	15/11/2022
27176059	GW007-A		0.00 - 0.00	15/11/2022
27176053	GW008-A		0.00 - 0.00	15/11/2022
27176018	GW014-A		0.00 - 0.00	15/11/2022
27176016	GW001-B		0.00 - 0.00	15/11/2022
27176066	GW004-B		0.00 - 0.00	15/11/2022
27176061	GW007-B		0.00 - 0.00	15/11/2022
27176056	GW008-B		0.00 - 0.00	15/11/2022
27176020	GW014-B		0.00 - 0.00	15/11/2022
27176009	GW002D-A		0.00 - 0.00	15/11/2022
27176006	GW03D-A		0.00 - 0.00	15/11/2022
27176051	GW05D-A		0.00 - 0.00	15/11/2022
27176046	GW015D-A		0.00 - 0.00	16/11/2022
27176011	GW002D-B		0.00 - 0.00	15/11/2022
27176029	GW03D-B		0.00 - 0.00	15/11/2022
27176035	GW05D-B		0.00 - 0.00	15/11/2022
27176048	GW015D-B		0.00 - 0.00	16/11/2022
27176039	SWML5B-A		0.00 - 0.00	15/11/2022
27176041	SWML5B-B		0.00 - 0.00	15/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	27176046	GW015D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176051	GW05D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176006	GW03D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176009	GW002D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176020	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176056	GW008-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176061	GW007-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176066	GW004-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176016	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176018	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176053	GW008-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176059	GW007-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176063	GW004-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176014	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176037	Gardeners Well B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	27176032	Gardeners Well A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	27176043	ASTB2		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176026	ASTB1		0.00 - 0.00	500ml Plastic (ALE208)	GW
	27176024	ASFB		0.00 - 0.00	500ml Plastic (ALE208)	GW
PFAS Liquids	All	NDPs: 0 Tests: 25				
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 25				

27176041	SWMML5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176039	SWMML5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176048	GW015D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176035	GW05D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176029	GW03D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176011	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend			Customer Sample Ref.						
# ISO17025 accredited.			GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A	GW05D-A	
M mCERTS accredited.			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
aq Aqueous / settled sample.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
diss.filt Dissolved / filtered sample.			15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	
tot.unfilt Total / unfiltered sample.			17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	
* Subcontracted - refer to subcontractor report for accreditation status.			221117-114	221117-114	221117-114	221117-114	221117-114	221117-114	
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			27176061	27176056	27176020	27176009	27176006	27176051	
(F) Trigger breach confirmed			Lab Sample No.(s)						
1-4*\$@Sample deviation (see appendix)			AGS Reference						
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<2	<2	<2	<4	<2	
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<2	<2	6.39	<4	<2	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<20	<20	<20	<40	<20	
PFBA (375-22-4)	<2 ng/l	TM337	<10	8.43	7.92	<28	<4	13.5	
			#	#	#	#	#	#	
PFPA (2706-90-3)	<1 ng/l	TM337	21.4	3.06	4.17	87.1	<2	21.3	
			#	#	#	#	#	#	
PFHxA (307-24-4)	<1 ng/l	TM337	26.3	5.31	2.32	59.3	<2	26.3	
			#	#	#	#	#	#	
PFBS (375-73-5)	<1 ng/l	TM337	9.03	3.95	<1	3.7	<2	9.53	
			#	#	#	#	#	#	
PFHpA (375-85-9)	<1 ng/l	TM337	8.47	1.82	1.03	82	<2	7.17	
			#	#	#	#	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM337	12	<1	<1	9.31	2.4	6.97	
			#	#	#	#	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM337	7.66	2.58	0.702	36.8	1.97	2.31	
			#	#	#	#	#	#	
PFHxS (355-46-4)	<1 ng/l	TM337	30.5	19.1	<1	27.2	2.69	5.46	
			#	#	#	#	#	#	
PFNA (375-95-1)	<1 ng/l	TM337	<5	<1	<1	9.11	<2	<1	
			#	#	#	#	#	#	
PFHpS (375-92-8)	<1 ng/l	TM337	<5	1.01	<1	2.6	<2	<1	
			#	#	#	#	#	#	
PFDA (335-76-2)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	5.92	30	<0.65	46.9	4.97	<0.65	
			#	#	#	#	#	#	
Branched PFOS	<0.65 ng/l	TM337	7.35	16.8	<0.65	43.2	2.99	<0.65	
			#	#	#	#	#	#	
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<2	<2	<2	<4	<2	
			#	#	#	#	#	#	
PFDS (335-77-3)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM337	5.51	2.78	<1	2.57	<2	4.02	
			#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM337	13.3	46.8	<0.65	90	7.96	<0.65	
			#	#	#	#	#	#	
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	
			#	#	#	#	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend			Customer Sample Ref.		GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B	SWML5B-A
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Sample Type		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)
aq	Aqueous / settled sample.		Date Sampled		16/11/2022	15/11/2022	15/11/2022	15/11/2022	16/11/2022	15/11/2022
diss.filt	Dissolved / filtered sample.		Sample Time							
tot.unfilt	Total / unfiltered sample.		Date Received		17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		221117-114	221117-114	221117-114	221117-114	221117-114	221117-114
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		27176046	27176011	27176029	27176035	27176048	27176039
	(F) Trigger breach confirmed		AGS Reference							
	1-4*\$@Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<2	<20	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	3.76	<20	<2	<2	3.29	10.9	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<20	<200	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	105	17.6	<20	10.6	136	60.4		
			#	#	#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	427	80.4	<10	18.5	469	86.7		
			#	#	#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	165	68	<10	22.6	190	78.8		
			#	#	#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<10	4.86	<10	8.67	<1	12.3		
			#	#	#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	43.9	76.8	<10	5.75	62	63.2		
			#	#	#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	13.6	12.2	<10	5.96	14.1	45.6		
			#	#	#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	13.3	38.1	<6.5	1.89	12	109		
			#	#	#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	<10	32.4	<10	4.54	1.39	171		
			#	#	#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<10	8.12	<10	<1	2.12	36.2		
			#	#	#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<10	2.23	<10	<1	<1	8.7		
			#	#	#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<10	<1	<10	<1	<1	1.7		
			#	#	#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<6.5	43.2	8.4	<0.65	1.75	138		
			#	#	#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	<6.5	54.7	<6.5	<0.65	1.24	147		
			#	#	#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<2	<20	<2	<2	<2		
			#	#	#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	2.93	<10	3.53	<1	13.8		
			#	#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	<6.5	97.8	8.4	<0.65	2.98	285		
			#	#	#	#	#	#	#	#
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

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SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
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Test Completion Dates

Lab Sample No(s)	27176024	27176026	27176043	27176032	27176037	27176014	27176063	27176059	27176053	27176018
Customer Sample Ref.	ASFB	ASTB1	ASTB2	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176016	27176066	27176061	27176056	27176020	27176009	27176006	27176051	27176046	27176011
Customer Sample Ref.	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176029	27176035	27176048	27176039	27176041
Customer Sample Ref.	GW03D-B	GW06D-B	GW015D-B	SWML5B-A	SWML5B-B
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water
PFAS Liquids	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022
PFAS Liquids (EU specified)	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
221117-114	27176046	GW016-A	02/12/2022	Sample ID Change	GW016-A	GW015D-A	641549
221117-114	27176048	GW016-B	02/12/2022	Sample ID Change	GW016-B	GW015D-B	641549



CERTIFICATE OF ANALYSIS

SDG: 221117-114
Client Ref: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 November 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	221117-121
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	669797
Order Number:	Z3689

We received 17 samples on Thursday November 17, 2022 and 17 of these samples were scheduled for analysis which was completed on Friday November 25, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-121
Client Ref.: P21-195

Report Number: 669797
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176273	BH1A		0.00 - 0.00	15/11/2022
27176302	BH5A		0.00 - 0.00	15/11/2022
27176309	BH6A		0.00 - 0.00	15/11/2022
27176315	BH7A		0.00 - 0.00	15/11/2022
27176285	BH9A		0.00 - 0.00	15/11/2022
27176300	BH1B		0.00 - 0.00	15/11/2022
27176306	BH5B		0.00 - 0.00	15/11/2022
27176312	BH6B		0.00 - 0.00	15/11/2022
27176319	BH7B		0.00 - 0.00	15/11/2022
27176287	BH9B		0.00 - 0.00	15/11/2022
27176280	BH8DA		0.00 - 0.00	15/11/2022
27176282	BH8DB		0.00 - 0.00	15/11/2022
27176321	BH8SA		0.00 - 0.00	15/11/2022
27176275	BH8SB		0.00 - 0.00	15/11/2022
27176291	CMFB		0.00 - 0.00	15/11/2022
27176294	CMTB1		0.00 - 0.00	15/11/2022
27176298	CMTB2		0.00 - 0.00	15/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-121
Client Ref.: P21-195

Report Number: 669797
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-121
Client Ref.: P21-195

Report Number: 669797
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27176273	27176302	27176309	27176315	27176285	27176300	27176306	27176312	27176319	27176287
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	25-Nov-2022									
PFAS Liquids (EU specified)	25-Nov-2022									

Lab Sample No(s)	27176280	27176282	27176321	27176275	27176291	27176294	27176298
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB	CMFB	CMTB1	CMTB2
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022
PFAS Liquids (EU specified)	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022



CERTIFICATE OF ANALYSIS

SDG: 221117-121
Client Ref: P21-195

Report Number: 669797
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Post Certification Report

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11
Attention: Declan Morrisey

Date:	21/12/2022	Location:	Offsite Reservoir
Customer:	Fehily Timoney	No. Of Samples Received:	2
Your Reference:	P21-195	Samples Scheduled:	2

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Offsite Reservoir

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176241	Offsite Reservoir - A		0.00 - 0.00	16/11/2022
27176243	Offsite Reservoir - B		0.00 - 0.00	16/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Offsite Reservoir

Results Legend

- X Test
- N No Determination Possible

Lab Sample No(s)					
	27176243	27176241			
Customer Sample Reference	Offsite Reservoir - B				
AGS Reference					
Depth (m)	0.00 - 0.00				
Container	500ml Plastic				
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X	X	

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Offsite Reservoir

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Post Certification Report



Customer : Fehily Timoney
Client Reference : P21-195

Location : Offsite Reservoir

Test Completion Dates

Lab Sample No(s)	27176241	27176243
Customer Sample Ref.	Offsite Reservo ir - A	Offsite Reservo ir - B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	SURFACE_W	SURFACE_W
PFAS Liquids	25-Nov-2022	25-Nov-2022
PFAS Liquids (EU specified)	25-Nov-2022	25-Nov-2022



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Offsite Reservoir

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 February 2023
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	230220-46
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	680185
Order Number:	Z3788

We received 20 samples on Monday February 20, 2023 and 20 of these samples were scheduled for analysis which was completed on Tuesday February 28, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-46
Client Ref.: P21-195

Report Number: 680185
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27578802	GW001-A		0.00 - 0.00	14/02/2023
27578793	GW004-A		0.00 - 0.00	14/02/2023
27578789	GW007-A		0.00 - 0.00	14/02/2023
27578785	GW008-A		0.00 - 0.00	14/02/2023
27578806	GW014-A		0.00 - 0.00	14/02/2023
27578804	GW001-B		0.00 - 0.00	14/02/2023
27578798	GW004-B		0.00 - 0.00	14/02/2023
27578791	GW007-B		0.00 - 0.00	14/02/2023
27578787	GW008-B		0.00 - 0.00	14/02/2023
27578808	GW014-B		0.00 - 0.00	14/02/2023
27578796	GW002D-A		0.00 - 0.00	14/02/2023
27578773	GW03D-A		0.00 - 0.00	14/02/2023
27578783	GW05D-A		0.00 - 0.00	14/02/2023
27578812	GW015D-A		0.00 - 0.00	14/02/2023
27578800	GW002D-B		0.00 - 0.00	14/02/2023
27578810	GW03D-B		0.00 - 0.00	14/02/2023
27578779	GW05D-B		0.00 - 0.00	14/02/2023
27578775	GW015D-B		0.00 - 0.00	14/02/2023
27578777	GWFB		0.00 - 0.00	14/02/2023
27578781	GWTB		0.00 - 0.00	14/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

27578781	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-46
Client Ref.: P21-195

Report Number: 680185
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Customer Sample Ref.					
# ISO17025 accredited.	M mCERTS accredited.		GW05D-A	GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B
aq Aqueous / settled sample.	dis.s.filter Dissolved / filtered sample.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfiltr Total / unfiltered sample.	Subcontracted - refer to subcontractor report for accreditation status.	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Trigger breach confirmed	Date Sampled	14/02/2023	14/02/2023	14/02/2023	14/02/2023	14/02/2023	14/02/2023
1-4* Sample deviation (see appendix)	AGS Reference	Date Received	20/02/2023	20/02/2023	20/02/2023	20/02/2023	20/02/2023	20/02/2023
	Lab Sample No.(s)	SDG Ref	230220-46	230220-46	230220-46	230220-46	230220-46	230220-46
	AGS Reference		27578783	27578812	27578800	27578810	27578779	27578775
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<10	<2	<20	<20	<10
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	<10	4.23	<20	<20	<10
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<100	<20	<200	<200	<100
PFBA (375-22-4)	<2 ng/l	TM337	<20	24.7	31.7	<20	<20	19.2
PFPA (2706-90-3)	<1 ng/l	TM337	21.2	48.5	54	<10	22.4	46.8
PFHxA (307-24-4)	<1 ng/l	TM337	31.1	22.4	49	<10	33.2	21.6
PFBS (375-73-5)	<1 ng/l	TM337	11	<5	2.53	<10	<10	<5
PFHpA (375-85-9)	<1 ng/l	TM337	<10	7.28	81.4	<10	20.6	7.43
6:2 FTS (27619-97-2)	<1 ng/l	TM337	23.6	5.86	13.6	<10	24.3	6.86
PFOA (335-67-1)	<0.65 ng/l	TM337	6.73	<3.25	25.5	<6.5	13.8	<3.25
PFHxS (355-46-4)	<1 ng/l	TM337	19.8	<5	21.1	<10	18.9	<5
PFNA (375-95-1)	<1 ng/l	TM337	<10	<5	6.06	<10	<10	<5
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<5	2	<10	<10	<5
PFDA (335-76-2)	<1 ng/l	TM337	<10	<5	<1	<10	<10	<5
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<6.5	<3.25	27.9	<6.5	<6.5	<3.25
Branched PFOS	<0.65 ng/l	TM337	20.7	<3.25	38.7	<6.5	16.3	<3.25
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<5	<1	<10	<10	<5
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<5	<1	<10	<10	<5
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<10	<2	<20	<20	<10
PFDS (335-77-3)	<1 ng/l	TM337	<10	<5	<1	<10	<10	<5
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	<5	1.94	<10	<10	<5
Total PFOS	<0.65 ng/l	TM337	20.7	<3.25	66.6	<6.5	16.3	<3.25
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<5	<1	<10	<10	<5
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<5	<1	<10	<10	<5
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<5	<1	<10	<10	<5
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<5	<1	<10	<10	<5
PFTrDS (174675-49-1)	<1 ng/l	TM433	<10	<5	<1	<10	<10	<5



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-46
Client Ref.: P21-195

Report Number: 680185
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-46
Client Ref.: P21-195

Report Number: 680185
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27578802	27578793	27578789	27578785	27578806	27578804	27578798	27578791	27578787	27578808
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	24-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	27-Feb-2023	27-Feb-2023
PFAS Liquids (EU specified)	24-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	27-Feb-2023	27-Feb-2023

Lab Sample No(s)	27578796	27578773	27578783	27578812	27578800	27578810	27578779	27578775	27578777	27578781
Customer Sample Ref.	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B	GWFB	GWTB
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	27-Feb-2023	23-Feb-2023	23-Feb-2023							
PFAS Liquids (EU specified)	27-Feb-2023	23-Feb-2023	23-Feb-2023							



CERTIFICATE OF ANALYSIS

SDG: 230220-46
Client Ref: P21-195

Report Number: 680185
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 March 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230220-48
Your Reference: P21-195
Location: Dublin Airport
Report No: 680379
Order Number: Z3788

We received 14 samples on Monday February 20, 2023 and 14 of these samples were scheduled for analysis which was completed on Wednesday March 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-48
Client Ref.: P21-195

Report Number: 680379
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27578902	BH1A		0.00 - 0.00	14/02/2023
27578928	BH5A		0.00 - 0.00	14/02/2023
27578904	BH6A		0.00 - 0.00	14/02/2023
27578908	BH7A		0.00 - 0.00	14/02/2023
27578922	BH9A		0.00 - 0.00	14/02/2023
27578926	BH1B		0.00 - 0.00	14/02/2023
27578930	BH5B		0.00 - 0.00	14/02/2023
27578906	BH6B		0.00 - 0.00	14/02/2023
27578911	BH7B		0.00 - 0.00	14/02/2023
27578924	BH9B		0.00 - 0.00	14/02/2023
27578918	BH8DA		0.00 - 0.00	14/02/2023
27578920	BH8DB		0.00 - 0.00	14/02/2023
27578914	BH8SA		0.00 - 0.00	14/02/2023
27578916	BH8SB		0.00 - 0.00	14/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-48
Client Ref.: P21-195

Report Number: 680379
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type											
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	27578902	BH1A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578928	BH5A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578904	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578908	BH7A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578922	BH9A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578926	BH1B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578930	BH5B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578906	BH6B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578911	BH7B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	27578924	BH9B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
27578918	BH8DA		0.00 - 0.00	500ml Plastic (ALE208)	GW												
27578920	BH8DB		0.00 - 0.00	500ml Plastic (ALE208)	GW												
27578914	BH8SA		0.00 - 0.00	500ml Plastic (ALE208)	GW												
27578916	BH8SB		0.00 - 0.00	500ml Plastic (ALE208)	GW												
PFAS Liquids	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-48
Client Ref.: P21-195

Report Number: 680379
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-48
Client Ref.: P21-195

Report Number: 680379
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27578902	27578928	27578904	27578908	27578922	27578926	27578930	27578906	27578911	27578924
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	28-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	28-Feb-2023
PFAS Liquids (EU specified)	27-Feb-2023	27-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	28-Feb-2023	27-Feb-2023	27-Feb-2023	28-Feb-2023	28-Feb-2023

Lab Sample No(s)	27578918	27578920	27578914	27578916
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	28-Feb-2023	27-Feb-2023	27-Feb-2023	01-Mar-2023
PFAS Liquids (EU specified)	28-Feb-2023	27-Feb-2023	27-Feb-2023	01-Mar-2023



CERTIFICATE OF ANALYSIS

SDG: 230220-48
Client Ref: P21-195

Report Number: 680379
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 28 February 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230220-50
Your Reference: P21-195
Location: Dublin Airport
Report No: 680186
Order Number: Z3788

We received 2 samples on Monday February 20, 2023 and 2 of these samples were scheduled for analysis which was completed on Tuesday February 28, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-50
Client Ref.: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27578983	Gardeners Well A		0.00 - 0.00	15/02/2023
27578985	Gardeners Well B		0.00 - 0.00	15/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-50
Client Ref.: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	27578983	27578985	
	Customer Sample Reference	Gardeners Well A	Gardeners Well B	
	AGS Reference			
	Depth (m)	0.00 - 0.00	0.00 - 0.00	
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)	
	Sample Type	SW	SW	
PFAS Liquids	All	NDPs: 0 Tests: 2	X X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-50
Client Ref.: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Gardeners Well A	Gardeners Well B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		15/02/2023	15/02/2023			
diss.filt	Dissolved / filtered sample.		20/02/2023	20/02/2023			
tot.unfilt	Total / unfiltered sample.		230220-50	230220-50			
	* Subcontracted - refer to subcontractor report for accreditation status.		27578983	27578985			
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
	(F) Trigger breach confirmed						
	1-4*§@ Sample deviation (see appendix)						
Component	LOD/Units		Method				
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2			
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	<2			
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20			
PFBA (375-22-4)	<2 ng/l	TM337	<2	<2			
			#	#			
PFPA (2706-90-3)	<1 ng/l	TM337	<1	<1			
			#	#			
PFHxA (307-24-4)	<1 ng/l	TM337	<1	<1			
			#	#			
PFBS (375-73-5)	<1 ng/l	TM337	<1	<1			
			#	#			
PFHpA (375-85-9)	<1 ng/l	TM337	<1	<1			
			#	#			
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1	<1			
			#	#			
PFOA (335-67-1)	<0.65 ng/l	TM337	<0.65	<0.65			
			#	#			
PFHxS (355-46-4)	<1 ng/l	TM337	<1	<1			
			#	#			
PFNA (375-95-1)	<1 ng/l	TM337	<1	<1			
			#	#			
PFHpS (375-92-8)	<1 ng/l	TM337	<1	<1			
			#	#			
PFDA (335-76-2)	<1 ng/l	TM337	<1	<1			
			#	#			
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65	<0.65			
			#	#			
Branched PFOS	<0.65 ng/l	TM337	<0.65	<0.65			
			#	#			
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1			
			#	#			
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1			
			#	#			
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2			
			#	#			
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1			
			#	#			
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	<1			
			#	#			
Total PFOS	<0.65 ng/l	TM337	<0.65	<0.65			
			#	#			
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1			
			#	#			
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1			
			#	#			
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1			
			#	#			
PFDoS (79780-39-5)	<1 ng/l	TM433	<1	<1			
			#	#			
PFTrDS (174675-49-1)	<1 ng/l	TM433	<1	<1			
			#	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-50
Client Ref.: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-50
Client Ref.: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27578983	27578985
Customer Sample Ref.	Gardeners Well A	Gardeners Well B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	27-Feb-2023	28-Feb-2023
PFAS Liquids (EU specified)	27-Feb-2023	28-Feb-2023



CERTIFICATE OF ANALYSIS

SDG: 230220-50
Client Ref: P21-195

Report Number: 680186
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 February 2023
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	230220-49
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	679916
Order Number:	Z3164

We received 2 samples on Monday February 20, 2023 and 2 of these samples were scheduled for analysis which was completed on Friday February 24, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-49
Client Ref.: P21-195

Report Number: 679916
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27578935	Offsite Reservoir A		0.00 - 0.00	13/02/2023
27578937	Offsite Reservoir B		0.00 - 0.00	13/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-49
Client Ref.: P21-195

Report Number: 679916
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	27578935	27578937		
	Customer Sample Reference	Offsite Reservoir A	Offsite Reservoir B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-49
Client Ref.: P21-195

Report Number: 679916
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-49
Client Ref.: P21-195

Report Number: 679916
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27578935	27578937
Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	24-Feb-2023	24-Feb-2023
PFAS Liquids (EU specified)	24-Feb-2023	24-Feb-2023



CERTIFICATE OF ANALYSIS

SDG: 230220-49
Client Ref: P21-195

Report Number: 679916
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
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Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 April 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230325-27
Your Reference: P21-195
Location: Dublin Airport
Report No: 684637
Order Number: Z3788

We received 48 samples on Friday March 24, 2023 and 48 of these samples were scheduled for analysis which was completed on Tuesday April 04, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27740077	GW11 A		0.00 - 0.00	21/03/2023
27740121	GW12 A		0.00 - 0.00	21/03/2023
27740163	GW13 A		0.00 - 0.00	21/03/2023
27740167	GW14 A		0.00 - 0.00	21/03/2023
27740173	GW15 A		0.00 - 0.00	21/03/2023
27740081	GW16 A		0.00 - 0.00	21/03/2023
27740085	GW17 A		0.00 - 0.00	21/03/2023
27740159	GW18 A		0.00 - 0.00	21/03/2023
27740129	GW19 A		0.00 - 0.00	21/03/2023
27740099	GW11 B		0.00 - 0.00	21/03/2023
27740143	GW12 B		0.00 - 0.00	21/03/2023
27740165	GW13 B		0.00 - 0.00	21/03/2023
27740169	GW14 B		0.00 - 0.00	21/03/2023
27740079	GW15 B		0.00 - 0.00	21/03/2023
27740083	GW16 B		0.00 - 0.00	21/03/2023
27740087	GW17 B		0.00 - 0.00	21/03/2023
27740161	GW18 B		0.00 - 0.00	21/03/2023
27740131	GW19 B		0.00 - 0.00	21/03/2023
27740139	GWFB		0.00 - 0.00	21/03/2023
27740089	GWMP5 A		0.00 - 0.00	22/03/2023
27740091	GWMP5 B		0.00 - 0.00	22/03/2023
27740137	GWTB		0.00 - 0.00	21/03/2023
27740093	P2 A		0.00 - 0.00	21/03/2023
27740097	P3 A		0.00 - 0.00	21/03/2023
27740103	P7 A		0.00 - 0.00	21/03/2023
27740107	P8 A		0.00 - 0.00	21/03/2023
27740095	P2 B		0.00 - 0.00	21/03/2023
27740101	P3 B		0.00 - 0.00	21/03/2023
27740105	P7 B		0.00 - 0.00	21/03/2023
27740109	P8 B		0.00 - 0.00	21/03/2023
27740147	R1 A		0.00 - 0.00	22/03/2023
27740151	R2 A		0.00 - 0.00	22/03/2023
27740149	R1 B		0.00 - 0.00	22/03/2023
27740153	R2 B		0.00 - 0.00	22/03/2023
27740135	SWFB		0.00 - 0.00	22/03/2023
27740119	SWML3 A		0.00 - 0.00	22/03/2023
27740115	SWML4 A		0.00 - 0.00	22/03/2023
27740155	SWML5(A) A		0.00 - 0.00	22/03/2023
27740125	SWML7(A) A		0.00 - 0.00	22/03/2023
27740157	SWML5(A) B		0.00 - 0.00	22/03/2023
27740127	SWML7(A) B		0.00 - 0.00	22/03/2023
27740123	SWML3 B		0.00 - 0.00	22/03/2023
27740117	SWML4 B		0.00 - 0.00	22/03/2023
27740111	SWML5(B) A		0.00 - 0.00	21/03/2023
27740141	SWML7(B) A		0.00 - 0.00	22/03/2023
27740113	SWML5(B) B		0.00 - 0.00	21/03/2023
27740145	SWML7(B) B		0.00 - 0.00	22/03/2023
27740133	SWTB		0.00 - 0.00	22/03/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

27740157	SWML5(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740125	SWML7(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740155	SWML5(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740115	SWML4 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740119	SWML3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740135	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740153	R2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740149	R1 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740151	R2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740147	R1 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740109	P8 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740105	P7 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740101	P3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740095	P2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740107	P8 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740103	P7 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740097	P3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740093	P2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740137	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
27740091	GWMP5 B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
27740089	GWMP5 A		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type											
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	27740127	SWMML7(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740123	SWMML 3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740117	SWMML 4 B		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740111	SWMML5(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740141	SWMML7(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740113	SWMML5(B) B		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740145	SWMML7(B) B		0.00 - 0.00	500ml Plastic (ALE208)	SW											
	27740133	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW											
PFAS Liquids	All	NDPs: 0 Tests: 48	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 48	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fltr Dissolved / filtered sample. tot.unfltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<20	<10	<20	<20	<20	<50
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<20	<10	206	<20	<20	<50
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<200	<100	<200	<200	<200	<500
PFBA (375-22-4)	<2 ng/l	TM337	<10	<20	<10	129	24	<90	#
PFPA (2706-90-3)	<1 ng/l	TM337	<5	<10	<5	378	16.3	<25	#
PFHxA (307-24-4)	<1 ng/l	TM337	<5	<10	<5	273	11.4	<25	#
PFBS (375-73-5)	<1 ng/l	TM337	<5	<10	<5	13.8	<10	<25	#
PFHpA (375-85-9)	<1 ng/l	TM337	<5	<10	<5	177	<10	<25	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<5	<10	<5	862	41.1	<25	#
PFOA (335-67-1)	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	79.4	8.29	<16.3	#
PFHxS (355-46-4)	<1 ng/l	TM337	<5	<10	<5	67.4	<10	<25	#
PFNA (375-95-1)	<1 ng/l	TM337	<5	<10	<5	15.3	<10	<25	#
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFDA (335-76-2)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	82	6.57	<16.3	#
Branched PFOS	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	24	<6.5	<16.3	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<20	<10	<20	<20	<50	#
PFDS (335-77-3)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
Total PFOS	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	106	6.57	<16.3	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	SWFB	SWML3 A
# ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M mCERTS accredited.		Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq Aqueous / settled sample.		Date Sampled	22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023
diss.filt Dissolved / filtered sample.		Sample Time						
tot.unfilt Total / unfiltered sample.		Date Received	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	230325-27	230325-27	230325-27	230325-27	230325-27	230325-27
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	27740147	27740151	27740149	27740153	27740135	27740119
(F) Trigger breach confirmed		AGS Reference						
1-4* @ Sample deviation (see appendix)								
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	7.67	13.7	10.7	12.7	<2	<7
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	14.1	19.4	13.2	23.7	<1	8.36
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	8.92	14.6	10.7	15.7	<1	6.79
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	3.81	10.6	4.37	10.7	<1	2.8
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	8.06	1.68	9.15	1.8	<1	2.29
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	2.3	4.2	2.59	3.92	<0.65	1.45
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	1.42	2.04	1.4	2.02	<1	<1
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	2.83	1.52	2.92	1.69	<0.65	1.62
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	1.61	1.44	1.57	1.57	<0.65	0.957
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	4.44	2.95	4.49	3.26	<0.65	2.58
			#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
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Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B	SWTB
# ISO17025 accredited.	M mCERTS accredited.							
aq Aqueous / settled sample.	aq Aqueous / filtered sample.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfilt Total / unfiltered sample.	tot.unfilt Total / unfiltered sample.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
* Subcontracted - refer to subcontractor report for accreditation status.		Date Sampled	22/03/2023	21/03/2023	22/03/2023	21/03/2023	22/03/2023	22/03/2023
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Sample Time						
(F) Trigger breach confirmed		Date Received	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023
1-4*\$@ Sample deviation (see appendix)		SDG Ref	230325-27	230325-27	230325-27	230325-27	230325-27	230325-27
		Lab Sample No.(s)	27740117	27740111	27740141	27740113	27740145	27740133
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	8.19	<2	6.23	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	<15	104	3.88	92.8	<3.5	<2
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	31.2	152	1.92	140	1.44	<1
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	19	137	1.41	121	1.39	<1
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<1	19.4	<1	18.2	<1	<1
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	9.18	135	<1	132	<1	<1
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	9.18	46.9	<1	43.5	<1	<1
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	3.78	173	1.08	185	1.38	<0.65
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	2.29	297	<1	266	<1	<1
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<1	47	<1	45	<1	<1
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<1	15.3	<1	15.7	<1	<1
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<1	1.5	<1	1.62	<1	<1
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	4.07	168	<0.65	153	<0.65	<0.65
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	3.14	160	<0.65	173	<0.65	<0.65
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	24.6	<1	22.4	<1	<1
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	7.2	327	<0.65	326	<0.65	<0.65
			#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

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SDG: 230325-27
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Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



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Test Completion Dates

Lab Sample No(s)	27740077	27740121	27740163	27740167	27740173	27740081	27740085	27740159	27740129	27740099
Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	04-Apr-2023	30-Mar-2023	30-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	04-Apr-2023	30-Mar-2023	30-Mar-2023

Lab Sample No(s)	27740143	27740165	27740169	27740079	27740083	27740087	27740161	27740131	27740139	27740089
Customer Sample Ref.	GW12 B	GW13 B	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	GWFB	GWMP5 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023

Lab Sample No(s)	27740091	27740137	27740093	27740097	27740103	27740107	27740095	27740101	27740105	27740109
Customer Sample Ref.	GWMP5 B	GWTB	P2 A	P3 A	P7 A	P8 A	P2 B	P3 B	P7 B	P8 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023

Lab Sample No(s)	27740147	27740151	27740149	27740153	27740135	27740119	27740115	27740155	27740125	27740157
Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	SWFB	SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023

Lab Sample No(s)	27740123	27740117	27740127	27740111	27740141	27740113	27740145	27740133
Customer Sample Ref.	SWML3 B	SWML4 B	SWML7(A) B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B	SWTB
AGS Ref.								
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023



CERTIFICATE OF ANALYSIS

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Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 July 2023
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	230602-85
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	696148
Order Number:	Z3893

This report has been revised and directly supersedes 695868 in its entirety.

We received 18 samples on Friday June 02, 2023 and 18 of these samples were scheduled for analysis which was completed on Wednesday July 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28093020	GW001-A		0.00 - 0.00	30/05/2023
28093110	GW004-A		0.00 - 0.00	30/05/2023
28093095	GW007-A		0.00 - 0.00	30/05/2023
28093077	GW008-A		0.00 - 0.00	30/05/2023
28093032	GW014-A		0.00 - 0.00	30/05/2023
28093026	GW001-B		0.00 - 0.00	30/05/2023
28093118	GW004-B		0.00 - 0.00	30/05/2023
28093103	GW007-B		0.00 - 0.00	30/05/2023
28093086	GW008-B		0.00 - 0.00	30/05/2023
28093040	GW014-B		0.00 - 0.00	30/05/2023
28093006	GW002D-A		0.00 - 0.00	30/05/2023
28092996	GW03D-A		0.00 - 0.00	30/05/2023
28093069	GW05D-A		0.00 - 0.00	30/05/2023
28093014	GW002D-B		0.00 - 0.00	30/05/2023
28093046	GW03D-B		0.00 - 0.00	30/05/2023
28093061	GW05D-B		0.00 - 0.00	30/05/2023
28093053	GWFB		0.00 - 0.00	30/05/2023
28093056	GWTB		0.00 - 0.00	30/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



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SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28093056 28093053 28093061 28093046 28093014 28093069 28092996 28093006 28093040 28093086 28093103 28093118 28093026 28093032 28093077 28093095 28093110 28093020	GWTR GWFB GW05D-B GW03D-B GW002D-B GW05D-A GW03D-A GW002D-A GW014-B GW008-B GW007-B GW004-B GW001-B GW014-A GW008-A GW007-A GW004-A GW001-A		0.00 - 0.00 0.00 - 0.00	500ml Plastic (ALE208) 500ml Plastic (ALE208)
PFAS Liquids	All					NDPs: 0 Tests: 18
						X X X X X X X X X X X X X X X X X X X



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093020	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093110	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093095	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093077	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093032	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093026
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	11.3	<2	14.2	4.63	9.97	12.4	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	34.3	5.19	24.1	2.71	13.7	32.7	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	8.26	<1	6.34	1.7	<1	6.09	#
PFHxA (307-24-4)	<1 ng/l	TM434	25.9	4.22	21.7	2.76	9.95	23.4	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	15.3	2.61	<1	<1	2.11	13	#
PFPeS (2706-91-4)	<1 ng/l	TM434	3.85	<1	2.85	<1	<1	2.79	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	37.8	<1	11.7	1.86	4.18	33.8	#
FBSA (30334-69-1)	<1 ng/l	TM434	1.56	<1	<1	1.28	<1	1.44	#
PFOA (335-67-1)	<0.65 ng/l	TM434	15.1	2.69	6.59	2	1.83	12.4	#
PFHxS (355-46-4)	<1 ng/l	TM434	42.2	6.66	26.1	13	<1	32.9	#
PFNA (375-95-1)	<1 ng/l	TM434	3.18	<1	<1	<1	<1	3.16	#
PFecHS (133201-07-7)	<1 ng/l	TM434	28.6	337	108	3.79	<1	24.1	#
PFHpS (375-92-8)	<1 ng/l	TM434	4.55	<1	<1	<1	<1	3.87	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	12.6	<2	<2	<2	<2	12.1	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	119	53.2	5.97	44.7	10.7	104	#
Branched PFOS	<0.65 ng/l	TM434	126	50.9	5.46	44.8	1.34	108	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*@\$ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093020	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093110	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093095	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093077	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093032	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093026
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	6.52	<1	<1	<1	1.66	<1	6.24
PFDaA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
Total PFOS	<0.65 ng/l	TM434	246	104	11.4	89.5	12	211	



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093118	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093103	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093086	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093040	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093006	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28092996					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	<20	#	11.1	#	3.83	#	9.07	#	24.3	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	<10	#	21.9	#	2.13	#	15.6	#	79.3	#	2.19	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<30	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<10	#	5.91	#	1.3	#	<1	#	2.49	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	<10	#	23.1	#	3.05	#	11.4	#	44.8	#	1.43	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<10	#	5.94	#	<1	#	2.39	#	52.8	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<10	#	2.97	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<50	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<10	#	12.3	#	1.58	#	4.4	#	<1	#	1.24	#
FBSA (30334-69-1)	<1 ng/l	TM434	<10	#	<1	#	1.46	#	<1	#	1.05	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	<6.5	#	6.02	#	1.98	#	1.73	#	22.9	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	<10	#	22.5	#	14.8	#	<1	#	22.9	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	3.99	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	309	#	113	#	4.04	#	<1	#	55.8	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	1.09	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<20	#	<2	#	<2	#	2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<50	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<50	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	55.4	#	6.54	#	49.9	#	11.2	#	53.2	#	2.23	#
Branched PFOS	<0.65 ng/l	TM434	55	#	6.16	#	49.7	#	1.16	#	53.3	#	1.68	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<20	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<10	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093118	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093103	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093086	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093040	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093006	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28092996
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<10	<1	1.91	<1	1.82	<1	
PFDaA (307-55-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFDS (335-77-3)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFTTrDA (72629-94-8)	<3 ng/l	TM434	<30	<3	<3	<3	<3	<3	
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFUnDS (749786-16-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFTeA (376-06-7)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
PFOSA (754-91-6)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFDoS (79780-39-5)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	
PFTTrDS (174675-49-1)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
PFHxDA (67905-19-5)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
MeFOSE (24448-09-7)	<10 ng/l	TM434	<100	<10	<10	<10	<10	<10	
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
EiFOSE (1691-99-2)	<10 ng/l	TM434	<100	<10	<10	<10	<10	<10	
PFODA (16517-11-6)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	
Total PFOS	<0.65 ng/l	TM434	110	12.7	99.6	12.4	107	3.91	



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB	GWTB
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093069	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093014	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093046	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093061	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093053	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093056
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	12.1	24.2	<20	<20	<2	<2	
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
PFPA (2706-90-3)	<1 ng/l	TM434	36.3	82.7	<10	30	<1	<1	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<30	<30	<3	<3	
PFBS (375-73-5)	<1 ng/l	TM434	11.1	1.81	<10	<10	<1	<1	
PFHxA (307-24-4)	<1 ng/l	TM434	32.3	45	<10	27.8	<1	<1	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
PFHpA (375-85-9)	<1 ng/l	TM434	7.53	48.5	<10	<10	<1	<1	
PFPeS (2706-91-4)	<1 ng/l	TM434	5.18	<1	<10	<10	<1	<1	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<50	<50	<5	<5	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	35.3	<1	<10	25.8	<1	<1	
FBSA (30334-69-1)	<1 ng/l	TM434	1.8	1.21	<10	<10	<1	<1	
PFOA (335-67-1)	<0.65 ng/l	TM434	8.85	24.1	<6.5	<6.5	<0.65	<0.65	
PFHxS (355-46-4)	<1 ng/l	TM434	44.7	19.2	<10	34.5	<1	<1	
PFNA (375-95-1)	<1 ng/l	TM434	3.91	2.64	<10	<10	<1	<1	
PFecHS (133201-07-7)	<1 ng/l	TM434	10.8	52	<10	<10	<1	<1	
PFHpS (375-92-8)	<1 ng/l	TM434	1.74	<1	<10	<10	<1	<1	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<50	<50	<5	<5	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<50	<50	<5	<5	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	35.5	40.3	<6.5	27.2	<0.65	<0.65	
Branched PFOS	<0.65 ng/l	TM434	37.6	44.9	<6.5	27.7	<0.65	<0.65	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Results Legend			Customer Sample Ref.	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB	GWTB
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*@\$@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093069	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093014	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093046	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093061	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093053	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-85 28093056
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	1.71	<10	<10	<1	<1	#
PFDaA (307-55-1)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<30	<30	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<20	<20	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<100	<100	<10	<10	#
N-MeFOSE (31506-32-8)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<100	<100	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
N-EiFOSE (4151-50-2)	<1 ng/l	TM434	<1	<1	<10	<10	<1	<1	#
Total PFOS	<0.65 ng/l	TM434	73.1	85.2	<6.5	54.8	<0.65	<0.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Data Amendment

Sample No. :	28092996	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford		
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended	
GW03D-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	4.00	1.68	
GW03D-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.98	2.23	
GW03D-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.98	3.91	
Sample No. :	28093032	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford		
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended	
GW014-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	12.3	1.34	
GW014-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	12.3	10.7	
GW014-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	24.6	12.1	
Sample No. :	28093040	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford		
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended	
GW014-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	12.5	1.16	
GW014-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	12.9	11.2	
GW014-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	25.4	12.4	
Sample No. :	28093095	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford		
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended	
GW007-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	12.2	5.46	
GW007-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	11.7	5.97	
GW007-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	11.4	23.9	
Sample No. :	28093103	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford		
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended	
GW007-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	11.9	6.16	
GW007-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	12.1	6.54	
GW007-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	24.0	12.7	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-85
Client Ref.: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Test Completion Dates

Lab Sample No(s)	28093020	28093110	28093095	28093077	28093032	28093026	28093118	28093103	28093086	28093040
Customer Sample Ref.	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	14-Jun-2023	12-Jun-2023	12-Jul-2023	09-Jun-2023	12-Jul-2023	14-Jun-2023	12-Jun-2023	12-Jul-2023	09-Jun-2023	12-Jul-2023

Lab Sample No(s)	28093006	28092996	28093069	28093014	28093046	28093061	28093053	28093056
Customer Sample Ref.	GW002D-A	GW003D-A	GW005D-A	GW002D-B	GW003D-B	GW005D-B	GWFB	GWTB
AGS Ref.								
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	09-Jun-2023	12-Jul-2023	09-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	09-Jun-2023	08-Jun-2023



CERTIFICATE OF ANALYSIS

SDG: 230602-85
Client Ref: P21-195

Report Number: 696148
Location: Dublin Airport

Superseded Report: 695868

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 27 June 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230602-86
Your Reference: P21-195
Location: Dublin Airport
Report No: 693916
Order Number: Z3893

This report has been revised and directly supersedes 692499 in its entirety.

We received 14 samples on Friday June 02, 2023 and 14 of these samples were scheduled for analysis which was completed on Tuesday June 27, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28093135	BH1A		0.00 - 0.00	31/05/2023
28093164	BH5A		0.00 - 0.00	31/05/2023
28093172	BH6A		0.00 - 0.00	31/05/2023
28093181	BH7A		0.00 - 0.00	31/05/2023
28093152	BH9A		0.00 - 0.00	31/05/2023
28093160	BH1B		0.00 - 0.00	31/05/2023
28093168	BH5B		0.00 - 0.00	31/05/2023
28093176	BH6B		0.00 - 0.00	31/05/2023
28093187	BH7B		0.00 - 0.00	31/05/2023
28093156	BH9B		0.00 - 0.00	31/05/2023
28093144	BH8DA		0.00 - 0.00	31/05/2023
28093148	BH8DB		0.00 - 0.00	31/05/2023
28093194	BH8SA		0.00 - 0.00	31/05/2023
28093140	BH8SB		0.00 - 0.00	31/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type											
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28093140	BH8SB		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093194	BH8SA		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093148	BH8DB		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093144	BH8DA		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093156	BH9B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093187	BH7B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093176	BH6B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093168	BH5B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093160	BH1B		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093152	BH9A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093181	BH7A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093172	BH6A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
	28093164	BH5A		0.00 - 0.00	500ml Plastic (ALE208)	GW											
28093135	BH1A		0.00 - 0.00	500ml Plastic (ALE208)	GW												
PFAS Liquids	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Results Legend			Customer Sample Ref.		BH1A	BH5A	BH6A	BH7A	BH9A	BH1B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	31/05/2023	31/05/2023	31/05/2023	31/05/2023	31/05/2023	31/05/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	02/06/2023	02/06/2023	02/06/2023	02/06/2023	02/06/2023	02/06/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230602-86	230602-86	230602-86	230602-86	230602-86	230602-86
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28093135	28093164	28093172	28093181	28093152	28093160
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<20	<10	
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<20	<10	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<100	<100	<200	<200	<200	<100	
PFBA (375-22-4)	<2 ng/l	TM337	<10	<10	<10	105	<20	<10	<10	
PFPA (2706-90-3)	<1 ng/l	TM337	5.53	<5	<5	201	<10	5.23	5.23	
PFHxA (307-24-4)	<1 ng/l	TM337	5.42	<5	<5	41.5	<10	5.38	5.38	
PFBS (375-73-5)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFHpA (375-85-9)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFOA (335-67-1)	<0.65 ng/l	TM337	<11.5	<9	<8	<18	<12	<9.5	<9.5	
PFHxS (355-46-4)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFNA (375-95-1)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFDA (335-76-2)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25	<3.25	
Branched PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25	<3.25	
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<10	<10	<20	<20	<10	<10	
PFDS (335-77-3)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	<5	<5	<10	<10	<5	<5	
Total PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<3.25	<6.5	<6.5	<3.25	<3.25	
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5	<5	
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5	<5	
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5	<5	
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5	<5	
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<5	<5	<5	<10	<10	<5	<5	
PFMOPra (377-73-1)	<1 ng/l	TM434	<2	<1	<10	<10	<10	<2	<2	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<4	<2	<20	<20	<20	<4	<4	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<2	<1	<10	<10	<10	<2	<2	
NFDHA (151772-58-6)	<3 ng/l	TM434	<6	<3	<30	<30	<30	<6	<6	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<4	<2	<20	<20	<20	<4	<4	
PFEESA (113507-82-7)	<1 ng/l	TM434	<2	<1	<10	<10	<10	<2	<2	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Results Legend			Customer Sample Ref.		BH5B	BH6B	BH7B	BH9B	BH8DA	BH8DB
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	31/05/2023	31/05/2023	31/05/2023	31/05/2023	31/05/2023	31/05/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	02/06/2023	02/06/2023	02/06/2023	02/06/2023	02/06/2023	02/06/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230602-86	230602-86	230602-86	230602-86	230602-86	230602-86
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28093168	28093176	28093187	28093156	28093144	28093148
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<10	<20	<20	<20	<20	<20	<20
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<10	<20	<20	<20	<20	<20	<20
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<100	<200	<200	<200	<200	<200	<200
PFBA (375-22-4)	<2 ng/l	TM337	<10	<10	126	<20	<20	<20	<20	<20
PFPA (2706-90-3)	<1 ng/l	TM337	<5	<5	232	<10	21	21.8	21.8	21.8
PFHxA (307-24-4)	<1 ng/l	TM337	<5	<5	50.3	<10	10.8	11.3	11.3	11.3
PFBS (375-73-5)	<1 ng/l	TM337	<5	<5	11.7	<10	<10	<10	<10	<10
PFHpA (375-85-9)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<5	<5	12.4	<10	<10	<10	<10	<10
PFOA (335-67-1)	<0.65 ng/l	TM337	<7	<6	<13	<16	<14.5	<15	<15	<15
PFHxS (355-46-4)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFNA (375-95-1)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFDA (335-76-2)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<3.25	<3.25	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
Branched PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<10	<20	<20	<20	<20	<20	<20
PFDS (335-77-3)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	<5	<10	<10	<10	<10	<10	<10
Total PFOS	<0.65 ng/l	TM337	<3.25	<3.25	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
PFTrDA (72629-94-8)	<1 ng/l	TM433	<5	<5	<10	<10	<10	<10	<10	<10
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<5	<10	<10	<10	<10	<10	<10
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<5	<10	<10	<10	<10	<10	<10
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<5	<10	<10	<10	<10	<10	<10
PFTrDS (174675-49-1)	<1 ng/l	TM433	<5	<5	<10	<10	<10	<10	<10	<10
PFMOPra (377-73-1)	<1 ng/l	TM434	<10	<10	<10	<2	<10	<2	<2	<2
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<20	<20	<20	<4	<20	<4	<4	<4
PFMOBA (863090-89-5)	<1 ng/l	TM434	<10	<10	<10	<2	<10	<2	<2	<2
NFDHA (151772-58-6)	<3 ng/l	TM434	<30	<30	<30	<6	<30	<6	<6	<6
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<20	<20	<20	<4	<20	<4	<4	<4
PFEESA (113507-82-7)	<1 ng/l	TM434	<10	<10	<10	<2	<10	<2	<2	<2



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Results Legend			Customer Sample Ref.		BH8SA	BH8SB				
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00					
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)					
aq	Aqueous / settled sample.			31/05/2023	31/05/2023					
diss.filt	Dissolved / filtered sample.			02/06/2023	02/06/2023					
tot.unfilt	Total / unfiltered sample.			230602-86	230602-86					
	* Subcontracted - refer to subcontractor report for accreditation status.			28093194	28093194					
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
	(F) Trigger breach confirmed									
	1-4*\$@Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337		<20	<20					
8:2 FTS (39108-34-4)	<2 ng/l	TM337		<20	<20					
5:3 FTCA (914637-49-3)	<20 ng/l	TM337		<200	<200					
PFBA (375-22-4)	<2 ng/l	TM337		<20	<20					
PFPA (2706-90-3)	<1 ng/l	TM337		19.5	17.1					
PFHxA (307-24-4)	<1 ng/l	TM337		10.3	<10					
PFBS (375-73-5)	<1 ng/l	TM337		<10	<10					
PFHpA (375-85-9)	<1 ng/l	TM337		<10	<10					
6:2 FTS (27619-97-2)	<1 ng/l	TM337		<10	<10					
PFOA (335-67-1)	<0.65 ng/l	TM337		<16	<15.5					
PFHxS (355-46-4)	<1 ng/l	TM337		<10	<10					
PFNA (375-95-1)	<1 ng/l	TM337		<10	<10					
PFHpS (375-92-8)	<1 ng/l	TM337		<10	<10					
PFDA (335-76-2)	<1 ng/l	TM337		<10	<10					
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337		<6.5	<6.5					
Branched PFOS	<0.65 ng/l	TM337		<6.5	<6.5					
PFUnA (2058-94-8)	<1 ng/l	TM337		<10	<10					
PFDoA (307-55-1)	<1 ng/l	TM337		<10	<10					
PFOSA (754-91-6)	<2 ng/l	TM337		<20	<20					
PFDS (335-77-3)	<1 ng/l	TM337		<10	<10					
PFPeS (2706-91-4)	<1 ng/l	TM337		<10	<10					
Total PFOS	<0.65 ng/l	TM337		<6.5	<6.5					
PFTTrDA (72629-94-8)	<1 ng/l	TM433		<10	<10					
PFNS (68259-12-1)	<1 ng/l	TM433		<10	<10					
PFUnDS (749786-16-1)	<1 ng/l	TM433		<10	<10					
PFDoS (79780-39-5)	<1 ng/l	TM433		<10	<10					
PFTTrDS (174675-49-1)	<1 ng/l	TM433		<10	<10					
PFMOPra (377-73-1)	<1 ng/l	TM434		<10	<2					
3:3 FTCA (356-02-5)	<2 ng/l	TM434		<20	<4					
PFMOBA (863090-89-5)	<1 ng/l	TM434		<10	<2					
NFDHA (151772-58-6)	<3 ng/l	TM434		<30	<6					
HFPO-DA (13252-13-6)	<2 ng/l	TM434		<20	<4					
PFEESA (113507-82-7)	<1 ng/l	TM434		<10	<2					



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

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SDG: 230602-86
Client Ref.: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Test Completion Dates

Lab Sample No(s)	28093135	28093164	28093172	28093181	28093152	28093160	28093168	28093176	28093187	28093156
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	23-Jun-2023	23-Jun-2023	27-Jun-2023	27-Jun-2023	27-Jun-2023	23-Jun-2023	27-Jun-2023	27-Jun-2023	27-Jun-2023	23-Jun-2023
PFAS Liquids (EU specified)	14-Jun-2023									

Lab Sample No(s)	28093144	28093148	28093194	28093140
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	27-Jun-2023	23-Jun-2023	27-Jun-2023	23-Jun-2023
PFAS Liquids (EU specified)	14-Jun-2023	14-Jun-2023	14-Jun-2023	14-Jun-2023



CERTIFICATE OF ANALYSIS

SDG: 230602-86
Client Ref: P21-195

Report Number: 693916
Location: Dublin Airport

Superseded Report: 692499

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 08 June 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230605-80
Your Reference: P21-195
Location: Dublin Airport
Report No: 691729
Order Number: Z3893

We received 2 samples on Monday June 05, 2023 and 2 of these samples were scheduled for analysis which was completed on Thursday June 08, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230605-80
Client Ref.: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28101757	Gardeners Well A		0.00 - 0.00	31/05/2023
28101759	Gardeners Well B		0.00 - 0.00	31/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230605-80
Client Ref.: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	28101757	28101759		
	Customer Sample Reference	Gardeners Well A	Gardeners Well B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">X</td> <td style="width: 50%; text-align: center;">X</td> </tr> </table>	X	X
X	X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230605-80
Client Ref.: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Gardeners Well A	Gardeners Well B			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unflit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 31/05/2023	0.00 - 0.00 Surface Water (SW) 31/05/2023			
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9Cl-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230605-80
Client Ref.: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230605-80
Client Ref.: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28101757	28101759
Customer Sample Ref.	Gardeners Well A	Gardeners Well B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	08-Jun-2023	08-Jun-2023



CERTIFICATE OF ANALYSIS

SDG: 230605-80
Client Ref: P21-195

Report Number: 691729
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 12 June 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230602-82
Your Reference: P21-195
Location: Dublin Airport
Report No: 692105
Order Number: Z3893

We received 2 samples on Friday June 02, 2023 and 2 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-82
Client Ref.: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28092839	Offsite Reservoir A		0.00 - 0.00	29/05/2023
28092846	Offsite Reservoir B		0.00 - 0.00	29/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-82
Client Ref.: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	28092839	28092846		
	Customer Sample Reference	Offsite Reservoir A	Offsite Reservoir B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-82
Client Ref.: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023	0.00 - 0.00 Surface Water (SW) 29/05/2023			
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	2.47	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9Cl-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-82
Client Ref.: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-82
Client Ref.: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28092839	28092846
Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	12-Jun-2023	09-Jun-2023



CERTIFICATE OF ANALYSIS

SDG: 230602-82
Client Ref: P21-195

Report Number: 692105
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 13 July 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230602-83
Your Reference: P21-195
Location: Dublin Airport
Report No: 696146
Order Number: Z3893

This report has been revised and directly supersedes 695877 in its entirety.

We received 44 samples on Friday June 02, 2023 and 42 of these samples were scheduled for analysis which was completed on Wednesday July 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28092868	GW11 A		0.00 - 0.00	30/05/2023
28092970	GW12 A		0.00 - 0.00	30/05/2023
28093067	GW13 A		0.00 - 0.00	30/05/2023
28093091	GW14 A		0.00 - 0.00	30/05/2023
28093112	GW15 A		0.00 - 0.00	30/05/2023
28092879	GW16 A		0.00 - 0.00	30/05/2023
28092888	GW17 A		0.00 - 0.00	30/05/2023
28093049	GW18 A		0.00 - 0.00	30/05/2023
28092987	GW19 A		0.00 - 0.00	30/05/2023
28092920	GW11 B		0.00 - 0.00	30/05/2023
28093033	GW12 B		0.00 - 0.00	30/05/2023
28093078	GW13 B		0.00 - 0.00	30/05/2023
28093102	GW14 B		0.00 - 0.00	30/05/2023
28092872	GW15 B		0.00 - 0.00	30/05/2023
28092884	GW16 B		0.00 - 0.00	30/05/2023
28092893	GW17 B		0.00 - 0.00	30/05/2023
28093057	GW18 B		0.00 - 0.00	30/05/2023
28092991	GW19 B		0.00 - 0.00	30/05/2023
28092897	GWMP5 A		0.00 - 0.00	31/05/2023
28092903	GWMP5 B		0.00 - 0.00	31/05/2023
28092907	P2 A		0.00 - 0.00	30/05/2023
28092915	P3 A		0.00 - 0.00	30/05/2023
28093123	P4 A			
28092928	P7 A		0.00 - 0.00	30/05/2023
28092938	P8 A		0.00 - 0.00	30/05/2023
28092911	P2 B		0.00 - 0.00	30/05/2023
28092924	P3 B		0.00 - 0.00	30/05/2023
28093127	P4 B			
28092933	P7 B		0.00 - 0.00	30/05/2023
28092943	P8 B		0.00 - 0.00	30/05/2023
28093012	R1 A		0.00 - 0.00	31/05/2023
28093028	R2 A		0.00 - 0.00	31/05/2023
28093019	R1 B		0.00 - 0.00	31/05/2023
28093044	R2 B		0.00 - 0.00	31/05/2023
28092965	SWML3 A		0.00 - 0.00	31/05/2023
28092957	SWML4 A		0.00 - 0.00	31/05/2023
28092979	SWML7(A) A		0.00 - 0.00	31/05/2023
28092983	SWML7(A) B		0.00 - 0.00	31/05/2023
28092975	SWML3 B		0.00 - 0.00	31/05/2023
28092961	SWML4 B		0.00 - 0.00	31/05/2023
28092947	SWML5(B) A		0.00 - 0.00	30/05/2023
28092995	SWML7(B) A		0.00 - 0.00	31/05/2023
28092951	SWML5(B) B		0.00 - 0.00	30/05/2023
28093004	SWML7(B) B		0.00 - 0.00	31/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

28092995	SWML7(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092947	SWML5(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092961	SWML4 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092975	SWML3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092983	SWML7(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092979	SWML7(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092957	SWML4 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092965	SWML3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093044	R2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093019	R1 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093028	R2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093012	R1 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092943	P8 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092933	P7 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092924	P3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092911	P2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092938	P8 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092928	P7 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092915	P3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092907	P2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; background-color: yellow; padding: 2px; width: 20px; text-align: center;">X</div> Test <div style="border: 1px solid black; background-color: red; color: white; padding: 2px; width: 20px; text-align: center;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	28092951	28093004		
	Customer Sample Reference	SWMLE5(B) B	SWMLE7(B) B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 42	X	X	



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092868	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092970	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093067	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093091	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093112	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092879
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	77.4	8.28	<2	60.6	3.39	20.2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	440	35.6	<1	272	3.98	106	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	8.43	<1	<1	<1	<1	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	195	12.9	<1	98.1	2.42	41.9	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	112	4.24	<1	25.6	1.71	13.7	#
PFPeS (2706-91-4)	<1 ng/l	TM434	4.99	<1	<1	<1	<1	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	489	26.7	<1	3.56	<1	16.5	#
FBSA (30334-69-1)	<1 ng/l	TM434	3.36	<1	<1	<1	<1	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	52.1	1.96	<0.65	3.12	0.861	3.89	#
PFHxS (355-46-4)	<1 ng/l	TM434	61.6	1.4	<1	1.1	<1	11.2	#
PFNA (375-95-1)	<1 ng/l	TM434	15.1	<1	<1	<1	<1	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	135	<2	<2	<2	<2	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	96.5	2.43	<0.65	<0.65	<0.65	2.42	#
Branched PFOS	<0.65 ng/l	TM434	95.9	2.03	<0.65	<0.65	<0.65	6.38	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092888	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093049	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092987	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092920	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093033	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093078
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	7.45	<2	<2	<2	54.6	7.07	<2
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFPA (2706-90-3)	<1 ng/l	TM434	3.28	<1	<1	383	40.4	<1	<1
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<30	<3	<3	<3
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHxA (307-24-4)	<1 ng/l	TM434	1.14	<1	<1	187	12.1	<1	<1
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	<1	106	3.63	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<1	609	4.04	<1	<1
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	<0.65	62.6	1.17	<0.65	<0.65
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	56	1.99	<1	<1
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	14.6	<1	<1	<1
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	171	<2	<2	<2
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.43	<0.65	<0.65	151	1.45	<0.65	<0.65
Branched PFOS	<0.65 ng/l	TM434	1.53	<0.65	<0.65	169	2.17	<0.65	<0.65
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093102	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092872	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092884	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092893	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093057	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092991			
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	42.6	#	2.96	#	31.9	#	<20	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	263	#	3.71	#	101	#	<10	#	<1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<30	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	84.9	#	2.13	#	38.8	#	<10	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	22.6	#	<1	#	14.5	#	<10	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	3.28	#	<1	#	16.3	#	<10	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	1.16	#	<10	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.48	#	1.12	#	3.74	#	<6.5	#	<6.5	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.19	#	<1	#	9.91	#	<10	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#	7.95	#	<6.5	#	<6.5	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	<0.65	#	6.49	#	<6.5	#	<6.5	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GWMP5 A	GWMP5 B	P2 A	P3 A	P7 A	P8 A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 31/05/2023 02/06/2023 230602-83 28092897	0.00 - 0.00 Ground Water (GW) 31/05/2023 02/06/2023 230602-83 28092903	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092907	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092915	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092928	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092938					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	4.6	#	6.29	#	24.1	#	11.5	#	27.2	#	5.2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	4.64	#	4.52	#	55.7	#	23.7	#	23.7	#	10.8	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	1.35	#	1.35	#	20.6	#	9.11	#	8.44	#	5.13	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<1	#	<1	#	8.48	#	3.35	#	4.37	#	2.32	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	0.79	#	<0.65	#	2.52	#	1.17	#	1.84	#	0.826	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	1.54	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.22	#	1.16	#	2.42	#	0.727	#	<0.65	#	1.84	#
Branched PFOS	<0.65 ng/l	TM434	1.28	#	1.21	#	2.44	#	0.809	#	<0.65	#	1.88	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	P2 B	P3 B	P7 B	P8 B	R1 A	R2 A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092911	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092924	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092933	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092943	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093012	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093028					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	19.8	#	9.38	#	20.7	#	3.24	#	13.5	#	8.41	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	49.9	#	22	#	23.5	#	8.95	#	49.5	#	36.6	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	19.3	#	7.83	#	8.22	#	3.94	#	19.1	#	14.1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.33	#	3.01	#	4.39	#	1.14	#	10.3	#	7.45	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	4.87	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	3.17	#	0.783	#	1.85	#	0.818	#	5.37	#	4.03	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	2.1	#	<1	#	<1	#	2.16	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1	#	0.826	#	<0.65	#	1.35	#	4.05	#	2.1	#
Branched PFOS	<0.65 ng/l	TM434	1.05	#	0.905	#	<0.65	#	1.38	#	4.08	#	1.13	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	R1 B	R2 B	SWML3 A	SWML4 A	SWML7(A) A	SWML7(A) B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093019	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093044	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092965	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092957	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092979	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092983					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	12.8	#	9.21	#	7.07	#	17.3	#	<2	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	45.7	#	33.4	#	23.2	#	50.1	#	2.62	#	2.8	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	18.3	#	12.8	#	9.49	#	21	#	<1	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.68	#	7.89	#	3.26	#	10.2	#	<1	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	6.16	#	<1	#	2.2	#	4.11	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.14	#	2.93	#	2.29	#	5.88	#	<0.65	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	2.77	#	1.68	#	<1	#	1.82	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.7	#	1.33	#	4.52	#	2.41	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	1.72	#	1.29	#	1.03	#	1.33	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B				
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*§@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092975	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092961	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092947	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092995	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092951	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093004				
Component	LOD/Units	Method											
PFBA (375-22-4)	<2 ng/l	TM434	10.3	#	12.1	#	70.2	<2	#	66.8	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	22.2	#	49.6	#	71.8	<1	#	80.6	#	<1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	9.57	<1	#	9.1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	9.13	#	21.1	#	59.9	1.06	#	59.7	#	1.56	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.24	#	9.76	#	49.3	<1	#	42.6	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	8.57	<1	#	7.45	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	1.99	#	2.96	#	39.3	<1	#	39.5	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	4.78	<1	#	4.64	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.74	#	3.68	#	69.7	0.69	#	69.4	#	0.793	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	1.47	#	140	<1	#	126	#	4.35	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	21	<1	#	27.5	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	21.8	<1	#	19.1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	6.45	<1	#	5.65	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	3.81	<2	#	4.51	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	4.4	#	1.95	#	116	<0.65	#	139	#	4.91	#
Branched PFOS	<0.65 ng/l	TM434	1.59	#	1.29	#	116	0.709	#	141	#	2.59	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Data Amendment

Sample No. :	28092879	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW16 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	8.81	6.38
GW16 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	8.85	2.42
GW16 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	17.7	8.80
Sample No. :	28092884	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW16 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.95	6.49
GW16 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.94	7.95
GW16 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.9	14.4
Sample No. :	28092957	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	4.13	1.33
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	4.09	2.41
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	8.22	3.74
Sample No. :	28092961	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.60	1.29
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.57	1.95
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.17	3.23
Sample No. :	28092965	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.09	1.03
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	6.06	4.52
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.2	5.55
Sample No. :	28092970	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW12 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	4.86	2.03
GW12 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	4.77	2.43
GW12 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	9.63	4.47
Sample No. :	28092975	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.33	1.59
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	6.51	4.40
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.8	5.98
Sample No. :	28093004	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.72	2.59
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.94	4.91
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.7	7.49
Sample No. :	28093019	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended



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R1 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.62	1.72
R1 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.70	1.70
R1 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.32	3.42

Sample No. : 28093028 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
R2 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.52	1.13
R2 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.48	2.10
R2 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.00	3.23

Sample No. : 28093033 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW12 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.99	2.17
GW12 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.95	1.45
GW12 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.94	3.62

Sample No. : 28093044 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
R2 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	2.86	1.29
R2 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	2.84	1.33
R2 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	5.70	2.62



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SDG: 230602-83
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Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



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Test Completion Dates

Lab Sample No(s)	28092868	28092970	28093067	28093091	28093112	28092879	28092888	28093049	28092987	28092920
Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	07-Jun-2023	12-Jul-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	12-Jul-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	12-Jun-2023

Lab Sample No(s)	28093033	28093078	28093102	28092872	28092884	28092893	28093057	28092991	28092897	28092903
Customer Sample Ref.	GW12 B	GW13 B	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	GWMP5 A	GWMP5 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	12-Jul-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	12-Jul-2023	12-Jun-2023	12-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023

Lab Sample No(s)	28092907	28092915	28092928	28092938	28092911	28092924	28092933	28092943	28093012	28093028
Customer Sample Ref.	P2 A	P3 A	P7 A	P8 A	P2 B	P3 B	P7 B	P8 B	R1 A	R2 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023	12-Jul-2023

Lab Sample No(s)	28093019	28093044	28092965	28092957	28092975	28092961	28092979	28092983	28092947	28092995
Customer Sample Ref.	R1 B	R2 B	SWML3 A	SWML4 A	SWML3 B	SWML4 B	SWML7(A) A	SWML7(A) B	SWML5(B) A	SWML7(B) A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jun-2023	12-Jun-2023	07-Jun-2023	06-Jun-2023

Lab Sample No(s)	28092951	28093004
Customer Sample Ref.	SWML5(B) B	SWML7(B) B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	06-Jun-2023	12-Jul-2023



CERTIFICATE OF ANALYSIS

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Location: Dublin Airport

Superseded Report: 695877

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 September 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-141
Your Reference: P21-195
Location: Dublin Airport
Report No: 702392
Order Number: Z4069

We received 16 samples on Friday August 18, 2023 and 16 of these samples were scheduled for analysis which was completed on Monday September 04, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28502870	GW004-A		0.00 - 0.00	15/08/2023
28502864	GW007-A		0.00 - 0.00	15/08/2023
28502857	GW008-A		0.00 - 0.00	15/08/2023
28502827	GW014-A		0.00 - 0.00	15/08/2023
28502844	GW016-A		0.00 - 0.00	15/08/2023
28502873	GW004-B		0.00 - 0.00	15/08/2023
28502867	GW007-B		0.00 - 0.00	15/08/2023
28502861	GW008-B		0.00 - 0.00	15/08/2023
28502831	GW014-B		0.00 - 0.00	15/08/2023
28502847	GW016-B		0.00 - 0.00	15/08/2023
28502821	GW003D-A		0.00 - 0.00	15/08/2023
28502853	GW005D-A		0.00 - 0.00	15/08/2023
28502834	GW03D-B		0.00 - 0.00	15/08/2023
28502850	GW005D-B		0.00 - 0.00	15/08/2023
28502839	GWFB		0.00 - 0.00	15/08/2023
28502842	GWTB		0.00 - 0.00	15/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28502842	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28502839	GWFB		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502850	GW005D-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502834	GW03D-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502853	GW005D-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502821	GW003D-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502847	GW016-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502831	GW014-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502861	GW008-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502867	GW007-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502873	GW004-B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502844	GW016-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502827	GW014-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502857	GW008-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502864	GW007-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
28502870	GW004-A		0.00 - 0.00	Digitube fo PFAS analysis.	GW	
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 16				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW004-A	GW007-A	GW008-A	GW014-A	GW016-A	GW004-B				
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.		Sample Type		Ground Water (GW)									
aq	Aqueous / settled sample.		Date Sampled		15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time											
tot.unfilt	Total / unfiltered sample.		Date Received		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230818-141	230818-141	230818-141	230818-141	230818-141	230818-141				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28502870	28502864	28502857	28502827	28502844	28502873				
	(F) Trigger breach confirmed		AGS Reference											
	1-4*§@Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	<20	@ #	14	#	7.16	#	6.82	#	10.9	#	<5	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	<10	@ #	30.2	#	5.44	#	6.21	#	59.2	#	<5	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<30	@ #	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<10	@ #	9.15	#	3.79	#	<1	#	<1	#	3.4	#
PFHxA (307-24-4)	<1 ng/l	TM434	<10	@ #	28.2	#	6.37	#	3.17	#	15.7	#	6.2	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<10	@ #	7	#	2.16	#	1.52	#	3.99	#	3.14	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<10	@ #	4.8	#	2.9	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<50	@ #	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	14.3	@ #	5.9	#	<1	#	1.8	#	3.55	#	1.13	#
FBSA (30334-69-1)	<1 ng/l	TM434	<10	@ #	2.01	#	2.61	#	<1	#	<1	#	1.75	#
PFOA (335-67-1)	<0.65 ng/l	TM434	9.31	@ #	6.94	#	3.32	#	1.51	#	1.36	#	4.06	#
PFHxS (355-46-4)	<1 ng/l	TM434	16.6	@ #	28.4	#	23	#	1.05	#	<1	#	4.76	#
PFNA (375-95-1)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	1.46	#
PFecHS (133201-07-7)	<1 ng/l	TM434	208	@ #	71.3	#	7.85	#	<1	#	<1	#	118	#
PFHpS (375-92-8)	<1 ng/l	TM434	<10	@ #	<1	#	1.25	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<50	@ #	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<50	@ #	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	48.1	@ #	3.2	#	31.3	#	<0.65	#	<0.65	#	23	#
Branched PFOS	<0.65 ng/l	TM434	26.9	@ #	7.13	#	13.7	#	<0.65	#	<0.65	#	13.9	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<20	@ #	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<10	@ #	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW004-A	GW007-A	GW008-A	GW014-A	GW016-A	GW004-B
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		Date Sampled	15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time						
tot.unfiltTotal	unfiltered sample.		Date Received	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	230818-141	230818-141	230818-141	230818-141	230818-141	230818-141
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	28502870	28502864	28502857	28502827	28502844	28502873
(F)	Trigger breach confirmed		AGS Reference						
1-4*	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<10	<1	2.7	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<30	<3	<3	<3	<3	<3	<3
			@ #	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<20	<2	<2	<2	<2	<2	<2
			@ #	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<100	<10	<10	<10	<10	<10	<10
			@ #	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<100	<10	<10	<10	<10	<10	<10
			@ #	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<10	<1	<1	<1	<1	<1	<1
			@ #	#	#	#	#	#	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<100						
			@						
Total PFOS	<0.65 ng/l	TM434	75	10.3	45		<0.65		36.8
			@ #	#	#		#		#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW007-B	GW008-B	GW014-B	GW016-B	GW003D-A	GW005D-A		
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Sample Type		Ground Water (GW)							
aq	Aqueous / settled sample.		Date Sampled		15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023	15/08/2023		
diss.filt	Dissolved / filtered sample.		Sample Time									
tot.unfilt	Total / unfiltered sample.		Date Received		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023		
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230818-141	230818-141	230818-141	230818-141	230818-141	230818-141		
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28502867	28502861	28502831	28502847	28502821	28502853		
	(F) Trigger breach confirmed		AGS Reference									
	1-4*@\$@Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	13.9	#	6.7	#	5.62	#	10.9	<20 @ #	28.6	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	29.4	#	4.59	#	5.11	#	62.5	<10 @ #	73.5	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	1.62	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	<30 @ #	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	9.12	#	3.55	#	<1	#	<1	<10 @ #	21.3	#
PFHxA (307-24-4)	<1 ng/l	TM434	26	#	5.56	#	2.9	#	14.4	<10 @ #	69	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	6.92	#	2.41	#	1.4	#	4.13	<10 @ #	22.7	#
PFPeS (2706-91-4)	<1 ng/l	TM434	4.74	#	2.88	#	<1	#	<1	<10 @ #	14.4	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	<50 @ #	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	5.51	#	<1	#	<1	#	3.55	<10 @ #	39.1	#
FBSA (30334-69-1)	<1 ng/l	TM434	2.15	#	2.6	#	<1	#	<1	<10 @ #	4.5	#
PFOA (335-67-1)	<0.65 ng/l	TM434	6.24	#	3.24	#	1.01	#	1.3	<6.5 @ #	12.8	#
PFHxS (355-46-4)	<1 ng/l	TM434	26.9	#	20.6	#	<1	#	<1	<10 @ #	60.7	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	1.7	#
PFecHS (133201-07-7)	<1 ng/l	TM434	67.3	#	7.53	#	<1	#	<1	<10 @ #	18.3	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	1.08	#	<1	#	<1	<10 @ #	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	<50 @ #	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	<50 @ #	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	3.45	#	30.7	#	<0.65	#	<0.65	<6.5 @ #	1.23	#
Branched PFOS	<0.65 ng/l	TM434	6.34	#	12.3	#	<0.65	#	<0.65	<6.5 @ #	9.16	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	<20 @ #	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	<10 @ #	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW007-B	GW008-B	GW014-B	GW016-B	GW003D-A	GW005D-A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502867	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502861	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502831	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502847	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502821	0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502853
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	2.49	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<30	<3
			#	#	#	#	#	@ #	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<20	<2
			#	#	#	#	#	@ #	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	@ #	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<100	<10
			#	#	#	#	#	@ #	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<10	<1
			#	#	#	#	#	@ #	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434						<100	
								@	
Total PFOS	<0.65 ng/l	TM434	9.78	43	<0.65	<0.65	<0.65	<6.5	10.4
			#	#	#	#	#	@ #	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	GW03D-B 0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502834	GW005D-B 0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502850	GWFB 0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502839	GWTB 0.00 - 0.00 Ground Water (GW) 15/08/2023 18/08/2023 230818-141 28502842	
Component	LOD/Units	Method				
PFBA (375-22-4)	<2 ng/l	TM434	<20 @ #	25.9 #	<2 @ #	<2 @ #
PFMOPrA (377-73-1)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
PFPA (2706-90-3)	<1 ng/l	TM434	<10 @ #	74.6 #	<1 @ #	<1 @ #
PFMOBA (863090-89-5)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<10 @ #	1.92 #	<1 @ #	<1 @ #
NFDHA (151772-58-6)	<3 ng/l	TM434	<30 @ #	<3 #	<3 @ #	<3 @ #
PFBS (375-73-5)	<1 ng/l	TM434	<10 @ #	22.5 #	<1 @ #	<1 @ #
PFHxA (307-24-4)	<1 ng/l	TM434	<10 @ #	69.5 #	<1 @ #	<1 @ #
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
PFEESA (113507-82-7)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #
PFHpA (375-85-9)	<1 ng/l	TM434	<10 @ #	21.1 #	<1 @ #	<1 @ #
PFPeS (2706-91-4)	<1 ng/l	TM434	<10 @ #	15.7 #	<1 @ #	<1 @ #
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<50 @ #	<5 #	<5 @ #	<5 @ #
ADONA (919005-14-4)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<10 @ #	37.6 #	<1 @ #	<1 @ #
FBSA (30334-69-1)	<1 ng/l	TM434	<10 @ #	5.31 #	<1 @ #	<1 @ #
PFOA (335-67-1)	<0.65 ng/l	TM434	<6.5 @ #	13.7 #	<0.65 @ #	<0.65 @ #
PFHxS (355-46-4)	<1 ng/l	TM434	<10 @ #	63.8 #	<1 @ #	<1 @ #
PFNA (375-95-1)	<1 ng/l	TM434	<10 @ #	1.74 #	<1 @ #	<1 @ #
PFecHS (133201-07-7)	<1 ng/l	TM434	<10 @ #	19.6 #	<1 @ #	<1 @ #
PFHpS (375-92-8)	<1 ng/l	TM434	<10 @ #	1.13 #	<1 @ #	<1 @ #
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<50 @ #	<5 #	<5 @ #	<5 @ #
PFDA (335-76-2)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<50 @ #	<5 #	<5 @ #	<5 @ #
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<6.5 @ #	1.98 #	<0.65 @ #	<0.65 @ #
Branched PFOS	<0.65 ng/l	TM434	<6.5 @ #	11.2 #	<0.65 @ #	<0.65 @ #
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
PFUnA (2058-94-8)	<2 ng/l	TM434	<20 @ #	<2 #	<2 @ #	<2 @ #
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #
PFNS (68259-12-1)	<1 ng/l	TM434	<10 @ #	<1 #	<1 @ #	<1 @ #



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW03D-B	GW005D-B	GWFB	GWTB			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
aq	Aqueous / settled sample.			15/08/2023	15/08/2023	15/08/2023	15/08/2023			
diss.filt	Dissolved / filtered sample.									
tot.unfiltTotal	unfiltered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023			
*	Subcontracted - refer to subcontractor report for accreditation status.			230818-141	230818-141	230818-141	230818-141			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		28502834	28502850	28502839	28502842				
(F)	Trigger breach confirmed									
1-4*	@ Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
PFDoA (307-55-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFDS (335-77-3)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFTrDA (72629-94-8)	<3 ng/l	TM434	<30	<3	<3	<3	<3	@ #	@ #	
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFUnDS (749786-16-1)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFTeA (376-06-7)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
PFOSA (754-91-6)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFDoS (79780-39-5)	<2 ng/l	TM434	<20	<2	<2	<2	<2	@ #	@ #	
PFTrDS (174675-49-1)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
PFHxDA (67905-19-5)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
MeFOSE (24448-09-7)	<10 ng/l	TM434	<100	<10	<10	<10	<10	@ #	@ #	
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
EiFOSE (1691-99-2)	<10 ng/l	TM434	<100	<10	<10	<10	<10	@ #	@ #	
PFODA (16517-11-6)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<10	<1	<1	<1	<1	@ #	@ #	
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<100		<10	<10	<10	@	@	
Total PFOS	<0.65 ng/l	TM434	<6.5	13.2	<0.65	<0.65	<0.65	@ #	@ #	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-141
Client Ref.: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28502870	28502864	28502857	28502827	28502844	28502873	28502867	28502861	28502831	28502847
Customer Sample Ref.	GW004-A	GW007-A	GW008-A	GW014-A	GW016-A	GW004-B	GW007-B	GW008-B	GW014-B	GW016-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	04-Sep-2023	31-Aug-2023	30-Aug-2023	29-Aug-2023	30-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	30-Aug-2023

Lab Sample No(s)	28502821	28502853	28502834	28502850	28502839	28502842
Customer Sample Ref.	GW003D-A	GW005D-A	GW003D-B	GW005D-B	GWFB	GWTB
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	04-Sep-2023	29-Aug-2023	04-Sep-2023	31-Aug-2023	04-Sep-2023	04-Sep-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-141
Client Ref: P21-195

Report Number: 702392
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 September 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-109
Your Reference: P21-195
Location: Dublin Airport
Report No: 702393
Order Number: Z4069

We received 14 samples on Friday August 18, 2023 and 14 of these samples were scheduled for analysis which was completed on Monday September 04, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28501997	BH1A		0.00 - 0.00	16/08/2023
28501986	BH5A		0.00 - 0.00	16/08/2023
28501975	BH6A		0.00 - 0.00	16/08/2023
28502030	BH7A		0.00 - 0.00	16/08/2023
28502003	BH9A		0.00 - 0.00	16/08/2023
28501992	BH1B		0.00 - 0.00	16/08/2023
28501982	BH5B		0.00 - 0.00	16/08/2023
28502033	BH6B		0.00 - 0.00	16/08/2023
28502026	BH7B		0.00 - 0.00	16/08/2023
28501969	BH9B		0.00 - 0.00	16/08/2023
28502014	BH8DA		0.00 - 0.00	16/08/2023
28502009	BH8DB		0.00 - 0.00	16/08/2023
28502021	BH8SA		0.00 - 0.00	16/08/2023
28502017	BH8SB		0.00 - 0.00	16/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28501997	BH1A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28501986	BH5A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28501975	BH6A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502030	BH7A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502003	BH9A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28501992	BH1B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28501982	BH5B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502033	BH6B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502026	BH7B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28501969	BH9B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502014	BH8DA		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502009	BH8DB		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502021	BH8SA		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28502017	BH8SB		0.00 - 0.00	Digitube for PFAS analysis.	GW
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 14				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.00 - 0.00 Ground Water (GW) 16/08/2023						
M	mCERTS accredited.										
aq	Aqueous / settled sample.										
diss.filt	Dissolved / filtered sample.										
tot.unfilt	Total / unfiltered sample.										
*	Subcontracted - refer to subcontractor report for accreditation status.										
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery										
(F)	Trigger breach confirmed										
1-4**	@Sample deviation (see appendix)										
Component	LOD/Units	Method									
PFBA (375-22-4)	<2 ng/l	TM434		<20	2.25	<10	26	<2	7.21		
				◆ #	#	◆ #	#	◆ #	#		
PFMOPra (377-73-1)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
3:3 FTCA (356-02-5)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
PFPA (2706-90-3)	<1 ng/l	TM434		<10	2.82	<5	35.4	<1	4.67		
				◆ #	#	◆ #	#	◆ #	#		
PFMOBA (863090-89-5)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
4:2 FTS (757124-72-4)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
NFDHA (151772-58-6)	<3 ng/l	TM434		<30	<3	<15	<3	<3	<3		
				◆ #	#	◆ #	#	◆ #	#		
PFBS (375-73-5)	<1 ng/l	TM434		<10	<1	<5	1.66	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFHxA (307-24-4)	<1 ng/l	TM434		<10	1.72	<5	4.7	<1	3.22		
				◆ #	#	◆ #	#	◆ #	#		
HFPO-DA (13252-13-6)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
PFEESA (113507-82-7)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFHpA (375-85-9)	<1 ng/l	TM434		<10	1.29	<5	<1	<1	1.57		
				◆ #	#	◆ #	#	◆ #	#		
PFPeS (2706-91-4)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434		<50	<5	<25	<5	<5	<5		
				◆ #	#	◆ #	#	◆ #	#		
ADONA (919005-14-4)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
6:2 FTS (27619-97-2)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
FBSA (30334-69-1)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFOA (335-67-1)	<0.65 ng/l	TM434		<6.5	1.25	<3.25	<0.65	<0.65	3.31		
				◆ #	#	◆ #	#	◆ #	#		
PFHxS (355-46-4)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFNA (375-95-1)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFecHS (133201-07-7)	<1 ng/l	TM434		<10	<1	<5	<1	<1	1.36		
				◆ #	#	◆ #	#	◆ #	#		
PFHpS (375-92-8)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
8:2 FTS (39108-34-4)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
HFPO-TA (13252-14-7)	<5 ng/l	TM434		<50	<5	<25	<5	<5	<5		
				◆ #	#	◆ #	#	◆ #	#		
PFDA (335-76-2)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
MeFOSAA (2355-31-9)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
7:3 FTCA (812-70-4)	<5 ng/l	TM434		<50	<5	<25	<5	<5	<5		
				◆ #	#	◆ #	#	◆ #	#		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434		<6.5	<0.65	<3.25	<0.65	<0.65	<0.65		
				◆ #	#	◆ #	#	◆ #	#		
Branched PFOS	<0.65 ng/l	TM434		<6.5	<0.65	<3.25	<0.65	<0.65	<0.65		
				◆ #	#	◆ #	#	◆ #	#		
EiFOSAA (2991-50-6)	<2 ng/l	TM434		<20	<2	<10	<2	<2	2.72		
				◆ #	#	◆ #	#	◆ #	#		
PFUnA (2058-94-8)	<2 ng/l	TM434		<20	<2	<10	<2	<2	<2		
				◆ #	#	◆ #	#	◆ #	#		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		
PFNS (68259-12-1)	<1 ng/l	TM434		<10	<1	<5	<1	<1	<1		
				◆ #	#	◆ #	#	◆ #	#		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		BH5B	BH6B	BH7B	BH9B	BH8DA	BH8DB
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.00 - 0.00 Ground Water (GW) 16/08/2023					
M	mCERTS accredited.				18/08/2023 230818-109 28501982	18/08/2023 230818-109 28502033	18/08/2023 230818-109 28502026	18/08/2023 230818-109 28501969	18/08/2023 230818-109 28502014	18/08/2023 230818-109 28502009
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434		2.63	<2	29.7	<10	10.9	9.98	
PFMOPrA (377-73-1)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
3:3 FTCA (356-02-5)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
PFPA (2706-90-3)	<1 ng/l	TM434		2.79	<1	36.6	<1	16.5	13	
PFMOBA (863090-89-5)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
4:2 FTS (757124-72-4)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
NFDHA (151772-58-6)	<3 ng/l	TM434		<3	<3	<30	<3	<15	<3	
PFBS (375-73-5)	<1 ng/l	TM434		<1	<1	<10	<1	<5	1.85	
PFHxA (307-24-4)	<1 ng/l	TM434		1.86	<1	<10	<1	7.64	4.21	
HFPO-DA (13252-13-6)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
PFEESA (113507-82-7)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
PFHpA (375-85-9)	<1 ng/l	TM434		1.14	<1	<10	<1	<5	1.34	
PFPeS (2706-91-4)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434		<5	<5	<50	<5	<25	<5	
ADONA (919005-14-4)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
6:2 FTS (27619-97-2)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
FBSA (30334-69-1)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
PFOA (335-67-1)	<0.65 ng/l	TM434		1.3	<0.65	<6.5	<0.65	<3.25	0.796	
PFHxS (355-46-4)	<1 ng/l	TM434		1.01	<1	<10	<1	8.35	3.02	
PFNA (375-95-1)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
PFecHS (133201-07-7)	<1 ng/l	TM434		<1	<1	<10	<1	15	6.55	
PFHpS (375-92-8)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
8:2 FTS (39108-34-4)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
HFPO-TA (13252-14-7)	<5 ng/l	TM434		<5	<5	<50	<5	<25	<5	
PFDA (335-76-2)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
MeFOSAA (2355-31-9)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
7:3 FTCA (812-70-4)	<5 ng/l	TM434		<5	<5	<50	<5	<25	<5	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434		<0.65	<0.65	<6.5	<0.65	<3.25	<0.65	
Branched PFOS	<0.65 ng/l	TM434		<0.65	<0.65	<6.5	<0.65	<3.25	<0.65	
EtFOSAA (2991-50-6)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
PFUnA (2058-94-8)	<2 ng/l	TM434		<2	<2	<20	<2	<10	<2	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	
PFNS (68259-12-1)	<1 ng/l	TM434		<1	<1	<10	<1	<5	<1	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	BH5B	BH6B	BH7B	BH9B	BH8DA	BH8DB
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 16/08/2023					
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<30	<3	<15	<3	<3
			#	#	◆ #	#	◆ #	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<20	<2	<10	<2	<2
			#	#	◆ #	#	◆ #	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<100	<10	<50	<10	<10
			#	#	◆ #	#	◆ #	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<100	<10	<50	<10	<10
			#	#	◆ #	#	◆ #	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<10	<1	<5	<1	<1
			#	#	◆ #	#	◆ #	#	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434			<100		<50		
					◆		◆		
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	<6.5	<0.65	<3.25	<0.65	<0.65
			#	#	◆ #	#	◆ #	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	BH8SA	BH8SB			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)			
aq	Aqueous / settled sample.		16/08/2023	16/08/2023			
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023			
tot.unfilt	Total / unfiltered sample.		230818-109	230818-109			
*	Subcontracted - refer to subcontractor report for accreditation status.		28502021	28502017			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$	Sample deviation (see appendix)						
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<10	8.75			
			◆ #	#			
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1			
			#	#			
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2			
			#	#			
PFPA (2706-90-3)	<1 ng/l	TM434	13.5	13.8			
			#	#			
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1			
			#	#			
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1			
			#	#			
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3			
			#	#			
PFBS (375-73-5)	<1 ng/l	TM434	1.81	2.39			
			#	#			
PFHxA (307-24-4)	<1 ng/l	TM434	3.78	4.74			
			#	#			
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2			
			#	#			
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1			
			#	#			
PFHpA (375-85-9)	<1 ng/l	TM434	1.29	1.55			
			#	#			
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	1.6			
			#	#			
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5			
			#	#			
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1			
			#	#			
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1			
			#	#			
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1			
			#	#			
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65			
			#	#			
PFHxS (355-46-4)	<1 ng/l	TM434	3.33	6.18			
			#	#			
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1			
			#	#			
PFecHS (133201-07-7)	<1 ng/l	TM434	10.2	13.7			
			#	#			
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1			
			#	#			
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2			
			#	#			
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5			
			#	#			
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2			
			#	#			
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2			
			#	#			
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5			
			#	#			
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65			
			#	#			
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65			
			#	#			
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2			
			#	#			
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2			
			#	#			
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1			
			#	#			
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1			
			#	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-109
Client Ref.: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28501997	28501986	28501975	28502030	28502003	28501992	28501982	28502033	28502026	28501969
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	04-Sep-2023	31-Aug-2023	04-Sep-2023	31-Aug-2023	30-Aug-2023	31-Aug-2023	31-Aug-2023	30-Aug-2023	04-Sep-2023	01-Sep-2023

Lab Sample No(s)	28502014	28502009	28502021	28502017
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	01-Sep-2023	31-Aug-2023	01-Sep-2023	31-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-109
Client Ref: P21-195

Report Number: 702393
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 August 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-143
Your Reference: P21-195
Location: Dublin Airport
Report No: 701463
Order Number: Z4069

We received 2 samples on Friday August 18, 2023 and 2 of these samples were scheduled for analysis which was completed on Friday August 25, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-143
Client Ref.: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28502968	Gardeners Well A		0.00 - 0.00	15/08/2023
28502988	Gardeners Well B		0.00 - 0.00	15/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-143
Client Ref.: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Results Legend			
X Test		28502968	28502988
N No Determination Possible		Gardeners Well A	Gardeners Well B
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other		AGS Reference	
		Depth (m)	0.00 - 0.00
		Container	Digitube for PFAS analysis.
		Sample Type	SW
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 2	X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-143
Client Ref.: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Gardeners Well A	Gardeners Well B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		15/08/2023	15/08/2023			
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023			
tot.unfilt	Total / unfiltered sample.		230818-143	230818-143			
	* Subcontracted - refer to subcontractor report for accreditation status.		28502968	28502968			
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
	(F) Trigger breach confirmed						
	1-4*@\$@Sample deviation (see appendix)						
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	2.01	2.05	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	1.32	1.27	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-143
Client Ref.: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-143
Client Ref.: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28502968	28502988
Customer Sample Ref.	Gardeners Well A	Gardeners Well B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-143
Client Ref: P21-195

Report Number: 701463
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
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Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 August 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-146
Your Reference: P21-195
Location: Dublin Airport
Report No: 701464
Order Number: Z4069

We received 2 samples on Friday August 18, 2023 and 2 of these samples were scheduled for analysis which was completed on Friday August 25, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-146
Client Ref.: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28503198	Offsite Reservoir A		0.00 - 0.00	15/08/2023
28503202	Offsite Reservoir B		0.00 - 0.00	15/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-146
Client Ref.: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Results Legend			
X Test		28503198	28503202
N No Determination Possible		Offsite Reservoir A	Offsite Reservoir B
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other		AGS Reference	
		Depth (m)	0.00 - 0.00
		Container	Digitube for PFAS analysis.
		Sample Type	SW
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 2	X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-146
Client Ref.: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-146 28503198	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-146 28503202			
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	0.807	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-146
Client Ref.: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-146
Client Ref.: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28503198	28503202
Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	23-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-146
Client Ref: P21-195

Report Number: 701464
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 September 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-142
Your Reference: P21-195
Location: Dublin Airport
Report No: 702250
Order Number: Z4069

We received 62 samples on Friday August 18, 2023 and 62 of these samples were scheduled for analysis which was completed on Friday September 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28503044	C1 A		0.00 - 0.00	16/08/2023
28503079	C-2A (A)		0.00 - 0.00	16/08/2023
28503084	C-2A (B)		0.00 - 0.00	16/08/2023
28503049	C1 B		0.00 - 0.00	16/08/2023
28503094	C-2B (A)		0.00 - 0.00	16/08/2023
28503103	C-2B (B)		0.00 - 0.00	16/08/2023
28502879	GW11 A		0.00 - 0.00	16/08/2023
28502974	GW12 A		0.00 - 0.00	16/08/2023
28503057	GW13 A		0.00 - 0.00	16/08/2023
28503138	GW14 A		0.00 - 0.00	16/08/2023
28503147	GW15 A		0.00 - 0.00	16/08/2023
28502886	GW16 A		0.00 - 0.00	16/08/2023
28502895	GW17 A		0.00 - 0.00	16/08/2023
28503026	GW18 A		0.00 - 0.00	15/08/2023
28502989	GW19 A		0.00 - 0.00	15/08/2023
28502924	GW11 B		0.00 - 0.00	16/08/2023
28503018	GW12 B		0.00 - 0.00	16/08/2023
28503126	GW13 B		0.00 - 0.00	16/08/2023
28503143	GW14 B		0.00 - 0.00	16/08/2023
28502883	GW15 B		0.00 - 0.00	16/08/2023
28502891	GW16 B		0.00 - 0.00	16/08/2023
28502900	GW17 B		0.00 - 0.00	16/08/2023
28503029	GW18 B		0.00 - 0.00	15/08/2023
28502995	GW19 B		0.00 - 0.00	15/08/2023
28502904	GWMP5 A		0.00 - 0.00	16/08/2023
28502908	GWMP5 B		0.00 - 0.00	16/08/2023
28503123	K Stream A		0.00 - 0.00	16/08/2023
28503129	K Stream B		0.00 - 0.00	16/08/2023
28503052	M5 A		0.00 - 0.00	16/08/2023
28503063	M5 B		0.00 - 0.00	16/08/2023
28502911	P2 A		0.00 - 0.00	15/08/2023
28502920	P3 A		0.00 - 0.00	15/08/2023
28503038	P4 A		0.00 - 0.00	16/08/2023
28502930	P7 A		0.00 - 0.00	15/08/2023
28502945	P8 A		0.00 - 0.00	15/08/2023
28502917	P2 B		0.00 - 0.00	15/08/2023
28502927	P3 B		0.00 - 0.00	15/08/2023
28503041	P4 B		0.00 - 0.00	16/08/2023
28502937	P7 B		0.00 - 0.00	15/08/2023
28502949	P8 B		0.00 - 0.00	15/08/2023
28503008	R1 A		0.00 - 0.00	16/08/2023
28503015	R2 A		0.00 - 0.00	16/08/2023
28503012	R1 B		0.00 - 0.00	16/08/2023
28503021	R2 B		0.00 - 0.00	16/08/2023
28503069	S1 A		0.00 - 0.00	16/08/2023
28503116	S3 A		0.00 - 0.00	16/08/2023
28503075	S1 B		0.00 - 0.00	16/08/2023
28503120	S3 B		0.00 - 0.00	16/08/2023
28502971	SWML3 A		0.00 - 0.00	16/08/2023
28502962	SWML4 A		0.00 - 0.00	16/08/2023
28503032	SWML5(A) A		0.00 - 0.00	16/08/2023
28502981	SWML7(A) A		0.00 - 0.00	16/08/2023
28503035	SWML5(A) B		0.00 - 0.00	16/08/2023
28502984	SWML7(A) B		0.00 - 0.00	16/08/2023
28502977	SWML3 B		0.00 - 0.00	16/08/2023
28502965	SWML4 B		0.00 - 0.00	16/08/2023
28502953	SWML5(B) A		0.00 - 0.00	16/08/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142 **Report Number:** 702250 **Superseded Report:**
Client Ref.: P21-195 **Location:** Dublin Airport

28502999	SWML7(B) A	0.00 - 0.00	16/08/2023
28502958	SWML5(B) B	0.00 - 0.00	16/08/2023
28503004	SWML7(B) B	0.00 - 0.00	16/08/2023
28503132	WAD Stream A	0.00 - 0.00	16/08/2023
28503135	WAD Stream B	0.00 - 0.00	16/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28503143	GW14 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503126	GW13 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503018	GW12 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502924	GW11 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502989	GW19 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503026	GW18 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502895	GW17 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502886	GW16 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503147	GW15 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503138	GW14 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503057	GW13 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502974	GW12 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502879	GW11 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503103	C-2B (B)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503094	C-2B (A)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503049	C1 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503084	C-2A (B)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503079	C-2A (A)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503044	C1 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
PFAS Liquids (Full Suite)	All				NDPs: 0 Tests: 62	

28502949	P8 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502937	P7 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503041	P4 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502927	P3 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502917	P2 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502945	P8 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502930	P7 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503038	P4 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502920	P3 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502911	P2 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503063	M5 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503052	M5 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503129	K Stream B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503123	K Stream A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502908	GWMMP5 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502904	GWMMP5 A		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502995	CW19 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28503029	CW18 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502900	CW17 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502891	CW16 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502883	CW15 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	28502958	SWML5(B) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502999	SWML7(B) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502953	SWML5(B) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502965	SWML4 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502977	SWML3 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502984	SWML7(A) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503035	SWML5(A) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502981	SWML7(A) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503032	SWML5(A) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502962	SWML4 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502971	SWML3 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503120	S3 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503075	S1 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503116	S3 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503069	S1 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
28503021	R2 B		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503012	R1 B		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503015	R2 A		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503008	R1 A		0.00 - 0.00	Digitube for PFAS analysis.	SW	
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 62				

28503135	WAD Stream B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503132	WAD Stream A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503004	SWML7(B) B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		C1 A	C-2A (A)	C-2A (B)	C1 B	C-2B (A)	C-2B (B)
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received
	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)
(F)	Trigger breach confirmed		AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	3.84	34.4	32.3	3.61	15.2	14.9	#	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	3.42	73.1	69.9	2.24	32	33.5	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	1	<1	<1	<1	#	1.05
PFHxA (307-24-4)	<1 ng/l	TM434	1.64	24.5	22.6	1.87	13.1	14.2	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	1.33	13.3	12.3	1.32	6.09	6.55	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	2.98	2.67	<1	<1	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.26	8.19	6.83	1.3	3.27	3.25	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	<1	2.21	2.53	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	1.87	1.55	<1	<1	1.04	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.916	0.985	<0.65	0.966	1.05	1.09	#	#
Branched PFOS	<0.65 ng/l	TM434	0.784	<0.65	<0.65	0.769	1.31	1.48	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	C1 A	C-2A (A)	C-2A (B)	C1 B	C-2B (A)	C-2B (B)
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28503044	28503079	28503084	28503049	28503094	28503094	28503103
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	1.7	0.985	<0.65	1.74	2.37	2.57	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A				
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.		Sample Type		Ground Water (GW)									
aq	Aqueous / settled sample.		Date Sampled		16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time											
tot.unfilt	Total / unfiltered sample.		Date Received		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28502879	28502974	28503057	28503138	28503147	28502886				
	(F) Trigger breach confirmed		AGS Reference											
	1-4* @ Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	184	#	5.57	#	<2	#	90.8	#	4.88	#	30.7	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	979	#	19.2	#	<1	#	582	#	4.97	#	106	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	1.14	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	15.9	#	<1	#	<1	#	2.08	#	1.02	#	1.89	#
PFHxA (307-24-4)	<1 ng/l	TM434	468	#	8.1	#	<1	#	302	#	3.32	#	46.1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	198	#	4.15	#	<1	#	84.8	#	3.9	#	14.3	#
PFPeS (2706-91-4)	<1 ng/l	TM434	13.6	#	<1	#	<1	#	2.15	#	<1	#	1.56	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	664	#	45.3	#	<1	#	15.1	#	<1	#	13.6	#
FBSA (30334-69-1)	<1 ng/l	TM434	17.5	#	<1	#	<1	#	1.84	#	<1	#	1.33	#
PFOA (335-67-1)	<0.65 ng/l	TM434	157	#	3.62	#	<0.85	#	8.15	#	1.11	#	3.94	#
PFHxS (355-46-4)	<1 ng/l	TM434	103	#	6.79	#	<1	#	16	#	2.88	#	8.62	#
PFNA (375-95-1)	<1 ng/l	TM434	16.5	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	1.2	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	93.3	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	58.7	#	3.71	#	<0.65	#	0.862	#	<0.65	#	1.27	#
Branched PFOS	<0.65 ng/l	TM434	18.4	#	4.09	#	<0.65	#	0.751	#	<0.65	#	6.09	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502879	28502974	28503057	28503138	28503147	28502886	28502886
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	28.8	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	77.1	7.8	<0.65	1.61	<0.65	7.35	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	28502895	28503026	28502989	28502924	28503018	28503126
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)						
(F)	Trigger breach confirmed		AGS Reference	AGS Reference						
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	13.1	<2	<2	323	5.46	<2	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	7.97	<1	<1	2010	17.1	<1	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	1.57	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	24.3	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	4.39	<1	<1	886	7.26	<1	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.91	<1	<1	370	3.27	<1	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	16.6	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<1	1230	6.48	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	24.4	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.49	<0.65	<0.65	223	1.39	<0.65	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	126	3.79	<1	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	25	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	2.08	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	128	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	2.11	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.42	<0.65	<0.65	75.6	1.83	<0.65	#	#
Branched PFOS	<0.65 ng/l	TM434	1.01	<0.65	<0.65	26.1	2.04	<0.65	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Ground Water (GW)						
aq	Aqueous / settled sample.			16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.			230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)				28502895	28503026	28502989	28502924	28503018	28503126	
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	48	<1	<1	#	
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#	
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#	
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	
6:2 FTAB (34455-29-3)	<10 ng/l	TM434				8360			#	
Total PFOS	<0.65 ng/l	TM434	2.44	<0.65	<0.65	102	3.87	<0.65	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Ground Water (GW)						
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	15/08/2023	15/08/2023	15/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.			230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
	Subcontracted - refer to subcontractor report for accreditation status.			28503143	28502883	28502891	28502900	28503029	28502995	28502995
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	122	4.33	22.1	12.1	<2	<2		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	987	4.34	68.9	7.82	<1	<1		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	2.66	<1	1.74	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	457	5.98	33.6	4.41	<1	<1		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	121	3.28	11	3.56	<1	<1		
PFPeS (2706-91-4)	<1 ng/l	TM434	2.56	<1	1.26	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	20.5	<1	10.8	<1	<1	<1		
FBSA (30334-69-1)	<1 ng/l	TM434	1.35	<1	1.5	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	12.2	2.03	2.75	2.31	<0.65	<0.65		
PFHxS (355-46-4)	<1 ng/l	TM434	7.58	3.35	13.9	<1	<1	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	1.87	0.885	<0.65	<0.65		
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	3.55	0.759	<0.65	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	15/08/2023	15/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28503143	28502883	28502891	28502900	28503029	28502995	28502995
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	5.42	1.64	<0.65	<0.65	<0.65
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	28502904	28502908	28503123	28503129	28503052	28503063
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)						
(F) Trigger breach confirmed			AGS Reference	AGS Reference						
1-4*\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	4.04	5.93	27.6	25.9	6.01	5.48	#	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	2.76	3.7	76.4	75.9	9.93	12.4	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	1.16	2.2	2.08	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	<1	1.87	35.6	34.7	5.5	6.86	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	1.18	1.43	20.1	20.3	2.93	2.78	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	1.47	1.35	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	12.4	12.3	1.18	1.19	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	1.27	1.06	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	0.915	1.33	15.6	14.7	2.27	2.15	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	16.3	12	1.23	1.29	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	3.69	3.8	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	8.19	5.37	2.32	2.62	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	4.4	4.11	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	9.41	7.1	<0.65	0.652	#	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	7.02	7.96	0.882	0.718	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Surface Water (SW) 16/08/2023			
M	mCERTS accredited.			18/08/2023 230818-142 28502904	18/08/2023 230818-142 28502908	18/08/2023 230818-142 28503123	18/08/2023 230818-142 28503129	18/08/2023 230818-142 28503052	18/08/2023 230818-142 28503063
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	2.25	1.93	<1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	16.4	15.1	0.882	1.37	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		P2 A	P3 A	P4 A	P7 A	P8 A	P2 B		
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.				Surface Water (SW)							
aq	Aqueous / settled sample.		Date Sampled	Date Received	15/08/2023	15/08/2023	16/08/2023	15/08/2023	15/08/2023	15/08/2023		
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023		
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142		
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28502911	28502920	28503038	28502930	28502945	28502917		
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
(F)	Trigger breach confirmed											
1-4	Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	20.2	#	10.4	#	12.3	#	21	#	26.9	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	47.6	#	20.5	#	30.3	#	16.4	#	23.6	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.02	#	1.06	#	1.17	#	<1	#	1.09	#
PFHxA (307-24-4)	<1 ng/l	TM434	21	#	9.58	#	13.7	#	7.37	#	11.3	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	6.85	#	4.15	#	7.2	#	3.84	#	4.11	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	1.39	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.3	#	1.82	#	4.3	#	1.5	#	2.24	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	2.17	#	5.52	#	1.21	#	1.64	#
PFNA (375-95-1)	<1 ng/l	TM434	1.01	#	<1	#	<1	#	<1	#	1.06	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.7	#	0.728	#	1.45	#	<0.65	#	1.2	#
Branched PFOS	<0.65 ng/l	TM434	1.18	#	1.67	#	1.27	#	<0.65	#	1.16	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	P2 A	P3 A	P4 A	P7 A	P8 A	P2 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-142 28502911	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-142 28502920	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28503038	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-142 28502930	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-142 28502945	0.00 - 0.00 Surface Water (SW) 15/08/2023 18/08/2023 230818-142 28502917
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	1.88	2.4	2.72	<0.65	2.36	1.75	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		P3 B	P4 B	P7 B	P8 B	R1 A	R2 A				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled				
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time				
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received				
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)				
	(F) Trigger breach confirmed		AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference				
	1-4*\$@Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	10.4	#	15.5	#	21.9	#	6.76	#	13.3	#	13.2	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	22.2	#	42.1	#	18.5	#	24.4	#	42.5	#	46.2	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.06	#	1.11	#	<1	#	1.09	#	<1	#	1.08	#
PFHxA (307-24-4)	<1 ng/l	TM434	11.5	#	16	#	6.56	#	12.2	#	19.6	#	18.8	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	4.43	#	8.32	#	4.21	#	5.17	#	7.27	#	10.6	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	1.34	#	1.21	#	<1	#	3.38	#	1.89	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.67	#	5.25	#	1.82	#	2.65	#	4.67	#	5.55	#
PFHxS (355-46-4)	<1 ng/l	TM434	3.53	#	2.76	#	1.06	#	1.55	#	3.18	#	1.83	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	1.19	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	2.13	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.812	#	1.31	#	0.787	#	1.06	#	2.28	#	1.54	#
Branched PFOS	<0.65 ng/l	TM434	1.6	#	0.942	#	<0.65	#	1.16	#	2.45	#	1.45	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	P3 B	P4 B	P7 B	P8 B	R1 A	R2 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			15/08/2023	16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502927	28503041	28502937	28502949	28503008	28503015	28503015
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	2.41	2.25	0.787	2.22	4.73	2.99	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		R1 B	R2 B	S1 A	S3 A	S1 B	S3 B				
#	ISO17025 accredited.		Depth (m)	Surface Water (SW)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023			
aq	Aqueous / settled sample.		Sample Type	Surface Water (SW)										
diss.filt	Dissolved / filtered sample.		Date Sampled	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023				
tot.unfilt	Total / unfiltered sample.		Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		SDG Ref	28503012	28503021	28503069	28503116	28503075	28503120	28503120				
	(F) Trigger breach confirmed		Lab Sample No.(s)											
	1-4*@\$@Sample deviation (see appendix)		AGS Reference											
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	12.9	#	12.3	#	<4	#	4.33	#	4.63	#	4.77	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	40.3	#	44.8	#	<1	#	3.18	#	<1	#	2.76	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.11	#	1.15	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	17	#	22.2	#	<1	#	1.57	#	<1	#	1.53	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	6.88	#	11.2	#	<1	#	1.25	#	<1	#	1.18	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	2.66	#	2.45	#	<1	#	<1	#	<1	#	1.05	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	3.78	#	4.6	#	<0.85	#	1.1	#	<0.65	#	1.1	#
PFHxS (355-46-4)	<1 ng/l	TM434	5.6	#	2.99	#	<1	#	<1	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	2.15	#	1.86	#	<0.65	#	<0.65	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	2.12	#	1.97	#	<0.65	#	<0.65	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	AGS Reference	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
* Subcontracted - refer to subcontractor report for accreditation status.			Lab Sample No.(s)		28502971	28502962	28503032	28502981	28503035	28502984				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery														
(F) Trigger breach confirmed														
1-4*§@Sample deviation (see appendix)														
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	<10	◆ #	13.9	#	17	#	2.71	#	14.8	#	3.31	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	26.7	◆ #	44.3	#	41.2	#	3.76	#	39.5	#	3.88	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<15	◆ #	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<5	◆ #	<1	#	1.53	#	<1	#	1.22	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	12.1	◆ #	20.3	#	20.7	#	2.14	#	19.9	#	2.31	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.04	◆ #	9.8	#	9.44	#	<1	#	10.3	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<25	◆ #	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	5.89	◆ #	1.85	#	24.7	#	<1	#	24.3	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	5.63	◆ #	4.84	#	6.09	#	0.727	#	7.45	#	0.854	#
PFHxS (355-46-4)	<1 ng/l	TM434	5.63	◆ #	3.49	#	7.04	#	<1	#	6.8	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<5	◆ #	<1	#	1.15	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<5	◆ #	<1	#	1.42	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<10	◆ #	<2	#	2.31	#	<2	#	2.26	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<25	◆ #	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<25	◆ #	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<3.25	◆ #	1.52	#	3.62	#	<0.65	#	3.72	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	<3.25	◆ #	1.94	#	2.62	#	<0.65	#	2.43	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<10	◆ #	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<5	◆ #	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502971	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502962	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28503032	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502981	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28503035	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502984
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<15	<3	<3	<3	<3	<3	<3
			◆ #	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<50	<10	<10	<10	<10	<10	<10
			◆ #	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<50	<10	<10	<10	<10	<10	<10
			◆ #	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<50						
			◆						
Total PFOS	<0.65 ng/l	TM434	<3.25	3.47	6.24	<0.65	6.15	<0.65	
			◆ #	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B				
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.		Sample Type		Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled		16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time											
tot.unfilt	Total / unfiltered sample.		Date Received		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28502977	28502965	28502953	28502999	28502958	28503004				
	(F) Trigger breach confirmed		AGS Reference											
	1-4*§@Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	10.2	#	13.3	#	40.3	#	6.32	#	64.4	#	2.76	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	21.3	#	45.2	#	41.1	#	4.73	#	62.1	#	1.86	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	1.08	#	3.45	#	<1	#	5.25	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	10	#	21.4	#	27.1	#	3.03	#	39	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.97	#	8.99	#	12.6	#	1.6	#	18.6	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	2.11	#	<1	#	2.46	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	1.43	#	1.74	#	17.9	#	<1	#	24.2	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	2.02	#	<1	#	2.16	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.43	#	4.32	#	12.9	#	1.95	#	18.5	#	1.05	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.48	#	2.03	#	27	#	<1	#	27.4	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	1.18	#	3.96	#	1.09	#	4.87	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	6.81	#	<1	#	18.1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	4.82	#	<2	#	5.96	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	2.14	#	1.39	#	18.9	#	0.872	#	22.2	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	0.815	#	1.54	#	10.1	#	1.1	#	14.6	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502977	28502965	28502953	28502999	28502958	28503004	28503004
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	2.77	<1	3.1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
Total PFOS	<0.65 ng/l	TM434	2.96	2.92	29.1	1.97	36.8	<0.65	#



CERTIFICATE OF ANALYSIS

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SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	WAD Stream A	WAD Stream B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		16/08/2023	16/08/2023			
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023			
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142			
	* Subcontracted - refer to subcontractor report for accreditation status.		28503132	28503135			
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
	(F) Trigger breach confirmed						
	1-4*\$@Sample deviation (see appendix)						
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<6	8.91	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	16.1	18.7	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	1.78	1.88	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	7.13	9.75	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	3.32	4	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	2.52	2.92	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	2.15	<2	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	1.33	1.18	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.41	1.59	#	#	
Branched PFOS	<0.65 ng/l	TM434	1.01	1.25	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28503044	28503049	28503079	28503084	28503094	28503103	28502879	28502974	28503057	28503138
Customer Sample Ref.	C1 A	C1 B	C-2A (A)	C-2A (B)	C-2B (A)	C-2B (B)	GW11 A	GW12 A	GW13 A	GW14 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023	29-Aug-2023	29-Aug-2023	29-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	29-Aug-2023	24-Aug-2023

Lab Sample No(s)	28503147	28502886	28502895	28503026	28502989	28502924	28503018	28503126	28503143	28502883
Customer Sample Ref.	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B	GW14 B	GW15 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	24-Aug-2023	29-Aug-2023	25-Aug-2023	29-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023

Lab Sample No(s)	28502891	28502900	28503029	28502995	28502904	28502908	28503123	28503129	28503052	28503063
Customer Sample Ref.	GW16 B	GW17 B	GW18 B	GW19 B	GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	24-Aug-2023	29-Aug-2023	29-Aug-2023	25-Aug-2023	24-Aug-2023	29-Aug-2023	23-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023

Lab Sample No(s)	28502911	28502920	28503038	28502930	28502945	28502917	28502927	28503041	28502937	28502949
Customer Sample Ref.	P2 A	P3 A	P4 A	P7 A	P8 A	P2 B	P3 B	P4 B	P7 B	P8 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023

Lab Sample No(s)	28503008	28503015	28503012	28503021	28503069	28503116	28503075	28503120	28502971	28502962
Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	S1 A	S3 A	S1 B	S3 B	SWML3 A	SWML4 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	24-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	29-Aug-2023	25-Aug-2023	25-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023

Lab Sample No(s)	28502977	28502965	28503032	28502981	28503035	28502984	28502953	28502999	28502958	28503004
Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	29-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023	25-Aug-2023	25-Aug-2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Lab Sample No(s)	28503132	28503135
Customer Sample Ref.	WAD Stream A	WAD Stream B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	23-Aug-2023	29-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-142
Client Ref: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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Dublin
DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 19 January 2024
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-135
Your Reference: P21-195
Location: Dublin Airport
Report No: 717385
Order Number: Z4209

This report has been revised and directly supersedes 713027 in its entirety.

We received 18 samples on Friday November 24, 2023 and 18 of these samples were scheduled for analysis which was completed on Friday December 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997536	GW004-A		0.00 - 0.00	22/11/2023
28997529	GW007-A		0.00 - 0.00	22/11/2023
28997523	GW008-A		0.00 - 0.00	22/11/2023
28997489	GW014-A		0.00 - 0.00	22/11/2023
28997506	GW015 A		0.00 - 0.00	22/11/2023
28997541	GW004-B		0.00 - 0.00	22/11/2023
28997533	GW007-B		0.00 - 0.00	22/11/2023
28997526	GW008-B		0.00 - 0.00	22/11/2023
28997493	GW014-B		0.00 - 0.00	22/11/2023
28997509	GW015 B		0.00 - 0.00	22/11/2023
28997665	GW002D-A			22/11/2023
28997485	GW003D-A		0.00 - 0.00	22/11/2023
28997520	GW005D-A		0.00 - 0.00	22/11/2023
28997660	GW002D-B			22/11/2023
28997496	GW03D-B		0.00 - 0.00	22/11/2023
28997515	GW005D-B		0.00 - 0.00	22/11/2023
28997499	GWFB		0.00 - 0.00	22/11/2023
28997504	GWTB		0.00 - 0.00	22/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28997504	GWTR		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28997499	GWFB		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997515	GW005D-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997496	GW03D-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997660	GW002D-B			Digitube for PFAS analysis.	GW
	28997520	GW005D-A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997485	GW003D-A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997665	GW002D-A			Digitube for PFAS analysis.	GW
	28997509	GW015 B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997493	GW014-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997526	GW008-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997533	GW007-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997541	GW004-B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997506	GW015 A		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997489	GW014-A		0.00 - 0.00	Digitube for PFAS analysis.	GW
28997523	GW008-A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
28997529	GW007-A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
28997536	GW004-A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
PFAS Liquids (Full Suite)	All				NDPs: 0 Tests: 18	
						X X X X X X X X X X X X X X X X X X X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.		GW004-A	GW007-A	GW008-A	GW014-A	GW015 A	GW004-B		
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Sample Type		Ground Water (GW)							
aq	Aqueous / settled sample.		Date Sampled		22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023		
diss.filt	Dissolved / filtered sample.		Sample Time									
tot.unfilt	Total / unfiltered sample.		Date Received		24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023		
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		231124-135	231124-135	231124-135	231124-135	231124-135	231124-135		
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28997536	28997529	28997523	28997489	28997506	28997541		
	(F) Trigger breach confirmed		AGS Reference									
	1-4* @ Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	<4	#	10.4	#	<10	#	27.5	<2	#	
PFMOPra (377-73-1)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<10	<2	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<2	#	26.6	#	<5	#	133	<1	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<6	#	<3	#	<15	#	<15	<3	#	
PFBS (375-73-5)	<1 ng/l	TM434	3.07	#	6.97	#	<5	#	<5	2.85	#	
PFHxA (307-24-4)	<1 ng/l	TM434	5.79	#	24.4	#	5.23	#	35.8	2.81	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<10	<2	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
PFHpA (375-85-9)	<1 ng/l	TM434	2.54	#	5.66	#	<5	#	9.48	1.96	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<2	#	3.99	#	<5	#	<5	<1	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<10	#	<5	#	<25	#	<50	<5	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<2	#	6.5	#	<5	#	17.9	1.14	#	
FBSA (30334-69-1)	<1 ng/l	TM434	2.13	#	1.72	#	<5	#	<5	1.6	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	2.59	#	5.19	#	4.62	#	5.43	2.46	#	
PFHxS (355-46-4)	<1 ng/l	TM434	5.84	#	19.6	#	14.9	#	<5	6.29	#	
PFNA (375-95-1)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	84.4	#	75.9	#	6.68	#	<10	85.6	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<5	<1	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<20	<2	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<10	#	<5	#	<25	#	<50	<5	#	
PFDA (335-76-2)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<20	<2	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<20	<2	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<10	#	<5	#	<25	#	<50	<5	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	18	#	3.35	#	17.4	#	<6.5	<3.25	17.5	#
Branched PFOS	<0.65 ng/l	TM434	15.4	#	6.36	#	11.6	#	<6.5	<3.25	13.7	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<20	<2	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<4	#	<2	#	<10	#	<20	<2	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<10	<5	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<2	#	<1	#	<5	#	<10	<5	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.	GW004-A	GW007-A	GW008-A	GW014-A	GW015 A	GW004-B
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		Date Sampled	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.		Sample Time						
tot.unfilt	Total / unfiltered sample.		Date Received	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	231124-135	231124-135	231124-135	231124-135	231124-135	231124-135
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	28997536	28997529	28997523	28997489	28997506	28997541
(F)	Trigger breach confirmed		AGS Reference						
1-4*	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<6	<3	<15	<30	<15	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<4	<2	<10	<20	<10	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<20	<10	<50	<100	<50	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<20	<10	<50	<100	<50	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<2	<1	<5	<10	<5	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<20	<10	<50	<100	285	<10	#
Total PFOS	<0.65 ng/l	TM434	33.5	9.7	29	<6.5	<3.25	31.2	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.		GW007-B	GW008-B	GW014-B	GW015 B	GW002D-A	GW003D-A				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		0.00 - 0.00				
M	mCERTS accredited.				Ground Water (GW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-135	231124-135	231124-135	231124-135	231124-135	231124-135				
	* Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997533	28997526	28997493	28997509	28997665	28997485				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
	(F) Trigger breach confirmed													
	1-4* @ Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	15.3	#	6.85	#	<10	#	36.9	#	39	@ #	<20	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
PFPA (2706-90-3)	<1 ng/l	TM434	29	#	2.69	#	7.23	#	163	#	106	@ #	<10	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<15	#	<3	#	<15	#	<15	#	<3	@ #	<30	#
PFBS (375-73-5)	<1 ng/l	TM434	9.08	#	3.22	#	<5	#	<5	#	4.23	@ #	<10	#
PFHxA (307-24-4)	<1 ng/l	TM434	27	#	3.74	#	<5	#	42.5	#	61.7	@ #	<10	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.98	#	1.6	#	<5	#	11	#	69.5	@ #	<10	#
PFPeS (2706-91-4)	<1 ng/l	TM434	5.22	#	2.23	#	<5	#	<5	#	2.61	@ #	<10	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<25	#	<5	#	<25	#	<25	#	<5	@ #	<50	#
ADONA (919005-14-4)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	10.3	#	<1	#	<5	#	21.1	#	21.9	@ #	<10	#
FBSA (30334-69-1)	<1 ng/l	TM434	<5	#	1.9	#	<5	#	<5	#	2.05	@ #	<10	#
PFOA (335-67-1)	<0.65 ng/l	TM434	6.95	#	2.24	#	<3.25	#	5.37	#	37.5	@ #	<6.5	#
PFHxS (355-46-4)	<1 ng/l	TM434	22	#	16.7	#	<5	#	<5	#	30.8	@ #	<10	#
PFNA (375-95-1)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	8.57	@ #	<10	#
PFecHS (133201-07-7)	<1 ng/l	TM434	83.6	#	6.36	#	<5	#	<5	#	75.3	@ #	<10	#
PFHpS (375-92-8)	<1 ng/l	TM434	<5	#	1.19	#	<5	#	<5	#	2.92	@ #	<10	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	4.67	@ #	<20	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<25	#	<5	#	<25	#	<25	#	<5	@ #	<50	#
PFDA (335-76-2)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<25	#	<5	#	<25	#	<25	#	<5	@ #	<50	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	4.36	#	25.3	#	<3.25	#	<3.25	#	40	@ #	<6.5	#
Branched PFOS	<0.65 ng/l	TM434	8	#	14.8	#	<3.25	#	<3.25	#	50.3	@ #	<6.5	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<10	#	<2	#	<10	#	<10	#	<2	@ #	<20	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#
PFNS (68259-12-1)	<1 ng/l	TM434	<5	#	<1	#	<5	#	<5	#	<1	@ #	<10	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.	GW007-B	GW008-B	GW014-B	GW015 B	GW002D-A	GW003D-A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997533	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997526	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997493	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997509	Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997665	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997485
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<5	1.86	<5	<5	5.69	<10	# @ #
PFD0A (307-55-1)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFDS (335-77-3)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFTrDA (72629-94-8)	<3 ng/l	TM434	<15	<3	<15	<15	<3	<30	# @ #
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFUnDS (749786-16-1)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFTeA (376-06-7)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
PFOSA (754-91-6)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFD0S (79780-39-5)	<2 ng/l	TM434	<10	<2	<10	<10	<2	<20	# @ #
PFTrDS (174675-49-1)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
PFHxDA (67905-19-5)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
MeFOSE (24448-09-7)	<10 ng/l	TM434	<50	<10	<50	<50	<10	<100	# @ #
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
EiFOSE (1691-99-2)	<10 ng/l	TM434	<50	<10	<50	<50	<10	<100	# @ #
PFODA (16517-11-6)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<5	<1	<5	<5	<1	<10	# @ #
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<50	<10	<50	356	<10	<100	# @ #
Total PFOS	<0.65 ng/l	TM434	12.4	40.1	<3.25	<3.25	90.2	<6.5	# @ #



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.		GW005D-A	GW002D-B	GW03D-B	GW005D-B	GWFB	GWTB			
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00		0.00 - 0.00		0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Sample Type		Ground Water (GW)								
aq	Aqueous / settled sample.		Date Sampled		22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023			
diss.filt	Dissolved / filtered sample.		Sample Time										
tot.unfilt	Total / unfiltered sample.		Date Received		24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023			
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		231124-135	231124-135	231124-135	231124-135	231124-135	231124-135			
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28997520	28997660	28997496	28997515	28997499	28997504			
	(F) Trigger breach confirmed		AGS Reference										
	1-4* @ Sample deviation (see appendix)												
Component	LOD/Units	Method											
PFBA (375-22-4)	<2 ng/l	TM434	26.7	#	@ #	<20	#	36.4	#	<2	#	<2	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	74.5	#	@ #	<10	#	71.1	#	<1	#	<1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	@ #	<30	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	23.6	#	@ #	<10	#	23.8	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	77.2	#	@ #	<10	#	73.1	#	<1	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	27.9	#	@ #	<10	#	29.2	#	<1	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	19.5	#	@ #	<10	#	19	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	@ #	<50	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	85.3	#	@ #	<10	#	85.2	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	5.23	#	@ #	<10	#	5.14	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	21.7	#	@ #	<6.5	#	23.8	#	<0.65	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	108	#	@ #	<10	#	110	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	2.89	#	@ #	<10	#	4.14	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	28.3	#	@ #	<10	#	27.8	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	1.39	#	@ #	<10	#	2.02	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	@ #	<50	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	@ #	<50	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	4.33	#	@ #	<6.5	#	7.29	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	25.4	#	@ #	<6.5	#	32.2	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	@ #	<20	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	@ #	<10	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Results Legend			Customer Sample Ref.	GW005D-A	GW002D-B	GW03D-B	GW005D-B	GWFB	GWTB
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997520	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997660	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997496	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997515	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997499	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-135 28997504
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	4.6	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<30	<3	<3	<3	<3
			#	@ #	#	#	#	#	2 #
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	<2
			#	@ #	#	#	#	#	2 #
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<100	<10	<10	<10	<10
			#	@ #	#	#	#	#	2 #
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<100	<10	<10	<10	<10
			#	@ #	#	#	#	#	2 #
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	<1
			#	@ #	#	#	#	#	2 #
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10	<100	<10	<10	<10	<10
			#	@	#	#	#	#	2
Total PFOS	<0.65 ng/l	TM434	29.8	89.5	<6.5	39.5	<0.65	<0.65	<0.65
			#	@ #	#	#	#	#	2 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Data Amendment

Sample No. : 28997506 Date of Amendment : 19/01/2024

Sample Ref.	Reason	Previous	Amended
GW015 A	Sample ID Change	GW16 A	GW15 A

Sample No. : 28997509 Date of Amendment : 19/01/2024

Sample Ref.	Reason	Previous	Amended
GW015 B	Sample ID Change	GW16 B	GW15 B

Sample No. : 28997660 Date of Amendment : 19/01/2024

Sample Ref.	Reason	Previous	Amended
GW002D-B	Sample Date Change	11/11/2023	22/11/2023

Sample No. : 28997665 Date of Amendment : 19/01/2024

Sample Ref.	Reason	Previous	Amended
GW002D-A	Sample Date Change	11/11/2023	22/11/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-135
Client Ref.: P21-195

Report Number: 717385
Location: Dublin Airport

Superseded Report: 713027

Test Completion Dates

Lab Sample No(s)	28997506	28997509	28997536	28997529	28997523	28997489	28997541	28997533	28997526	28997493
Customer Sample Ref.	GW015 A	GW015 B	GW004-A	GW007-A	GW008-A	GW014-A	GW004-B	GW007-B	GW008-B	GW014-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	30-Nov-2023	30-Nov-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023	01-Dec-2023	01-Dec-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023

Lab Sample No(s)	28997665	28997485	28997520	28997660	28997496	28997515	28997499	28997504
Customer Sample Ref.	GW002D-A	GW003D-A	GW005D-A	GW002D-B	GW03D-B	GW005D-B	GWFB	GWTB
AGS Ref.								
Depth		0.00 - 0.00	0.00 - 0.00		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	01-Dec-2023	01-Dec-2023	30-Nov-2023	01-Dec-2023	01-Dec-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-135
Client Ref: P21-195

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Location: Dublin Airport

Superseded Report: 713027

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 December 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-137
Your Reference: P21-195
Location: Dublin Airport
Report No: 713029
Order Number: Z4209

We received 14 samples on Friday November 24, 2023 and 14 of these samples were scheduled for analysis which was completed on Friday December 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997694	BH1A		0.00 - 0.00	22/11/2023
28997686	BH5A		0.00 - 0.00	22/11/2023
28997679	BH6A		0.00 - 0.00	22/11/2023
28997716	BH7A		0.00 - 0.00	22/11/2023
28997698	BH9A		0.00 - 0.00	22/11/2023
28997690	BH1B		0.00 - 0.00	22/11/2023
28997683	BH5B		0.00 - 0.00	22/11/2023
28997719	BH6B		0.00 - 0.00	22/11/2023
28997713	BH7B		0.00 - 0.00	22/11/2023
28997672	BH9B		0.00 - 0.00	22/11/2023
28997704	BH8DA		0.00 - 0.00	22/11/2023
28997701	BH8DB		0.00 - 0.00	22/11/2023
28997710	BH8SA		0.00 - 0.00	22/11/2023
28997707	BH8SB		0.00 - 0.00	22/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		28997707	BH8SB		0.00 - 0.00	Digitube for PFAS analysis.	GW
		28997710	BH8SA		0.00 - 0.00	Digitube for PFAS analysis.	GW
		28997701	BH8DB		0.00 - 0.00	Digitube for PFAS analysis.	GW
		28997704	BH8DA		0.00 - 0.00	Digitube for PFAS analysis.	GW
		28997672	BH9B		0.00 - 0.00	Digitube for PFAS analysis.	GW
	28997713	BH7B		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997719	BH6B		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997683	BH5B		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997690	BH1B		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997698	BH9A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997716	BH7A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997679	BH6A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997686	BH5A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
	28997694	BH1A		0.00 - 0.00	Digitube for PFAS analysis.	GW	
PFAS Liquids (Full Suite)	All				NDPs: 0 Tests: 14		
						X X X X X X X X X X X X X X X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023					
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<15	<3	<30	<3	<15	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<10	<2	<20	<2	<10	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<50	<10	<100	<10	<50	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<50	<10	<100	<10	<50	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<5	<1	<10	<1	<5	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<50	<10	<100	<10	<50	<10	#
Total PFOS	<0.65 ng/l	TM434	<3.25	0.778	<6.5	<0.65	<3.25	1.13	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		BH5B	BH6B	BH7B	BH9B	BH8DA	BH8DB
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-137	231124-137	231124-137	231124-137	231124-137	231124-137
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997683	28997719	28997713	28997672	28997704	28997701
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	4.06	<2	65.3	<2	8.31	8.94	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	3.95	<1	82.4	<1	11	11.5	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<30	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<10	<1	1.69	1.72	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	2.24	<1	16.8	<1	3.94	4.06	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<10	<1	1.05	1.04	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<50	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.17	<0.65	<6.5	<0.65	<0.65	<0.65	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<10	<1	3.91	4.23	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<10	<1	7.32	7.83	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<50	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<50	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	<6.5	<0.65	<0.65	<0.65	#	#
Branched PFOS	<0.65 ng/l	TM434	0.804	<0.65	<6.5	<0.65	<0.65	0.825	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<20	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<10	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	BH8SA	BH8SB			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)			
aq	Aqueous / settled sample.		22/11/2023	22/11/2023			
diss.filt	Dissolved / filtered sample.		24/11/2023	24/11/2023			
tot.unfilt	Total / unfiltered sample.		231124-137	231124-137			
*	Subcontracted - refer to subcontractor report for accreditation status.		28997710	28997707			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$	Sample deviation (see appendix)						
Component	LOD/Units		Method				
PFBA (375-22-4)	<2 ng/l	TM434	7.71	7.06	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	9.97	9.77	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	1.92	1.72	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	4.05	3.44	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	1.25	1.2	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	4.97	4.73	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	9.53	8.92	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	1.1	0.949	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	BH8SA	BH8SB					
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00					
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)					
aq	Aqueous / settled sample.			22/11/2023	22/11/2023					
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.			24/11/2023	24/11/2023					
*	Subcontracted - refer to subcontractor report for accreditation status.			231124-137	231124-137					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			28997710	28997707					
(F)	Trigger breach confirmed									
1-4*	Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	#	#				
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	#	#				
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	#	#				
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	#	#				
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	#	#				
PFUn _D S (749786-16-1)	<2 ng/l	TM434	<2	<2	#	#				
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	#	#				
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	#	#				
PFDo _S (79780-39-5)	<2 ng/l	TM434	<2	<2	#	#				
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	#	#				
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	#	#				
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	#	#				
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	#	#				
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	#	#				
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	#	#				
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	#	#				
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10						
Total PFOS	<0.65 ng/l	TM434	1.1	0.949	#	#				



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-137
Client Ref.: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28997694	28997686	28997679	28997716	28997698	28997690	28997683	28997719	28997713	28997672
Customer Sample Ref.	BH1A	BH5A	BH6A	BH7A	BH9A	BH1B	BH5B	BH6B	BH7B	BH9B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	01-Dec-2023	30-Nov-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	01-Dec-2023	01-Dec-2023

Lab Sample No(s)	28997704	28997701	28997710	28997707
Customer Sample Ref.	BH8DA	BH8DB	BH8SA	BH8SB
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	01-Dec-2023	01-Dec-2023	30-Nov-2023	01-Dec-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-137
Client Ref: P21-195

Report Number: 713029
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
 Unit 3/4
 Northwood House
 Northwood Crescent
 Northwood
 Dublin
 Dublin
 DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 19 January 2024
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-138
Your Reference: P21-195
Location: Dublin Airport
Report No: 717376
Order Number: Z4209

This report has been revised and directly supersedes 713397 in its entirety.

We received 2 samples on Friday November 24, 2023 and 2 of these samples were scheduled for analysis which was completed on Tuesday December 05, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
 Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997732	Gardeners Well A		0.00 - 0.00	22/11/2023
28997736	Gardeners Well B		0.00 - 0.00	22/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Results Legend <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px; background-color: yellow;">X</div> Test <div style="border: 1px solid black; padding: 2px; background-color: red; color: white;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	28997732	28997736
	Customer Sample Reference	Gardeners Well A	Gardeners Well B
	AGS Reference		
	Depth (m)	0.00 - 0.00	0.00 - 0.00
	Container	Digitube for PFAS analysis.	Digitube for PFAS analysis.
	Sample Type	GW	GW
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 2	<div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px; background-color: yellow;">X</div> <div style="border: 1px solid black; padding: 2px; background-color: yellow;">X</div> </div>



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Results Legend			Customer Sample Ref.		Gardeners Well A	Gardeners Well B			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023	0.00 - 0.00 Ground Water (GW) 22/11/2023				
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$	Sample deviation (see appendix)								
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	<2	#	<2	#			
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#			
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#			
PFPA (2706-90-3)	<1 ng/l	TM434	<1	#	<1	#			
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#			
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#			
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#			
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#			
PFHxA (307-24-4)	<1 ng/l	TM434	<1	#	<1	#			
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#			
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#			
PFHpA (375-85-9)	<1 ng/l	TM434	<1	#	<1	#			
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#			
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#			
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#			
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#			
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#			
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#			
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	<1	#			
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#			
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#			
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#			
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#			
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#			
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#			
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#			
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#			
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#			
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	<0.65	#			
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#			
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#			
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#			
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Results Legend			Customer Sample Ref.	Gardeners Well A	Gardeners Well B					
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00					
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)					
aq	Aqueous / settled sample.			22/11/2023	22/11/2023					
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.			24/11/2023	24/11/2023					
*	Subcontracted - refer to subcontractor report for accreditation status.			231124-138	231124-138					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			28997732	28997736					
(F)	Trigger breach confirmed									
1-4*	Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	#	#				
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	#	#				
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	#	#				
PFTTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	#	#				
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	#	#				
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	#	#				
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	#	#				
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	#	#				
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	#	#				
PFTTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	#	#				
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	#	#				
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	#	#				
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	#	#				
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	#	#				
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	#	#				
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	#	#				
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10						
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#				



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Data Amendment

Sample No. : All Date of Amendment : 19/01/2024

Sample Ref.	Reason	Previous	Amended
All	Matrix Change	Surface Water	Ground water



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-138
Client Ref.: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Test Completion Dates

Lab Sample No(s)	28997732	28997736
Customer Sample Ref.	Gardeners Well A	Gardeners Well B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
PFAS Liquids (Full Suite)	05-Dec-2023	04-Dec-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-138
Client Ref: P21-195

Report Number: 717376
Location: Dublin Airport

Superseded Report: 713397

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
Unit 3/4
Northwood House
Northwood Crescent
Northwood
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Dublin
DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 30 November 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231127-26
Your Reference: P21-195
Location: Dublin Airport
Report No: 712865
Order Number: Z4209

We received 2 samples on Monday November 27, 2023 and 2 of these samples were scheduled for analysis which was completed on Thursday November 30, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231127-26
Client Ref.: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
29006176	Offsite Reservoir A		0.00 - 0.00	24/11/2023
29006173	Offsite Reservoir B		0.00 - 0.00	24/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231127-26
Client Ref.: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	29006176	29006173		
	Customer Sample Reference	Offsite Reservoir A	Offsite Reservoir B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	Digitube for PFAS analysis.	Digitube for PFAS analysis.		
	Sample Type	SW	SW		
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 2	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px solid black; padding: 2px;">X</td> <td style="border: 1px solid black; padding: 2px;">X</td> </tr> </table>	X	X
X	X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 231127-26
Client Ref.: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		24/11/2023	24/11/2023			
diss.filt	Dissolved / filtered sample.		27/11/2023	27/11/2023			
tot.unfilt	Total / unfiltered sample.		231127-26	231127-26			
*	Subcontracted - refer to subcontractor report for accreditation status.		29006176	29006176			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$	Sample deviation (see appendix)						
Component	LOD/Units		Method				
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231127-26
Client Ref.: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231127-26
Client Ref.: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	29006176	29006173
Customer Sample Ref.	Offsite Reservoir A	Offsite Reservoir B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	30-Nov-2023	30-Nov-2023



CERTIFICATE OF ANALYSIS

SDG: 231127-26
Client Ref: P21-195

Report Number: 712865
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 December 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-144
Your Reference: P21-195
Location: Dublin Airport
Report No: 713474
Order Number: Z4209

We received 18 samples on Friday November 24, 2023 and 18 of these samples were scheduled for analysis which was completed on Wednesday December 06, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997922	GW11A		0.00 - 0.00	22/11/2023
28998011	GW12A		0.00 - 0.00	22/11/2023
28998020	GW13A		0.00 - 0.00	22/11/2023
28998026	GW14A		0.00 - 0.00	22/11/2023
28998031	GW15A		0.00 - 0.00	22/11/2023
28997940	GW16A		0.00 - 0.00	22/11/2023
28997963	GW17A		0.00 - 0.00	22/11/2023
28997978	GW18A		0.00 - 0.00	22/11/2023
28997995	GW19A		0.00 - 0.00	22/11/2023
28998007	GW11B		0.00 - 0.00	22/11/2023
28998015	GW12B		0.00 - 0.00	22/11/2023
28998023	GW13B		0.00 - 0.00	22/11/2023
28998028	GW14B		0.00 - 0.00	22/11/2023
28997932	GW15B		0.00 - 0.00	22/11/2023
28997955	GW16B		0.00 - 0.00	22/11/2023
28997969	GW17B		0.00 - 0.00	22/11/2023
28997986	GW18B		0.00 - 0.00	22/11/2023
28998001	GW19B		0.00 - 0.00	22/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28998001	- GW1 9B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997986	- GW1 8B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997969	- GW1 7B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997955	- GW1 6B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997932	- GW1 5B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998028	- GW1 4B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998023	- GW1 3B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998015	- GW1 2B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998007	- GW1 1B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997995	- GW1 9A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997978	- GW1 8A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997963	- GW1 7A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28997940	- GW1 6A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998031	- GW1 5A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28998026	- GW1 4A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
28998020	- GW1 3A		0.00 - 0.00	Digitube fo PFAS analysis.	GW	
28998011	- GW1 2A		0.00 - 0.00	Digitube fo PFAS analysis.	GW	
28997922	- GW1 1A		0.00 - 0.00	Digitube fo PFAS analysis.	GW	
PFAS Liquids (Full Suite)	All				NDPs: 0 Tests: 18	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW11A	GW12A	GW13A	GW14A	GW15A	GW16A	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Ground Water (GW)						
aq	Aqueous / settled sample.			22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.			231124-144	231124-144	231124-144	231124-144	231124-144	231124-144	231124-144
	Subcontracted - refer to subcontractor report for accreditation status.			28997922	28998011	28998020	28998026	28998031	28997940	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	154	5.47	3.06	61.8	4.8	29		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	738	22.4	1.86	298	4.7	84.8		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	9.58	<1	<1	<1	<1	1.45		
PFHxA (307-24-4)	<1 ng/l	TM434	300	8.03	1.8	106	3.64	35.2		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	133	3.12	<1	29.2	2.73	11.4		
PFPeS (2706-91-4)	<1 ng/l	TM434	6.37	<1	<1	<1	<1	1.07		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	439	13.1	<1	4.51	<1	9.78		
FBSA (30334-69-1)	<1 ng/l	TM434	7.86	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	79.1	1.5	<0.65	2.2	1.21	3.3		
PFHxS (355-46-4)	<1 ng/l	TM434	58.8	1.54	<1	1.97	1.2	7.66		
PFNA (375-95-1)	<1 ng/l	TM434	14.1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	2.08	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	95.6	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	59.6	1.4	<0.65	<0.65	<0.65	1.87		
Branched PFOS	<0.65 ng/l	TM434	22.6	1.86	<0.65	<0.65	<0.65	7.5		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW17A	GW18A	GW19A	GW11B	GW12B	GW13B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-144	231124-144	231124-144	231124-144	231124-144	231124-144
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997963	28997978	28997995	28998007	28998015	28998023
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	18.2	<10	<2	179	6.38	<2	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	7.16	<5	1.89	824	24.2	2.5	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<15	<3	<30	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<5	<1	15.7	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	6.21	<5	1.49	341	8.61	1.88	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	5.33	<5	<1	154	3.92	<1	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<5	<1	10.2	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<25	<5	<50	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<5	<1	583	16.2	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.41	<3.25	<0.65	95.2	1.89	<0.65	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<5	<1	77.6	1.95	<1	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<5	<1	21.6	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<10	<2	142	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<25	<5	<50	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<25	<5	<50	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<3.25	<0.65	123	1.65	<0.65	#	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	<3.25	<0.65	36.9	1.69	<0.65	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW17A	GW18A	GW19A	GW11B	GW12B	GW13B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997963	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997978	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997995	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28998007	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28998015	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28998023
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<5	<1	25.9	<1	<1	#
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<15	<3	<30	<3	<3	#
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFUn _d S (749786-16-1)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<10	<2	<20	<2	<2	#
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<50	<10	<100	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<50	<10	<100	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<5	<1	<10	<1	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<50	<10	7380	13.7	<10	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<3.25	<0.65	160	3.34	<0.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW14B	GW15B	GW16B	GW17B	GW18B	GW19B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)
	(F) Trigger breach confirmed		AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference
	1-4*\$@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	86.1	3.43	23.3	<20	<2	<2	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	276	5.17	88.3	<10	<1	<1	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<30	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	1.28	<10	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	107	3.94	37.1	<10	<1	<1	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	26.8	2.74	11.8	<10	<1	<1	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	1.15	<10	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	4.2	<1	10.3	<10	<1	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.3	1.21	3.32	<6.5	<0.65	<0.65	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.79	1.26	7.9	<10	<1	<1	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	2.12	<6.5	<0.65	<0.65	#	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	7.9	<6.5	<0.65	<0.65	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW14B	GW15B	GW16B	GW17B	GW18B	GW19B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28998028	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997932	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997955	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997969	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28997986	0.00 - 0.00 Ground Water (GW) 22/11/2023 24/11/2023 231124-144 28998001
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<30	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<100	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<100	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10	<10	<100	<10	<10	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	10	<6.5	<0.65	<0.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-144
Client Ref.: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28997922	28998011	28998020	28998026	28998031	28997940	28997963	28997978	28997995	28998007
Customer Sample Ref.	GW11A	GW12A	GW13A	GW14A	GW15A	GW16A	GW17A	GW18A	GW19A	GW11B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	06-Dec-2023	05-Dec-2023	05-Dec-2023	06-Dec-2023	05-Dec-2023	06-Dec-2023	06-Dec-2023	05-Dec-2023	06-Dec-2023	05-Dec-2023

Lab Sample No(s)	28998015	28998023	28998028	28997932	28997955	28997969	28997986	28998001
Customer Sample Ref.	GW12B	GW13B	GW14B	GW15B	GW16B	GW17B	GW18B	GW19B
AGS Ref.								
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	06-Dec-2023	06-Dec-2023	05-Dec-2023	05-Dec-2023	06-Dec-2023	05-Dec-2023	05-Dec-2023	05-Dec-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-144
Client Ref: P21-195

Report Number: 713474
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

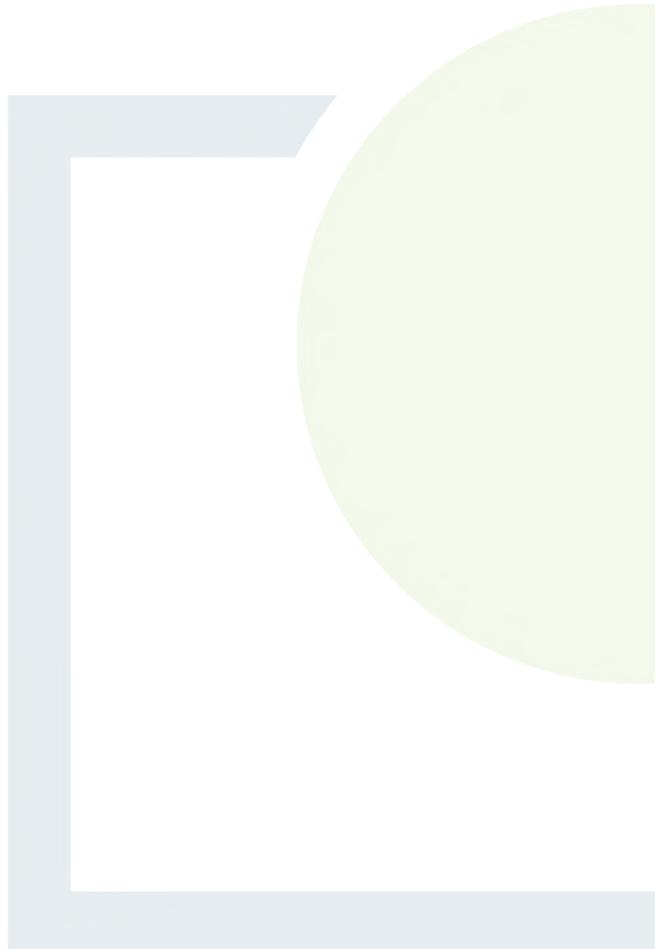
The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



CONSULTANTS IN ENGINEERING,
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APPENDIX 5

Surface Water Results





Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL1																							
		15/1/21	15/1/21	09/02/22	09/02/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	16/11/22	16/11/22	13/02/23	13/02/23	29/05/23	29/05/23	14/08/23	14/08/23	21/11/23	21/11/23	
11CI PF3QJAS (76351-62-9)	ng/l																		<2	<2	<2	<2	<2	<2	
33 FTCA (866-62-0)	ng/l																		<2	<2	<2	<2	<2	<2	
42 FTS (757124-72-4)	ng/l	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
53 FTCA (914637-49-3)	ng/l	<20	<20		<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20		
62 FTAB (34455-22-3)	ng/l																							<10	<10
82FTS (27819-97-2) Perfluoro-octane sulfonate B-2	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
73 FTA (812-70-4)	ng/l																		<5	<5	<5	<5	<5	<5	<5
82 FTS (39108-34-1)	ng/l	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
30-PP3ONS (756206-58-1)	ng/l																		<1	<1	<1	<1	<1	<1	<1
ADONA (918025-14-4)	ng/l																		<1	<1	<1	<1	<1	<1	<1
branched PFOS	ng/l	<0.65	<0.65	0.92	0.938	<1	<0.65	<0.65	<0.65	<0.65	<0.65	0.665	<0.65	<0.65	5.36	0.865	0.677	0.766	0.686	<0.65	<0.65	0.824	0.832	<0.65	0.666
EFOSAA (2991-50-6)	ng/l																		<2	<2	<2	<2	<2	<2	<2
EFOSB (1691-99-2)	ng/l																		<10	<10	<10	<10	<10	<10	<10
FBSA (30334-69-1)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PHSA (41997-13-1)	ng/l																		<1	<1	<1	<1	<1	<1	<1
HPFOA (13252-13-6)	ng/l																		<2	<2	<2	<2	<2	<2	<2
HPFOA (13252-14-7)	ng/l																		<5	<5	<5	<5	<5	<5	<5
Linear PFOS (763-23-1) Perfluoro-1-octanesulfonate	ng/l	<0.65	0.777	0.749	0.824	<0.65	<0.65	0.771	0.77	0.773	0.819	1.11	0.844	0.704	3.02	0.853	0.859	0.827	0.733	<0.65	<0.65	1.09	0.95	0.686	<0.65
MeFOAA (2355-31-9)	ng/l																		<2	<2	<2	<2	<2	<2	<2
MeFOBE (2448-09-7)	ng/l																		<10	<10	<10	<10	<10	<10	<10
N-EOFSA (4151-50-2)	ng/l																		<1	<1	<1	<1	<1	<1	<1
NFDHA (15172-68-6)	ng/l																		<3	<3	<3	<3	<3	<3	<3
N-MeFOA (31508-32-8)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	<3	5.03	10.7	11.2	2.61	2.95	4.41	5.19	7.66	7.65	<7	<3	<3.5	<14	<6	<8	6.14	5.07	4.24	<2	6.98	8.2	6.35	6.93
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	1.02	
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDA (307-55-1) Perfluoro-n-dodecanoic acid	ng/l	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDS (79780-39-5)	ng/l					<1	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFcHS (133201-07-7)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFEESA (113927-82-7)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFHA (375-85-9) Perfluoro-n-heptanoic acid	ng/l	1.32	2.76	7.87	7.87	1.74	2.21	2.5	1.92	1.03	1.48	1.26	<1	2	2.43	2.74	2.58	2.46	<1	<1	2.3	3.13	2.27	1.58	
PFHs (375-50-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHs (307-24-6) Perfluoro-n-hexanoic acid	ng/l	2.01	4.29	13.1	13.1	3.21	4.04	3.19	3.72	2.42	3.7	1.74	1.4	<1	2.75	4.12	4.28	4.65	4.16	1.85	3.85	6.02	5.72	4.94	5.96
PFHcA (8795-15-5)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFHcB (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	26.7	<1	<1	<1	<1	<1	<1	<1	1.24	<1	1.04
PFMOBA (86390-89-6)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFMOPHA (377-73-1)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFNA (375-95-1) Perfluoro-n-novenoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.05	<1	<1	<1
PFNS (86259-12-1)	ng/l					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	0.959	1.26	1.75	1.88	1.06	1.05	2.42	3.24	2.51	2.52	0.955	0.933	1.04	2.37	1.17	1.06	1.07	0.949	<0.65	0.894	1.91	1.74	1.23	1.38
PFDA (16517-11-6)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFDA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PFPA (2708-90-3) Perfluoro-n-pentanoic acid	ng/l	3.92	7.64	33.9	27.9	5.53	6.64	8.66	8.66	4.76	7.33	3.32	1.77	<1	7.41	8.04	9.63	7.51	6.64	6.42	12.2	13.2	10.2	10.5	
PFPS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3.13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFTcA (378-06-7)	ng/l																		<1	<1	<1	<1	<1	<1	<1
PFTDA (28209-84-8)	ng/l				<1	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<3	<3	<3	<3
PFTDS (174875-49-1)	ng/l				<2	<3	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFUHS (749786-16-1)	ng/l				<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total PFOS	ng/l	<0.65	0.777	1.67	1.76	<1	<0.65	0.771	0.77	0.779	0.819	1.77	0.844	0.704	9.58	1.72	1.54	1.59	1.42	<0.65	<0.65	1.91	1.76	0.686	0.666
Sum of PFAS																									
Sum of 20 PFAS	ng/l	8.009	21.747	69.09	63.71	14.15	16.9	21.951	23.42	19.159	22.499	9.965	4.817	1.744	48.53	16.86	17.66	25.66	22.169	11.73	10.164	32.87	35	25.576	29.756
Sum of Total PFAS	ng/l	8.009	22.524	70.759	65.472	14.15	16.9	22.722	24.19	19.938	23.918	10.84	5.661	2.448	66.75	18.568	19.196	27.253	23.588	11.73	10.164	34.784	36.762	26.262	30.422
Average Sum of 20 PFAS	ng/l	23.84																							
Average Total PFAS	ng/l	25.52																							
Min Sum of Total PFAS	ng/l	2.45																							
Max Sum of Total PFAS	ng/l	70.76																							
SW Threshold (as per S.I. No. 77 of 2015)																									
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	0		1.868		0		0		0		0.665		5.36		1.542		1.452		0		1.656		0.666	
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	0.777		1.573		0		1.541		1.598		1.954		4.324		1.712		1.56		0		2.02		0.686	
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	0.777		3.43		0		1.541		1.598		2.614		10.284		3.26		3.01		0		3.67		1.362	
MAC EQS (PFOS) (branched)	35,000 ng/l	<0.65	<0.65	0.92	0.938	<1	<0.65	<0.65	<0.65																



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL4																							
		09/02/22	09/03/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	19/09/22	16/11/22	16/11/22	13/02/23	13/02/23	20/05/23	20/05/23	14/08/23	14/08/23	21/11/23	21/11/23		
11C1 PFQJUS (76351-62-9)	ng/l																	<2	<2	<2	<2	<2	<2	<2	
33 FTCA (866-62-6)	ng/l																	<2	<2	<2	<2	<2	<2	<2	
42 FTS (757124-72-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	
53 FTCA (914637-49-3)	ng/l			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<5	<5	<5	<5	<5	<5	<5	
62 FTAB (34455-22-3)	ng/l																							<10	<10
62FTS (27819-97-2) Perfluoro-octano sulfonate B-2	ng/l	<1	<1	<1	<1	1.02	1.21	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
73 FTCA (812-70-4)	ng/l																	<5	<5	<5	<5	<5	<5	<5	<5
82 FTS (39108-34-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
9C1 PF3ONS (75626-58-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
ADONA (91805-14-4)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
branched PFOS	ng/l	1.61	1.51	1.64	<1.5	1.1	1.17	1.06	1.04	0.741	0.72	1.99	2.08	0.772	1.46	1.65	1.4	1.21	1.71	1.19	1.11	1.15	1.1	1.1	
EFOSAA (2991-60-6)	ng/l																	<2	<2	<2	<2	<2	<2	<2	<2
EFOSBE (1691-99-2)	ng/l																	<10	<10	<10	<10	<10	<10	<10	<10
FBSA (30334-69-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
FMBA (41997-13-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
HFPODA (13252-13-6)	ng/l																	<2	<2	<2	<2	<2	<2	<2	<2
HFPOTA (13252-14-7)	ng/l																	<5	<5	<5	<5	<5	<5	<5	<5
Linear PFOS (76323-1) Perfluoro-1-octanesulfonate	ng/l	<0.65	<0.65	1.34	<0.65	0.732	0.734	0.747	0.773	<0.65	0.702	1.08	1.08	0.828	0.828	0.756	<0.65	1.2	1.72	<0.65	<0.65	<0.65	<0.65	<0.65	
MeFOSA (2355-31-9)	ng/l																	<2	<2	<2	<2	<2	<2	<2	<2
MeFOBE (24448-09-7)	ng/l																	<10	<10	<10	<10	<10	<10	<10	<10
NEFOSA (4151-50-2)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
NFHA (15172-68-6)	ng/l																	<3	<3	<3	<3	<3	<3	<3	<3
NMeFOA (31508-32-8)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	18.8	14.4	14.8	11.4	8.21	8.37	10.4	11.1	<4.5	5.9	35.1	29.8	<10	<10	9.52	11.6	11.7	11.6	12.1	11.8	20.1	18.7	18.7	
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.04	<1	<1	
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFDA (307-65-1) Perfluoro-n-dodecanoic acid	ng/l	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFDS (79780-39-6)	ng/l			<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFcHS (133201-07-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFEEBA (133607-82-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFHA (375-85-8) Perfluoro-n-heptanoic acid	ng/l	14.5	11.1	14.3	10.8	4.7	5.63	3	3.23	2.04	2.35	16.5	19.2	7.39	8.29	4.71	3.36	3.31	2.97	4.98	4.31	7.61	7.12	7.12	
PFHcS (375-50-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHcA (307-24-6) Perfluoro-n-hexanoic acid	ng/l	21.8	18.1	19.6	16	7.04	7.66	9.04	9.04	5.03	5.09	37.7	37.8	13.8	13.8	10.2	9.3	8.19	8.36	10.5	9.74	17	16.3	16.3	
PFHcA (8795-15-5)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFHcB (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	1.98	1.42	1.24	1.01	1.5	1.82	1.58	1.03	<1	<1	2.62	2.45	2.25	2.17	1.83	1.91	<1	1.34	2.85	2.8	2.04	1.75	1.75	
PFMOBA (86390-89-6)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFMOPHA (377-73-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFNA (375-95-1) Perfluoro-n-novenoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFNS (86259-12-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	2.48	1.94	2.38	2.18	3.12	2.6	3.14	2.98	1.01	0.896	3.79	3.75	2.01	1.96	1.86	1.42	1.27	1.08	2.05	1.81	2.33	1.95	1.95	
PFDA (16517-11-6)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFPA (2708-90-3) Perfluoro-n-pentanoic acid	ng/l	61.5	48.5	28.3	27.3	10.1	17.1	21.5	13.6	7.9	13.3	71.1	22.7	32.7	39.8	19.5	18.6	21.5	21	22.5	20.6	38.2	36.9	36.9	
PFPS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFTcA (378-06-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFTDA (28209-94-8)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<3	<3	<3	<3	<3	
PFTDS (174875-49-1)	ng/l			<4	<4	<2	<2	<1	<1	<1	<1	<3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFUcS (749786-16-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	
Total PFOS	ng/l	1.61	1.51	2.38	<1.5	1.84	1.91	1.81	1.81	0.741	1.42	3.08	3.11	1.6	2.27	2.41	1.4	2.4	3.43	1.19	1.11	1.15	1.1	1.1	
Sum of PFAS																									
Sum of 20 PFAS	ng/l	112.67	96.97	82.7	68.67	36.51	44.96	46.97	39.79	16.721	33.156	163.89	108.79	69.75	68.09	49.43	51.08	48.37	49.78	55.97	52.71	88.43	82.41		
Sum of Total PFAS	ng/l	114.28	98.48	85.68	68.67	39.362	48.074	48.777	41.603	17.462	34.678	166.96	111.91	61.36	70.368	51.836	52.48	50.78	53.21	57.16	53.82	89.58	83.51		
Average Sum of 20 PFAS	ng/l																								
Average Total PFAS	ng/l																								
Min Sum of Total PFAS	ng/l																								
Max Sum of Total PFAS	ng/l																								
SW Threshold (as per S.I. No. 77 of 2015)																									
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	3.12		1.64		2.27		2.1		1.461		4.05		2.222		3.06		2.92		2.3		2.25			
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	0		1.34		1.466		1.52		0.702		2.14		1.656		0.756		2.92		0		0			
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	3.12		2.98		3.75		3.62		2.161		6.19		3.87		3.81									



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL6																					
		09/02/22	09/03/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	19/09/22	16/11/22	13/02/23	13/02/23	20/05/23	20/05/23	14/08/23	14/08/23	21/11/23	21/11/23	
11Cl PFOQS (76351-62-9)	ng/l																<2	<2	<2	<2	<2	<2	
33 FTCA (866-02-0)	ng/l																<2	<2	<2	<2	<2	<2	
42 FTS (757124-72-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
53 FTCA (914637-49-3)	ng/l			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
62 FTAB (34455-22-3)	ng/l																					24.1	17.4
82FTS (27819-97-2) Perfluoro-octano sulfonate B-2	ng/l	6.59	7.74	12.4	10.7	7.26	5.03	5.89	6.41	4.11	3.59	16.3	17.6	5.65	4.95	3.37	2.94	<1	<1	3.93	3.12	3.96	3.3
73 FTCA (812-70-4)	ng/l																<5	<5	<5	<5	<5	<5	<5
82 FTS (39108-34-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
3Cl-PFOSNs (756426-58-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
ADONA (918025-14-4)	ng/l																<1	<1	<1	<1	<1	<1	<1
Branched PFOS	ng/l	3.63	4.69	9.65	3.64	5.1	4	2.82	2.73	2.69	3.02	4.68	5.74	3.97	3.4	3.45	3.26	2.06	2.74	2.62	2.07	1.89	1.67
EFOSAA (2991-60-6)	ng/l																<2	<2	<2	<2	<2	<2	<2
EFOSB (1691-99-2)	ng/l																<10	<10	<10	<10	<10	<10	<10
FBSA (30334-69-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
PHSA (41997-13-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
HPFO-DA (13252-13-6)	ng/l																<2	<2	<2	<2	<2	<2	<2
HPFO-TA (13252-14-7)	ng/l																<5	<5	<5	<5	<5	<5	<5
Linear PFOS (763-23-1) Perfluoro-1-octanesulfonate	ng/l	5.37	6.83	5.29	4	7.29	6.03	3.82	4.17	4.6	5.1	4.89	5.52	5.47	4.99	7.01	6.81	3.47	3.48	3.46	2.62	1.91	1.57
MeFOEAA (2355-31-9)	ng/l																<2	<2	<2	<2	<2	<2	<2
MeFOE (24448-09-7)	ng/l																<10	<10	<10	<10	<10	<10	<10
NEFOEA (4151-50-2)	ng/l																<1	<1	<1	<1	<1	<1	<1
NFOHA (15172-68-6)	ng/l																<3	<3	<3	<3	<3	<3	<3
NMeFOEA (31508-32-8)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	16.8	<15	10.6	9.26	34.8	21.2	13.8	20.3	<7.5	<10	22.9	<28	<10	<8	9.91	10.6	9.28	9.1	13.1	9	11	7.9
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	1.22	1.11	<1	<1	<1	<1.5	1.24	<1	<1	1.79	1.88	1.73	1.19	<1	<1	<1	1.77	1.31	1.31	1.36
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<1.5	<1	<1	<1	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFDA (307-65-1) Perfluoro-n-dodecanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2
PFDDs (79780-39-6)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2
PFdHS (133201-07-7)	ng/l																<1	<1	<1	<1	1.3	1.33	1.18
PFEEBA (133607-82-7)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFHnA (375-85-8) Perfluoro-n-heptanoic acid	ng/l	8.30	2.76	13.7	7.91	17.9	11.3	10.5	11.4	16.1	16.4	21	16.1	9.46	9	12	10.4	4.97	4.91	7.43	6.31	4.34	4.02
PFHnS (375-50-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFHnA (307-24-6) Perfluoro-n-hexanoic acid	ng/l	14.1	16.4	27.6	23.4	19.4	12.1	44.6	51.8	31.5	99.8	97.6	86.7	19.5	19.4	22.1	20.6	17.8	17.8	25.3	16.7	17	10.5
PFHnA (8795-15-5)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFHnS (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	3.49	4.01	3.72	3.44	4.54	3.22	2.79	3.1	3.46	3.25	5.62	8.27	4.94	3.89	4.91	4.39	3.98	2.83	3.12	3.75	2.27	2.04
PFMOBA (86390-89-6)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFMOPHA (377-73-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFNA (375-95-1) Perfluoro-n-nonanoic acid	ng/l	1.73	1.46	1.21	1.27	2.19	1.52	1.08	1.19	1.17	1.34	1.34	1.98	1.72	1.46	2.3	2.32	<1	1.34	1.7	<1	<1	<1
PFNS (86259-12-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	3.58	4.16	4.39	3.73	7.12	5.16	3.94	5.13	3.67	3.58	6.07	7.27	5.08	5.31	5.75	5.44	3.25	2.54	4.75	3.68	2.86	2.16
PFDA (16517-11-6)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PFPA (2708-90-3) Perfluoro-n-pentanoic acid	ng/l	32.6	28.2	24.5	28.4	56.6	36.4	49	63.4	49.2	63.9	64	80	27.3	56.3	36.2	18	23.9	20.3	31	19	19	16.5
PFPS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFTeA (378-06-7)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFTDA (28209-94-8)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<3	<3	<3	<3
PFTDS (174875-49-1)	ng/l			<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFUNDS (749786-16-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2
Total PFOS	ng/l	8.0	10.5	10.9	7.64	12.4	10	6.64	6.9	7.29	8.12	9.57	11.3	9.44	8.09	10.5	9.87	5.53	6.22	5.98	4.69	3.8	3.24
Sum of PFAS																							
Sum of 20 PFAS	ng/l	90.09	71.48	95.84	86.16	156.94	100.92	132.25	164.46	142.39	146.09	199.65	191.08	78.26	104.67	103.67	81.62	67.81	64.94	91.86	62.84	56.58	47.74
Sum of Total PFAS	ng/l	105.58	89.7	118.18	104.5	176.59	115.98	144.78	178.17	163.79	158.2	225.55	219.94	93.27	117.71	117.5	94.43	73.34	71.16	104.67	71.96	69.37	73.26
Average Sum of 20 PFAS	ng/l	106.25																					
Average Total PFAS	ng/l	122.53																					
Min Sum of Total PFAS	ng/l	71.16																					
Max Sum of Total PFAS	ng/l	225.55																					
SW Threshold (as per S.I. No. 77 of 2015)																							
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	8.18		9.29		9.1		5.55		5.71		10.42		7.37		6.71		4.8		4.59		3.56	
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	11.2		9.29		13.32		7.99		9.7		10.41		10.16		13.62		6.95		6.08		3.48	
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	19.4		18.54		22.4		13.54		16.41		20.87		17.53		20.37		11.75		10.67		7.04	
MAC EQS (PFOS) (branched)	35,000 ng/l	3.53	4.65	5.65	3.64	5.1	4	2.82	2.73	2.69	3.02	4.68	5.74	3.97	3.4	3.45	3.26	2.06	2.74	2.52	2.07	1.89	1.67
MAC EQS (PFOS) (linear)	35,000 ng/l	5.37	6.83	5.29	4	7.29	6.03	3.82	4.17	4.6	5.1	4.89	5.52	5.47	4.69	7.01	6.61	3.47	3.48	3.46	2.62	1.91	



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL7																							
		09/02/22	09/03/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	19/09/22	16/11/22	13/02/23	13/02/23	20/05/23	20/05/23	14/08/23	14/08/23	21/11/23	21/11/23			
11Cl PFOQS (76351-62-9)	ng/l																<2	<2	<2	<2	<2	<2	<2		
33 FTCA (866-02-0)	ng/l																<2	<2	<2	<2	<2	<2	<2		
42 FTS (757124-72-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
53 FTCA (914637-49-3)	ng/l			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20		
62 FTAB (34455-22-3)	ng/l																						52.4	51.9	
82FTS (27819-97-2) Perfluoro-octanesulfonate B-2	ng/l	17.1	17.2	15.5	16.4	23.1	22.2	44.5	51.7	35.6	33	3.48	3.82	20.5	18.8	13.3	14.9	16.3	16.5	63.7	73.3	31.5	29		
73 FTCA (812-70-4)	ng/l																<5	<5	<5	<5	<5	<5	<5	<5	
82 FTS (39108-34-4)	ng/l			6.79	7.86	<3	<3	<6	<7.5	<2	<2	<2	<2							2.31	3.6	3.11	3.22	3.08	
3D-PFONS (756426-58-1)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
ADONA (918025-14-4)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
branched PFOS	ng/l	1.89	2.04	11.6	12.6	4.02	4.22	4.87	4.42	4.04	3.72	2.71	2.58	5.23	4.1	1.87	1.81	7.6	6.61	3.66	2.68	5.64	4.75		
EFOSAA (2991-60-6)	ng/l																<2	<2	<2	<2	<2	<2	<2	<2	
EFOSB (1691-99-2)	ng/l																<10	<10	<10	<10	<10	<10	<10	<10	
FBSA (30334-69-1)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
PHSA (41997-13-1)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
HPFOA (13252-13-6)	ng/l																<2	<2	<2	<2	<2	<2	<2	<2	
HPFOA (13252-14-7)	ng/l																<5	<5	<5	<5	<5	<5	<5	<5	
Linear PFOS (763-23-1) Perfluoro-1-octanesulfonate	ng/l	3.22	3.37	9.79	11.2	7.71	8.15	5.97	5.44	3.98	2.92	3.8	4.39	12.3	10.8	2.31	2.34	10.7	10.2	6.6	6.41	5.61	4.62		
MeFOSA (2355-31-9)	ng/l																<2	<2	<2	<2	<2	<2	<2	<2	
MeFOSE (2448-09-7)	ng/l																<10	<10	<10	<10	<10	<10	<10	<10	
N-efOSA (4151-50-2)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
NFDA (15172-68-6)	ng/l																<3	<3	<3	<3	<3	<3	<3	<3	
N-MeFOA (31508-32-8)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	6.64	13.3	<9	9.04	13.9	15.2	13.2	19.6	32.4	<12.5	14.5	12.5	<8	<2	16.5	15	13.1	11	12.2	13.5	12.1	10		
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<2	<1.5	<1	<1	1.03	1.11	<1	<1	<1	<1	1.23	<1	1.17	1.13	1.13		
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	1.3	1.35	<1	<1	1.85	1.78	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	
PFDA (307-65-1) Perfluoro-n-dodecanoic acid	ng/l	<1.5	<1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	
PFDD (79780-39-6)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	
PFdHS (133201-07-7)	ng/l																								
PFEEBA (113927-82-7)	ng/l																								
PFHnA (375-85-8) Perfluoro-n-heptanoic acid	ng/l	6.93	7.27	8.43	9.79	29.3	24.8	30.5	32.1	31.5	11.5	7.8	7.62	7.46	9.59	16.4	12.8	8.28	7.36	7.29	7.15	7.06	6.81		
PFHnS (375-92-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	1.24	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHnA (307-24-4) Perfluoro-n-hexanoic acid	ng/l	10.4	10.5	10.8	11.5	12.3	14	18.1	21.7	23.2	20.7	19.4	19.7	12.2	10.6	24.5	23.7	20	18.5	21	18.8	17.3	14.1		
PFHnA (8795-15-5)	ng/l																								
PFHnS (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	1.13	1.97	8.94	8.76	3.45	3.49	3.54	3.56	3.97	3.12	3.29	3.75	4.43	4.79	1.38	1.39	6.32	6.89	6.52	5.3	6.61	6.16		
PFMOBA (86390-89-6)	ng/l																								
PFMOPhA (377-73-1)	ng/l																								
PFNA (375-95-1) Perfluoro-n-nonanoic acid	ng/l	1.04	1.91	2.48	2.42	2.3	2.34	1.44	1.58	1.39	1.23	<1	<1	1.26	<1	1.13	1.27	2.04	2.07	<1	1.33	<1	<1	<1	
PFNS (86259-12-1)	ng/l																<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	3.21	3.54	6.74	6.53	7.71	7.45	6.07	6.86	4.82	4.09	3.89	4.25	4.29	3.98	5.21	5.42	6.4	6.41	4.87	4.54	4.01	3.45		
PFDA (16517-11-6)	ng/l																								
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFPA (2786-90-3) Perfluoro-n-pentanoic acid	ng/l	25	32.9	13.4	20.8	25.8	28.4	19.5	37.4	38.3	36	17.4	35.8	23.4	37.9	38.5	36.3	32.7	34	32.5	30.2	30.8	28.8		
PFPhS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFTeA (378-06-7)	ng/l																								
PFTDA (2829-84-8)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<3	<3	<3	<3	<3	
PFTDS (174875-49-1)	ng/l			<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1	<1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	
PFUHS (749786-16-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	
Total PFOS	ng/l	5.11	5.41	21.4	23.7	11.7	12.4	10.5	9.86	7.12	6.64	6.51	6.98	17.5	14.9	4.19	4.15	18.3	16.8	10.3	9.09	11.3	9.38		
Sum of PFAS																									
Sum of 20 PFAS	ng/l	65.48	77.55	72.59	92.78	102.31	109.69	81.4	109.77	122.1	85.27	74.02	91.61	70.54	78.36	110.21	100.95	107.14	104.03	95.91	100.31	90.35	79.84		
Sum of Total PFAS	ng/l	87.67	100.86	116.27	140.74	137.14	144.26	136.44	171.33	164.82	124.91	84.04	102.4	111.84	114.71	127.69	120	147.26	145.03	204.64	198.51	203.89	187.83		
Average Sum of 20 PFAS	ng/l	91.92																							
Average Total PFAS	ng/l	136.50																							
Min Sum of Total PFAS	ng/l	84.01																							
Max Sum of Total PFAS	ng/l	203.89																							
SW Threshold (as per S.I. No. 77 of 2015)																									
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	3.93		24.1		8.24		9.09		7.76		6.29		9.33		3.68		14.21		6.34		10.39			
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	6.59		20.99		15.86		11.31		6		8.19		23.1		4.65		20.9		13.01		10.23			
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	10.52		24.1		20.36		13.76		13.49		32.4		8.34		35.1		19.39		20.66		20.66			
MAC EQS (PFOS) (branched)	35,000 ng/l	1.89	2.04	11.6	12.6	4.02	4.22	4.87	4.42	4.04	3.72	2.71	2.58	5.23	4.1	1.87	1.81	7.6	6.61	3.66	2.68	5.64	4.75		
MAC EQS (PFOS) (linear)	35,000 ng/l	3.22	3.37	9.79	11.2	7.71	8.15	5.97	5.44	3.98	2.92	3.8	4.39	12.3	10.8	2.31	2.34	10.7	10.2	6.6	6.41	5.61	4.		



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL9																							
		09/02/22	09/02/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	19/09/22	16/11/22	16/11/22	13/02/23	13/02/23	20/05/23	20/05/23	14/08/23	14/08/23	21/11/23	21/11/23		
11Cl PFOQS (76351-62-9)	ng/l																	<2	<2	<2	<2	<2	<2		
33 FTCA (866-02-0)	ng/l																	<2	<2	<2	<2	<2	<2		
42 FTS (757124-72-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<5	<5	<5	<5	<5	<5		
53 FTCA (914637-49-3)	ng/l			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<5	<5	<5	<5	<5	<5		
62 FTAB (34455-22-3)	ng/l																						<10	<10	
82FTS (27819-97-2) Perfluoro-octane sulfonate B-2	ng/l			1.18	1.16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
73 FTCA (812-70-4)	ng/l																	<5	<5	<5	<5	<5	<5		
82 FTS (39108-34-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
3Cl-PFONS (75626-58-1)	ng/l																	<1	<1	<1	<1	<1	<1		
ADONA (91805-14-4)	ng/l																	<1	<1	<1	<1	<1	<1		
branched PFOS	ng/l			<0.65	<0.65	<0.65	1.39	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	0.721	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	0.708	<0.65	<0.65	
EFOSAA (2991-50-4)	ng/l																	<2	<2	<2	<2	<2	<2	<2	
EFOSB (1691-99-2)	ng/l																	<10	<10	<10	<10	<10	<10	<10	
FBSA (30334-69-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	
FMBA (41997-13-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	
HFPODA (13252-13-6)	ng/l																	<2	<2	<2	<2	<2	<2	<2	
HFPOTA (13252-14-7)	ng/l																	<5	<5	<5	<5	<5	<5	<5	
Linear PFOS (763-23-1) Perfluoro-1-octanesulfonate	ng/l			<0.65	0.774	0.85	1.13	<0.65	<0.65	0.893	<0.65	<0.65	0.799	0.855	0.72	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	
MeFOSA (2355-31-9)	ng/l																	<2	<2	<2	<2	<2	<2	<2	
MeFOSE (24448-09-7)	ng/l																	<10	<10	<10	<10	<10	<10	<10	
NEFOSA (4151-50-2)	ng/l																	<1	<1	<1	<1	<1	<1	<1	
NFHA (15172-58-6)	ng/l																	<3	<3	<3	<3	<3	<3	<3	
NMeFOA (31508-32-8)	ng/l																	<1	<1	<1	<1	<1	<1	<1	
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l			3.08	3.37	2.71	<2	3.15	3.15	6.06	9.81	<8.5	<11.5	<13	6.04	<2	<2	2.45	2.15	<2	2.71	3.59	4.01	4.04	3.28
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
PFDA (307-55-1) Perfluoro-n-dodecanoic acid	ng/l	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
PFDS (79780-39-6)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
PFcHS (133201-07-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFEEBA (113927-82-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFHnA (375-85-8) Perfluoro-n-heptanoic acid	ng/l	<1		1.98	<1	<1	2.03	1.48	<1	1.47	1.68	1.86	1.92	1.75	<1	<1	<1	<1	<1	<1	<1	1.28	<1	<1	<1
PFHnS (375-50-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFHnA (307-24-6) Perfluoro-n-hexanoic acid	ng/l			1.27	1.26	1.29	<1.5	1.48	1.68	2.23	2.59	2.19	2.44	4.7	3.94	1.23	1.49	1.38	1.19	<1	<1	1.32	1.8	1.96	1.78
PFHnA (8795-15-5)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFHnS (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFMOBA (86390-89-6)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFMOPhA (377-73-1)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFNA (375-95-1) Perfluoro-n-novanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFNS (86259-12-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l			0.938	0.887	0.936	0.84	<1.5	<2.5	1.57	3.18	1.01	0.941	1.14	1.42	0.738	<0.65	<0.65	<0.65	<0.65	<0.65	0.972	1.25	1.09	1.1
PFDA (16517-11-6)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PFPA (2786-90-3) Perfluoro-n-pentanoic acid	ng/l			2.45	2.58	1.82	<2	1.96	2.07	3.08	4.96	3.33	4.85	4.42	6.45	1.45	2.03	2.85	1.28	2.01	1.65	1.75	2.51	2.38	2.07
PFPS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFTcA (378-06-7)	ng/l																	<1	<1	<1	<1	<1	<1	<1	<1
PFTDA (28209-84-8)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFTDS (174875-49-1)	ng/l			<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
PFUNDS (749786-16-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2
Total PFOS	ng/l			<0.65	0.774	0.85	2.51	<0.65	<0.65	0.893	<0.65	<0.65	0.799	0.855	1.44	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	0.708	<0.65	<0.65
Sum of PFAS																									
Sum of 20 PFAS	ng/l	7.738	9.961	7.606	3.36	8.62	8.33	13.633	21.97	8.16	10.89	12.795	21.04	3.418	3.52	6.52	4.56	2.01	4.36	7.632	11.558	9.37	8.23	8.23	
Sum of Total PFAS	ng/l	8.918	11.895	8.456	5.87	8.62	8.33	14.328	21.97	8.16	11.689	13.36	22.481	3.418	3.52	6.52	4.56	2.01	4.36	7.632	12.266	9.37	8.23	8.23	
Average Sum of 20 PFAS	ng/l	8.87																							
Average Total PFAS	ng/l	9.36																							
Min Sum of Total PFAS	ng/l	2.01																							
Max Sum of Total PFAS	ng/l	22.48																							
SW Threshold (as per S.I. No. 77 of 2015)																									
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	0		1.39								0.721										0.708			
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	0.774		1.98							0.893	0.799	1.375									0			
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	0.774		3.36							0.893	0.799	2.096									0.708			
MAC EQS (PFOS) (branched																									



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	SL11																					
		09/02/22	09/03/22	14/03/22	14/03/22	19/04/22	19/04/22	26/05/22	26/05/22	21/06/22	21/06/22	19/09/22	19/09/22	16/11/22	13/02/23	13/02/23	20/05/23	20/05/23	14/08/23	14/08/23	21/11/23	21/11/23	
11Cl PFOQS (76351-62-9)	ng/l																<2	<2	<2	<2	<2	<2	<2
33 FTCA (866-02-0)	ng/l																<2	<2	<2	<2	<2	<2	<2
42 FTS (757124-72-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1
53 FTCA (914637-49-3)	ng/l			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<5	<5	<5	<5	<5	<5	<5
62 FTAB (34455-22-3)	ng/l																<1	<1	<1	<1	<1	<1	<10
82FTS (27819-97-2) Perfluoro-octane sulfonate B-2	ng/l	3.51	3.43	7.93	8.70	3.84	3.62	3.00	3.54	3.30	3.39	3.45	3.64	3.07	4.11	7.4	7.56	1.56	1.31	2.91	3.64	3.2	3.25
73 FTCA (812-70-4)	ng/l																<5	<5	<5	<5	<5	<5	<5
82 FTS (39108-34-4)	ng/l			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1
3Cl-PFONS (756426-58-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
ADONA (918025-14-4)	ng/l																<1	<1	<1	<1	<1	<1	<1
branched PFOS	ng/l	1.05	0.841	<1	1.44	1.85	1.86	1.98	1.74	2.91	2.81	2.78	2.92	1.2	1.03	1.85	1.16	2.15	1.6	1.25	<0.65	0.996	1.14
EFOSAA (2991-50-6)	ng/l																<2	<2	<2	<2	<2	<2	<2
EFOSB (1691-99-2)	ng/l																<10	<10	<10	<10	<10	<10	<10
FBSA (30334-69-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
PHSA (41997-13-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
HPFODA (13252-13-6)	ng/l																<2	<2	<2	<2	<2	<2	<2
HPFOTA (13252-14-7)	ng/l																<5	<5	<5	<5	<5	<5	<5
Linear PFOS (763-23-1) Perfluoro-1-octanesulfonate	ng/l	1.3	1.35	<0.65	1.3	2.26	2.16	2.36	2.26	3.74	3.6	3.67	4.34	1.2	1.28	1.36	1.28	2.14	1.65	0.996	1.57	<0.65	0.678
MeFOEA (2355-31-9)	ng/l																<2	<2	<2	<2	<2	<2	<2
MeFOE (2448-09-7)	ng/l																<10	<10	<10	<10	<10	<10	<10
NEFOEA (4151-50-2)	ng/l																<1	<1	<1	<1	<1	<1	<1
NFOHA (15172-68-6)	ng/l																<3	<3	<3	<3	<3	<3	<3
NMeFOEA (31508-32-8)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	9.67	21.6	6.03	7.02	18.5	19	19.1	<20	27.3	29.2	11.5	12.5	<7	10	10.7	11.2	9.86	10.3	7.91	12.1	9.46	9.18
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFDDA (307-65-1) Perfluoro-n-dodecanoic acid	ng/l	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFDDs (79780-39-6)	ng/l			<1	<1	<1	<1	<1	<1	<1	1.02	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFDS (335-73-3) Perfluoro-1-decanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFdHS (133201-07-7)	ng/l																<1	<1	4.35	5.35	1.10	1.10	1.10
PFEEBA (133607-82-7)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFHnA (375-85-9) Perfluoro-n-heptanoic acid	ng/l	4.93	6.95	4.17	4.75	12.4	11.3	7.12	7.44	11.2	10.1	6.46	7.46	3.95	3.95	10.6	9.35	3.79	3.98	3.15	3.44	3.41	3.05
PFHs (375-50-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFHn (307-24-6) Perfluoro-n-hexanoic acid	ng/l	9.11	9.47	9.82	9.62	12.8	12.5	21	21.7	24.6	24	16.5	17.8	10.4	13	20.6	20.9	15.8	14.7	10.1	13.5	9.36	9.92
PFHdA (8795-15-5)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFHd (365-46-4) Perfluoro-1-hexanesulfonate	ng/l	<1.5	<1	<1	<1	2.22	1.98	2.21	2.28	3.44	3.51	3.41	3.36	<1	1.18	<1	<1	<1	<1	2.5	<2	1.31	1.28
PFMOBA (86390-89-6)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFMOPHA (377-73-1)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFNA (375-95-1) Perfluoro-n-novenoic acid	ng/l	<1	1.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFNS (86259-12-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	1.47	1.42	1.8	2.2	4.21	4.45	3.52	3.57	2.99	3.91	3.29	3.88	1.57	1.96	2.87	2.72	1.72	1.32	2.19	3.28	2.09	1.75
PFODA (16517-11-6)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PFPA (2786-90-3) Perfluoro-n-pentanoic acid	ng/l	24.9	40.8	20	15.4	65.4	66	50.3	51.1	66.2	66.4	24.8	34.9	20	22.1	31.2	26	30.6	26.5	32.4	26.9	17.5	17.8
PFPS (2786-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFTeA (378-06-7)	ng/l																<1	<1	<1	<1	<1	<1	<1
PFTDA (28209-84-8)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<3	<3	<3	<3	<3
PFTDS (174875-49-1)	ng/l			<2	<2	<2	<2	<1	<1	3.04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
PFUNDS (749786-16-1)	ng/l			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2
Total PFOS	ng/l	2.35	2.19	<1	2.74	4.11	3.84	4.34	3.99	6.65	6.41	6.45	7.26	2.39	2.32	2.41	2.44	4.29	3.25	2.2	1.57	0.996	1.81
Sum of PFAS																							
Sum of 20 PFAS	ng/l	51.93	81.35	41.82	41.73	119.44	119.05	107.59	90.08	147.04	162.93	77.41	88.23	44.31	52.82	78.18	75.21	65.86	62.75	60.45	64.17	44.666	44.5
Sum of Total PFAS	ng/l	57.39	86.971	49.75	53.23	127.39	126.51	115.02	97.62	167.88	173.33	87.31	99.13	50.38	59.24	87.99	85.21	71.71	67.31	69.916	74.73	50.042	50.828
Average Sum of 20 PFAS	ng/l	78.23																					
Average Total PFAS	ng/l	86.30																					
Min Sum of Total PFAS	ng/l	49.75																					
Max Sum of Total PFAS	ng/l	173.33																					
SW Threshold (as per S.I. No. 77 of 2015)																							
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	1.891		1.44		3.51		3.72		5.72		5.7		2.23		2.21		3.75		1.25		2.136	
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	2.65		1.3		4.44		4.62		7.34		8.01		2.48		2.64		3.79		2.526		0.678	
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	4.54		2.74		7.95		8.33		13.06		13.71		4.71		4.85		7.54		3.77		2.806	
MAC EQS (PFOS) (branched)	35,000 ng/l	1.05	0.841	<1	1.44	1.85	1.86	1.98	1.74	2.91	2.81	2.78	2.92	1.2	1.03	1.05	1.16	2.15	1.6	1.25	<0.65	0.996	1.14
MAC EQS (PFOS) (linear)	35,000 ng/l	1.3	1.35	<0.65	1.3	2.26	2.16	2.36	2.26	3.74	3.6	3.67	4.34	1.2	1.28	1.36	1.28	2.14	1.65	0.996	1.57	<0.65	



Landside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	C1				C-2A				C-2B				K Stream				MS				
		16/08/23	16/09/23	22/11/23	22/11/23	16/08/23	16/09/23	22/11/23	22/11/23	16/08/23	16/09/23	22/11/23	22/11/23	16/08/23	16/09/23	22/11/23	16/08/23	16/09/23	22/11/23			
11C1 PFQJUS (76351-62-9)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2			
33 FTCA (866-62-6)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2			
42 FTS (757124-72-4)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
53 FTCA (914637-49-3)	ng/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	30.2	29.3	<5	<5	<5	<5			
62 FTAB (34465-22-3)	ng/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	119	105	<10	<10	<10	<10			
62FTS (27819-87-2) Perfluoro-octanesulfonate B-2	ng/l	<1	<1	<1	<1	2.98	2.67	<5	<1	<1	<1	<1	12.4	12.3	20.1	20	1.18	1.19	<1	<1		
73 FTCA (812-70-4)	ng/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	5.37	<5	<5	<5	<5			
82 FTS (39108-34-4)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	4.4	4.11	15.2	16.6	<2	<2			
92 PF3ONS (75626-58-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
ADONA (91805-14-4)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
branched PFOS	ng/l	0.784	0.789	<0.65	<0.65	<0.65	<0.65	<3.25	<0.65	1.31	1.48	<0.65	<0.65	7.02	7.96	16	14.6	0.882	0.718	<0.65	<0.65	
EFOSAA (2691-50-6)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
EFOSAE (1691-99-2)	ng/l	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
FBSA (30334-69-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	1.27	1.09	1.51	<1	<1	<1	<1	<1	
FMBA (41997-13-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	2.25	1.93	1.54	1.31	<1	<1	<1	<1	
HPFO-DA (13252-13-6)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
HPFO-TA (13252-14-7)	ng/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Linear PFOS (7163-23-1) Perfluoro-1-octanesulfonate	ng/l	0.916	0.966	<0.65	<0.65	0.985	<0.65	<3.25	<0.65	1.05	1.09	<0.65	<0.65	9.41	7.1	12.6	13.7	<0.65	0.652	<0.65	<0.65	
MeFOAA (2355-31-9)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
MeFOAE (2448-09-7)	ng/l	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
NEFOBA (4151-50-2)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
NFOHA (15172-68-6)	ng/l	<3	<3	<3	<3	<3	<3	<15	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
NMeFOBA (31508-32-8)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	3.04	3.61	<4	<2	34.4	32.3	16.1	6.12	16.2	14.9	10.6	13.9	27.6	26.9	34.6	53.1	6.01	6.48	6.15	14	
PFBS (375-73-5) Perfluoro-1-butanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	1.05	<1	<1	2.2	2.08	2.41	2.6	<1	<1	<1	<1	
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFDDA (307-65-1) Perfluoro-n-dodecanoic acid	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFDDs (79780-39-6)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFDS (335-73-3) Perfluoro-1-decane sulfonate	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFdHS (133201-07-7)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	8.19	5.37	7.19	7.94	2.32	2.62	1.3	1.29	
PFEEBA (113927-82-7)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHSA (375-85-6) Perfluoro-n-heptanoic acid	ng/l	1.33	1.32	<1	<1	13.3	12.3	<5	1.88	6.98	6.35	3.96	3.91	20.1	20.3	27.6	37.1	2.93	2.78	2.85	2.43	
PFHsS (375-92-8) Perfluoro-1-heptanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHsA (307-24-6) Perfluoro-n-hexanoic acid	ng/l	1.64	1.67	<1	<1	24.9	22.6	7.67	4.33	13.1	14.3	8.91	5.3	39.6	34.7	37.6	55.4	5.6	6.86	3.74	3.71	
PFHsDA (8795-15-6)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFHsS (365-46-6) Perfluoro-1-hexanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<5	1.01	2.21	2.63	<1	<1	16.3	12	16.4	18.9	1.23	1.28	<1	<1	
PFMOBA (86390-89-6)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFMOPHA (377-73-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFNA (375-95-1) Perfluoro-n-novenoic acid	ng/l	<1	<1	<1	<1	1.87	1.55	<5	<1	<1	1.04	<1	<1	3.69	3.8	6.15	7.98	<1	<1	<1	<1	
PFNS (86259-12-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDA (335-67-1) Perfluoro-n-octanoic acid	ng/l	1.26	1.3	<0.65	<0.65	8.19	6.85	<3.25	1.31	3.27	3.25	1.85	1.92	15.6	14.7	14.5	17.6	2.27	2.19	1.47	2.11	
PFDA (16517-11-6)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFDSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	ng/l	3.42	2.34	<1	<1	73.1	69.9	13.7	6.16	32	33.5	12.8	11	76.4	75.9	115	136	9.93	12.4	8.4	6.35	
PFPS (2706-91-4) Perfluoro-1-pentanesulfonate	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	1.47	1.35	1.41	1.34	<1	<1	<1	<1	
PFTEA (378-06-7)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFTDA (28209-84-8)	ng/l	<3	<3	<3	<3	<3	<3	<15	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
PFTDS (174875-49-1)	ng/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
PFUHA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
PFUHS (749786-16-1)	ng/l	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Total PFOS	ng/l	1.7	1.74	<0.65	<0.65	0.985	<0.65	<3.25	<0.65	2.37	2.57	<0.65	<0.65	16.4	15.1	28.6	28.2	0.882	1.37	<0.65	<0.65	
Sum of PFAS																						
Sum of 20 PFAS	ng/l	13.19	12.98	0	0	156.345	146.48	39.47	22.83	74.24	79.59	34.82	35.13	215.36	205.83	307.07	358.22	287.92	32.33	21.81	32.6	
Sum of Total PFAS	ng/l	14.89	13.815	0	0	160.31	149.45	39.47	22.83	76.6	82.16	34.82	35.13	260.3	246.66	635.78	563.57	33.134	37.51	23.11	34.19	
Average Sum of 20 PFAS	ng/l	6.32				91.28				55.96				271.52				28.87				
Average Total PFAS	ng/l	7.18				92.94				57.18				401.33				31.99				
Min Sum of Total PFAS	ng/l	0.60				22.83				34.82				245.66				23.11				
Max Sum of Total PFAS	ng/l	14.89				160.31				82.16				563.57				37.51				
SW Threshold (as per S.I. No. 77 of 2015.)																						
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	1.503				0				2.79				14.98				1.6				
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	1.802				0.985				2.14				16.51				0.652				
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	3.44				0.985				4.94				31.5				2.262				
MAC EQS (PFOS) (branched)	35,000 ng/l	0.784	0.789	<0.65	<0.65	<0.65	<0.65	<3.25	<0.65	1.31	1.48	<0.65	<0.65	7.02	7.96	16	14.6	0.882	0.718	<0.65	<	



APEC 5/North Runway/Airside Surface Water Monitoring Results (Surface Water)

Parameter	Unit	Date																																		
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050		
100-PT0004-10000-10-0	mg/l																																			
100-PT0005-10000-10-0	mg/l																																			
100-PT0006-10000-10-0	mg/l																																			
100-PT0007-10000-10-0	mg/l																																			
100-PT0008-10000-10-0	mg/l																																			
100-PT0009-10000-10-0	mg/l																																			
100-PT0010-10000-10-0	mg/l																																			
100-PT0011-10000-10-0	mg/l																																			
100-PT0012-10000-10-0	mg/l																																			
100-PT0013-10000-10-0	mg/l																																			
100-PT0014-10000-10-0	mg/l																																			
100-PT0015-10000-10-0	mg/l																																			
100-PT0016-10000-10-0	mg/l																																			
100-PT0017-10000-10-0	mg/l																																			
100-PT0018-10000-10-0	mg/l																																			
100-PT0019-10000-10-0	mg/l																																			
100-PT0020-10000-10-0	mg/l																																			
100-PT0021-10000-10-0	mg/l																																			
100-PT0022-10000-10-0	mg/l																																			
100-PT0023-10000-10-0	mg/l																																			
100-PT0024-10000-10-0	mg/l																																			
100-PT0025-10000-10-0	mg/l																																			
100-PT0026-10000-10-0	mg/l																																			
100-PT0027-10000-10-0	mg/l																																			
100-PT0028-10000-10-0	mg/l																																			
100-PT0029-10000-10-0	mg/l																																			
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100-PT0038-10000-10-0	mg/l																																			
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100-PT0041-10000-10-0	mg/l																																			
100-PT0042-10000-10-0	mg/l																																			
100-PT0043-10000-10-0	mg/l																																			
100-PT0044-10000-10-0	mg/l																																			
100-PT0045-10000-10-0	mg/l																																			
100-PT0046-10000-10-0	mg/l																																			
100-PT0047-10000-10-0	mg/l																																			
100-PT0048-10000-10-0	mg/l																																			
100-PT0049-10000-10-0	mg/l																																			
100-PT0050-10000-10-0	mg/l																																			
100-PT0051-10000-10-0	mg/l																																			
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100-PT0055-10000-10-0	mg/l																																			
100-PT0056-10000-10-0	mg/l																																			
100-PT0057-10000-10-0	mg/l																																			
100-PT0058-10000-10-0	mg/l																																			
100-PT0059-10000-10-0	mg/l																																			
100-PT0060-10000-10-0	mg/l																																			
100-PT0061-10000-10-0	mg/l																																			
100-PT0062-10000-10-0	mg/l																																			
100-PT0063-10000-10-0	mg/l																																			
100-PT0064-10000-10-0	mg/l																																			
100-PT0065-10000-10-0	mg/l																																			
100-PT0066-10000-10-0	mg/l																																			
100-PT0067-10000-10-0	mg/l																																			
100-PT0068-10000-10-0	mg/l																																			
100-PT0069-10000-10-0	mg/l						</																													



Manhole Monitoring Results (Surface Water)

Parameter	Unit / Limit	MH 1				MH 2				MH 3				MH 4			
		08/06/21	25/08/21	30/09/21	21/10/21	08/06/21	26/08/21	30/09/21	21/10/21	08/06/21	27/08/21	30/09/21	21/10/21	08/06/21	28/08/21	30/09/21	21/10/21
6:2PTS (27619-97-2)	ng/l	2.92	3.44	<2	2.59	12.8	17.9	26.2	49.7	<1	<1	<1	1.11	29.6	13.3	33.7	74.6
Branched PFOS	ng/l	65.2	10.1	2.41	25.9	11.2	24	5.62	38.6	101	21.2	0.962	20.1	21.9	15.3	6.1	60.4
Linear PFOS(1763-23-1)	ng/l	27.3	16	3.66	44.3	20.9	40.9	10.9	49.9	35.4	21.1	1.89	24.1	59.7	21.8	9.04	72.9
PFBA (357-22-4)	ng/l	<21	48.7	<100	39.3	<42	1470	52.1	63.2	<11	28.8	<5.5	24	76.2	401	21.1	38.9
PFBS (375-73-5)	ng/l	1.99	3.79	<2	12.1	2.65	18.2	2.03	7.35	<2	5.54	<1	7.74	5.23	8.17	1.9	11.8
PFDA (335-76-2)	ng/l	<1	<2	<2	<1	<1	<5	<2	<1.5	<1	<2	<1	<1	<1	<10	<1	<1.5
PFDoA (307-55-1)	ng/l	<1	<1	<2	<1	<1	<5	<2	<1	<1	<1	<1	<1	<1	<5	<1	<1
PFDS (335-73-3)	ng/l	-	-	<2	<1	-	-	<2	<1	-	-	<1	<1	-	-	<1	<1
PFHpA (375-85-9)	ng/l	20.2	14.9	2.07	19.1	14.8	12.6	16.5	31.9	28.5	47.7	1.69	80.5	25.8	9.63	25.3	43.2
PFHpS (375-92-8)	ng/l	<1	<1	<2	1.16	<1	<5	<2	2	<1	<1	<1	<1	1.12	<5	<1	3.6
PFHxA (307-24-4)	ng/l	7.63	10.7	3.82	15.3	36.5	28	69.5	105	6.73	23.3	1.39	14.6	36.4	33.8	109	129
PFHxS (355-46-4)	ng/l	<5.5	5.94	<2	6.19	8.3	16.1	5.25	28.1	<5	6.83	<1	<3.5	8.61	12.2	5.52	55.2
PFNA (375-95-1)	ng/l	<1.5	1.45	<2	1.77	2.5	<5	<2	3.63	<1	1.8	<1	<1.5	10.2	<5	1.35	5.53
PFOA (335-67-1)	ng/l	26.9	8.21	1.41	10.1	8.27	13	3.62	11.7	51.5	37.3	0.771	14.8	22.4	6.58	3.53	16
PFOSA (754-91-6)	ng/l	<2	<2	<4	5.15	<2	<10	<4	<2	<2	<2	<2	<2	4.22	<10	<2	<2
PFPA (2706-90-3)	ng/l	7.82	11.4	<3	9.3	24.7	15.4	24.6	55.2	5.04	13.6	<1.5	11.1	27.3	17	43.3	59
PFPeS (2706-91-4)	ng/l	-	-	<2	1.17	-	-	<2	4.45	-	-	<1	<1	-	-	<1	9.9
PFUnA (2058-94-8)	ng/l	<1	<1	<2	<1	<1	<5	<2	<1	<1	<1	<1	<1	<1	<5	<1	<1
Total PFOS	ng/l	92.5	26.1	6.08	70.1	32.1	64.9	16.5	88.5	136	42.3	2.85	44.3	81.6	37.1	15.1	133
Sum of PFAS																	
Sum of 20 PFAS	ng/l	157.04	131.19	13.38	185.59	129.82	1638.2	190.1	401.03	227.77	207.17	6.701	197.04	294.86	525.48	226.1	505.13
Sum of Total PFAS	ng/l	159.96	134.63	13.38	193.33	142.62	1656.1	216.3	450.73	227.77	207.17	6.701	198.15	328.68	538.78	259.8	579.73
Average Sum of 20 PFAS	ng/l	121.80				589.79				159.67				387.89			
Average Total PFAS	ng/l	125.33				616.44				159.95				426.75			
SW Threshold (as per S.I No. 77 of 2019.)																	
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	65.2	10.1	2.41	25.9	11.2	24	5.62	38.6	101	21.2	0.962	20.1	21.9	15.3	6.1	60.4
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	27.3	16	3.66	44.3	20.9	40.9	10.9	49.9	35.4	21.1	1.89	24.1	59.7	21.8	9.04	72.9
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	92.5	26.1	6.08	70.1	32.1	64.9	16.5	88.5	136	42.3	2.85	44.3	81.6	37.1	15.1	133
MAC EQS (PFOS) (branched)	36,000 ng/l	65.2	10.1	2.41	25.9	11.2	24	5.62	38.6	101	21.2	0.962	20.1	21.9	15.3	6.1	60.4
MAC EQS (PFOS) (linear)	36,000 ng/l	27.3	16	3.66	44.3	20.9	40.9	10.9	49.9	35.4	21.1	1.89	24.1	59.7	21.8	9.04	72.9
MAC EQS (PFOS) (total PFOS)	36,000 ng/l	92.5	26.1	6.08	70.1	32.1	64.9	16.5	88.5	136	42.3	2.85	44.3	81.6	37.1	15.1	133
EQS Biota	9100 ng/l																
Min of Total PFOS	ng/l	6.08				16.50				2.85				15.10			
Max of Total PFOS	ng/l	92.50				88.50				136.00				133.00			



Fire Station FFTG Surface Water Monitoring (Surface Water)

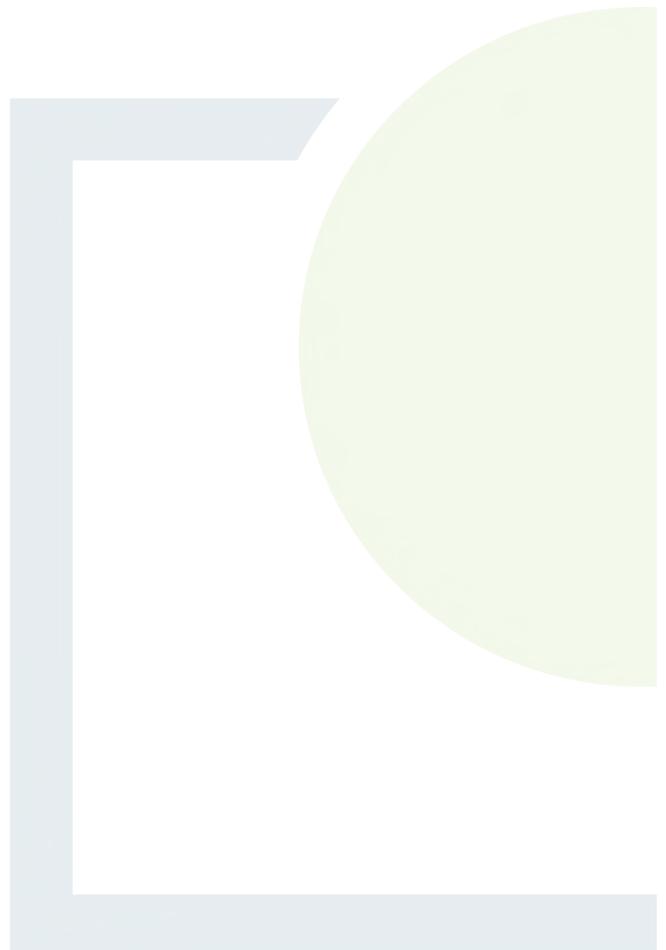
Parameter	Unit	ACO			Interceptor				Sewer		
		24/05/22	21/06/22	21/06/22	24/05/22	24/05/22	21/06/22	21/06/22	24/05/22	21/06/22	21/06/22
4:2 FTS (757124-72-4)	ng/l	<20	<4	6.12	<10	<2	<2	<2	<20	<20	<20
5:3 FTCA (914637-49-3)	ng/l	<200	<40	<40	<100	<20	<20	<20	<200	<200	<200
6:2FTS (27619-97-2) Perfluoro-octane sulfonate 6:2	ng/l	455	1780	1860	520	343	318	291	<10	<10	<10
8:2 FTS (39108-34-4)	ng/l	353	1110	886	205	152	153	152	<20	<20	<20
Branched PFOS	ng/l	10.1	39.1	28.4	5.75	4.34	4.36	3.84	<6.5	<6.5	<6.5
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	ng/l	28.5	77.1	67	10.8	8	10.3	8.75	<6.5	<6.5	<6.5
PFBA (375-22-4) Perfluoro-n-butanoic acid	ng/l	80.5	<24	29.2	36.8	32.6	17.2	16.6	42	188	<20
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	ng/l	<10	<2	<2	<5	<1	<1	<1	<10	<10	<10
PFDA (335-76-2) Perfluoro-n-decanoic acid	ng/l	<10	5.06	4.9	<5	1.61	2.08	1.75	<10	<10	<10
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	ng/l	<10	<2	<2	<5	<1	<1	<1	<10	<10	<10
PFDoS (79780-39-5)	ng/l	<10	<2	<2	<40	<1	<1	<1	<10	<10	<10
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	ng/l	<10	<2	<2	<5	<1	<1	<1	<10	<10	<10
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	ng/l	50.6	70.9	27.4	40.6	37.6	40	35.3	<10	<10	<10
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	ng/l	<10	3.02	3.38	<5	<1	<1	<1	<10	<10	<10
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	ng/l	43.6	113	95	81.4	61.2	32.9	28.7	<10	<10	<10
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	ng/l	<10	32.8	31.7	<5	2.29	1.97	1.77	<10	<10	<10
PFNA (375-95-1) Perfluoro-n-nonanoic acid	ng/l	34.7	14.5	12.1	6.19	4.62	3.65	3.31	<10	<10	<10
PFNS (68259-12-1)	ng/l	<10	<2	<2	<5	<1	<1	<1	<10	<10	<10
PFOA (335-67-1) Perfluoro-n-octanoic acid	ng/l	23.8	40.1	40.2	38.9	26.1	15.3	12.6	15.3	15.2	<6.5
PFOSA (754-91-6) Perfluoro-octanesulfonamide	ng/l	<20	<4	<4	<10	<2	<2	<2	<20	<20	<20
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	ng/l	21.6	53.9	66.8	126	90.8	32.8	29.5	18.2	<10	<10
PFPeS (2706-91-4) Perfluoro-1-pentanedisulfonate	ng/l	<10	2.24	3.08	<5	<1	<1	<1	<10	<10	<10
PFTrDA (72629-94-8)	ng/l	<10	<2	<2	<15	<1	<1	<1	<10	<10	<10
PFTrDS (174675-49-1)	ng/l	<10	<2	4.9	<40	<2	<1	<1	<10	29.6	<10
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	ng/l	<10	3.36	3.25	<5	<1	1.26	1.02	<10	<10	<10
PFUnDS (749786-16-1)	ng/l	<10	<2	<2	<10	<1	<1	<1	<10	<10	<10
Total PFOS	ng/l	38.5	116	95.4	16.5	12.3	14.6	12.6	<6.5	<6.5	<6.5
Sum of PFAS											
Sum of 20 PFAS	ng/l	293.3	454.88	417.31	346.39	269.12	161.76	143.15	75.5	232.8	0
Sum of Total PFAS	ng/l	1101.3	3344.88	3169.43	1071.39	764.12	632.76	586.15	75.5	232.8	0
Average Sum of 20 PFAS	ng/l	388.50			230.11				102.77		
Average Total PFAS	ng/l	2538.54			763.61				102.77		
SW Threshold (as per S.I No. 77 of 2019.)											
AA EQS (PFOS) (average duplicates branched)	0.65 ng/l	10.1	67.5		10.09		8.2		<6.5	0	
AA EQS (PFOS) (average duplicates linear)	0.65 ng/l	28.5	144.1		18.8		19.05		<6.5	0	
AA EQS (PFOS) (average duplicates total PFOS)	0.65 ng/l	38.5	211.4		28.8		27.2		<6.5	0	
MAC EQS (PFOS) (branched)	36,000 ng/l	10.1	39.1	28.4	5.75	4.34	4.36	3.84	<6.5	<6.5	<6.5
MAC EQS (PFOS) (linear)	36,000 ng/l	28.5	77.1	67	10.8	8	10.3	8.75	<6.5	<6.5	<6.5
MAC EQS (PFOS) (total PFOS)	36,000 ng/l	38.5	116	95.4	16.5	12.3	14.6	12.6	<6.5	<6.5	<6.5
EQS Biota	9100 ng/l										
Min of Total PFOS	ng/l	38.50			12.30				0.00		
Max of Total PFOS	ng/l	116.00			16.50				0.00		



CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 6

Surface Water Laboratory
Certificates





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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 September 2021
Customer: Fehily Timoney
Sample Delivery Group (SDG): 210826-126
Your Reference: P21-195
Location: Dublin Airport
Report No: 611389

We received 5 samples on Thursday August 26, 2021 and 5 of these samples were scheduled for analysis which was completed on Wednesday September 01, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126 **Client Reference:** P21-195 **Report Number:** 611389
Location: Dublin Airport **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24875807	Gardeners Well		0.00 - 0.00	25/08/2021
24875781	Manhole 1		0.00 - 0.00	25/08/2021
24875789	Manhole 2		0.00 - 0.00	25/08/2021
24875800	Manhole 3		0.00 - 0.00	25/08/2021
24875802	Manhole 4		0.00 - 0.00	25/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	24875807	24875781	24875789	24875800	24875802
Customer Sample Reference	Gardens Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4
AGS Reference					
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Container	1 plastic (ALE221)				
Sample Type	SW	SW	SW	SW	SW

PFAS Liquids	All	NDPs: 0 Tests: 5	X	X	X	X	X
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CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Results Legend			Customer Sample Ref.		Gardeners Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / filtered sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*#@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.00 - 0.00 Surface Water (SW) 25/08/2021						
Component	LOD/Units	Method							
PFBA (357-22-4) Perfluoro-n-butanoic acid	<2 ng/l	TM337	<2	48.7	1470	28.8	401		
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<1 ng/l	TM337	<1	11.4	15.4	13.6	17		
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<1 ng/l	TM337	<1	10.7	28	23.3	33.8		
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<1 ng/l	TM337	<1	3.79	18.2	5.54	8.17		
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 ng/l	TM337	<1	14.9	12.6	47.7	9.63		
6:2FTS (27619-97-2) Perfluoro-octane sulfonate 6:2	<1 ng/l	TM337	<1	3.44	17.9	<1	13.3		
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.65 ng/l	TM337	<0.65	8.21	13	37.3	6.58		
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<1 ng/l	TM337	<1	5.94	16.1	6.83	12.2		
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 ng/l	TM337	<1	1.45	<5	1.8	<5		
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<1 ng/l	TM337	<1	<1	<5	<1	<5		
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 ng/l	TM337	<2	<2	<5	<2	<10		
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	<0.65	16	40.9	21.1	21.8		
Branched PFOS Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	<0.65	10.1	24	21.2	15.3		
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 ng/l	TM337	<1	<1	<5	<1	<5		
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 ng/l	TM337	<1	<1	<5	<1	<5		
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<2 ng/l	TM337	<2	<2	<10	<2	<10		
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<1 ng/l	TM337	<1	<1	<5	<1	<5		
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<1 ng/l	TM337	<1	<1	<5	<1	<5		
Total PFOS	<0.65 ng/l	TM337	<0.65	26.1	64.9	42.3	37.1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126 **Client Reference:** P21-195 **Report Number:** 611389
Location: Dublin Airport **Order Number:** **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 210826-126
Location: Dublin Airport

Client Reference: P21-195
Order Number:

Report Number: 611389
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24875807	24875781	24875789	24875800	24875802
Customer Sample Ref.	Gardeners Well	Manhole 1	Manhole 2	Manhole 3	Manhole 4
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021



CERTIFICATE OF ANALYSIS

SDG: 210826-126 Client Reference: P21-195 Report Number: 611389
 Location: Dublin Airport Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 October 2021
Customer: Fehily Timoney
Sample Delivery Group (SDG): 211001-67
Your Reference: P21-195
Location: Dublin Airport
Report No: 617181
Order Number: Z2852

We received 5 samples on Friday October 01, 2021 and 5 of these samples were scheduled for analysis which was completed on Thursday October 14, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211001-67
Client Ref.: P21-195

Report Number: 617181
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25077673	Manhole 1		0.00 - 0.00	30/09/2021
25077678	Manhole 2		0.00 - 0.00	30/09/2021
25077681	Manhole 3		0.00 - 0.00	30/09/2021
25077685	Manhole 4		0.00 - 0.00	30/09/2021
25077688	SILT SAMPLE		0.00 - 0.00	30/09/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211001-67
Client Ref.: P21-195

Report Number: 617181
Location: Dublin Airport

Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	25077673	25077678	25077681	25077685	25077688
Customer Sample Reference	Manhole 1	Manhole 2	Manhole 3	Manhole 4	SILT SAMPLE
AGS Reference					
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Container	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)
Sample Type	SW	SW	SW	SW	SW
PFAS Liquids	All		NDPs: 0 Tests: 5		
	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211001-67
Client Ref.: P21-195

Report Number: 617181
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	Manhole 1	Manhole 2	Manhole 3	Manhole 4	SILT SAMPLE
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.	Date Sampled	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021
diss.filt	Dissolved / filtered sample.	Sample Time					
tot.unfilt	Total / unfiltered sample.	Date Received	01/10/2021	01/10/2021	01/10/2021	01/10/2021	01/10/2021
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		SDG Ref	211001-67	211001-67	211001-67	211001-67	211001-67
		Lab Sample No.(s)	25077673	25077678	25077681	25077685	25077688
		AGS Reference					
Component	LOD/Units	Method					
PFBA (375-22-4) Perfluoro-n-butanoic acid	<2 ng/l	TM337	<100 #	52.1 #	<5.5 #	21.1 #	68.3 #
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<1 ng/l	TM337	<3 #	24.6 #	<1.5 #	43.3 #	39 #
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<1 ng/l	TM337	3.82 #	69.5 #	1.39 #	109 #	70.8 #
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<1 ng/l	TM337	<2 #	2.03 #	<1 #	1.9 #	5.77 #
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 ng/l	TM337	2.07 #	16.5 #	1.69 #	25.3 #	31.2 #
6:2FTS (27619-97-2) Perfluoro-octane sulfonate 6:2	<1 ng/l	TM337	<2 #	26.2 #	<1 #	33.7 #	101 #
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.65 ng/l	TM337	1.41 #	3.62 #	0.771 #	3.53 #	17.8 #
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<1 ng/l	TM337	<2 #	5.25 #	<1 #	5.52 #	17.4 #
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 ng/l	TM337	<2 #	<2 #	<1 #	1.35 #	2.36 #
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	<1 #
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	<1 #
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	3.66 #	10.9 #	1.89 #	9.04 #	12.4 #
Branched PFOS	<0.65 ng/l	TM337	2.41 #	5.62 #	0.962 #	6.1 #	8.68 #
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	<1 #
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	<1 #
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<2 ng/l	TM337	<4 #	<4 #	<2 #	<2 #	<2 #
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	<1 #
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<1 ng/l	TM337	<2 #	<2 #	<1 #	<1 #	2.79 #
Total PFOS	<0.65 ng/l	TM337	6.08 #	16.5 #	2.85 #	15.1 #	21.1 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 211001-67
Client Ref.: P21-195

Report Number: 617181
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211001-67
Client Ref.: P21-195

Report Number: 617181
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25077673	25077678	25077681	25077685	25077688
Customer Sample Ref.	Manhole 1	Manhole 2	Manhole 3	Manhole 4	SILT SAMPLE
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water				
PFAS Liquids	11-Oct-2021	11-Oct-2021	14-Oct-2021	12-Oct-2021	13-Oct-2021



CERTIFICATE OF ANALYSIS

SDG: 211001-67	Client Reference: P21-195	Report Number: 617181
Location: Dublin Airport	Order Number: Z2852	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	30 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220922-79
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	663098
Order Number:	P3393

We received 22 samples on Thursday September 22, 2022 and 21 of these samples were scheduled for analysis which was completed on Friday September 30, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26909466	Gardeners Well A		0.00 - 0.00	20/09/2022
26909470	Gardeners Well B		0.00 - 0.00	20/09/2022
26909448	GW001-A		0.00 - 0.00	20/09/2022
26909493	GW004-A		0.00 - 0.00	20/09/2022
26909488	GW007-A		0.00 - 0.00	20/09/2022
26909483	GW008-A		0.00 - 0.00	20/09/2022
26909453	GW014-A		0.00 - 0.00	20/09/2022
26909450	GW001-B		0.00 - 0.00	20/09/2022
26909497	GW004-B		0.00 - 0.00	20/09/2022
26909490	GW007-B		0.00 - 0.00	20/09/2022
26909486	GW008-B		0.00 - 0.00	20/09/2022
26909436	GW013-B	A		
26909443	GW002D-A		0.00 - 0.00	20/09/2022
26909440	GW03D-A		0.00 - 0.00	20/09/2022
26909479	GW05D-A		0.00 - 0.00	20/09/2022
26909446	GW002D-B		0.00 - 0.00	20/09/2022
26909463	GW03D-B		0.00 - 0.00	20/09/2022
26909468	GW05D-B		0.00 - 0.00	20/09/2022
26909456	GWFB		0.00 - 0.00	20/09/2022
26909458	GWTB		0.00 - 0.00	20/09/2022
26909473	SWML5B-A		0.00 - 0.00	20/09/2022
26909475	SWML5B-B		0.00 - 0.00	20/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26909475	SWML 5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X
26909473	SWML 5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB
# ISO17025 accredited.	M mCERTS accredited.		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
aq Aqueous / settled sample.	dis.filter Dissolved / filtered sample.	Depth (m)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
tot.unfilt Total / unfiltered sample.	Subcontracted - refer to subcontractor report for accreditation status.	Sample Type	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Trigger breach confirmed	Date Sampled	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022
1-4*% Sample deviation (see appendix)	AGS Reference	Date Received	220922-79	220922-79	220922-79	220922-79	220922-79	220922-79
	Lab Sample No.(s)	SDG Ref	26909440	26909479	26909446	26909463	26909468	26909456
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	<2	12	<20	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<20	<20	<200	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	2180	<14	<34	903	<14	<5
PFPA (2706-90-3)	<1 ng/l	TM337	14.7	15.8	55.8	<10	15.3	<1
PFHxA (307-24-4)	<1 ng/l	TM337	<10	23.2	59.6	<10	21.6	<1
PFBS (375-73-5)	<1 ng/l	TM337	<10	10.4	5.37	<10	9.3	<1
PFHpA (375-85-9)	<1 ng/l	TM337	<10	5.84	71.4	<10	5.53	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	6.78	35.8	<10	6.77	<1
PFOA (335-67-1)	<0.65 ng/l	TM337	<17	2	33.6	<13.5	2.03	<0.65
PFHxS (355-46-4)	<1 ng/l	TM337	<10	5.72	30.1	<10	5.39	<1
PFNA (375-95-1)	<1 ng/l	TM337	<10	<1	8.7	<10	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<1	2.53	<10	<1	<1
PFDA (335-76-2)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	11.2	<0.65	49.8	9.36	<1	<0.65
Branched PFOS	<0.65 ng/l	TM337	<6.5	<2.5	62.4	<6.5	<2.5	<0.65
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
PFDS (335-77-3)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	3.85	2.88	<10	3.77	<1
Total PFOS	<0.65 ng/l	TM337	11.2	<2.5	112	9.36	<2.5	<0.65
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<1	<1	<10	<1	<1
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26909466	26909470	26909448	26909493	26909488	26909483	26909453	26909450	26909497	26909490
Customer Sample Ref.	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909486	26909443	26909440	26909479	26909446	26909463	26909468	26909456	26909458	26909473
Customer Sample Ref.	GW008-B	GW002D-A	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB	GWTB	SWML5B-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909475
Customer Sample Ref.	SWML5B-B
AGS Ref.	
Depth	0.00 - 0.00
Type	Surface Water
PFAS Liquids	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022



CERTIFICATE OF ANALYSIS

SDG: 220922-79
Client Ref: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 October 2021
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	211023-91
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	618963
Order Number:	Z2852

We received 4 samples on Friday October 22, 2021 and 4 of these samples were scheduled for analysis which was completed on Thursday October 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211023-91
Client Ref.: P21-195

Report Number: 618963
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25206842	Manhole 1		0.00 - 0.00	21/10/2021
25206844	Manhole 2		0.00 - 0.00	21/10/2021
25206848	Manhole 3		0.00 - 0.00	21/10/2021
25206850	Manhole 4		0.00 - 0.00	21/10/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211023-91
Client Ref.: P21-195

Report Number: 618963
Location: Dublin Airport

Superseded Report:

Results Legend					
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	25206842	25206844	25206848	25206850
	Customer Sample Reference	Manhole 1	Manhole 2	Manhole 3	Manhole 4
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Container	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)	1|plastic (ALE221)
	Sample Type	SW	SW	SW	SW
	PFAS Liquids	All	NDPs: 0 Tests: 4	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211023-91
Client Ref.: P21-195

Report Number: 618963
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.			
# ISO17025 accredited.			Manhole 1	Manhole 2	Manhole 3	Manhole 4
M mCERTS accredited.						
aq Aqueous / settled sample.						
diss.filt Dissolved / filtered sample.						
tot.unfilt Total / unfiltered sample.						
* Subcontracted - refer to subcontractor report for accreditation status.						
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.						
(F) Trigger breach confirmed						
1-4*\$@ Sample deviation (see appendix)						
Component	LOD/Units	Method	Manhole 1	Manhole 2	Manhole 3	Manhole 4
PFBA (375-22-4) Perfluoro-n-butanoic acid	<2 ng/l	TM337	39.3 #	63.2 #	24 #	38.9 #
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<1 ng/l	TM337	9.3 #	55.2 #	11.1 #	59 #
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<1 ng/l	TM337	15.3 #	105 #	14.6 #	129 #
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<1 ng/l	TM337	12.1 #	7.35 #	7.74 #	11.8 #
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 ng/l	TM337	19.1 #	31.9 #	80.5 #	43.2 #
6:2FTS (27619-97-2) Perfluoro-octane sulfonate 6:2	<1 ng/l	TM337	2.59 #	49.7 #	1.11 #	74.6 #
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.65 ng/l	TM337	10.1 #	11.7 #	14.8 #	16 #
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<1 ng/l	TM337	6.19 #	28.1 #	<3.5 #	55.2 #
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 ng/l	TM337	1.77 #	3.63 #	<1.5 #	5.53 #
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<1 ng/l	TM337	1.16 #	2 #	<1 #	3.6 #
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 ng/l	TM337	<1 #	<1.5 #	<1 #	<1.5 #
Linear PFOS (1763-23-1) Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	44.3 #	49.9 #	24.1 #	72.9 #
Branched PFOS	<0.65 ng/l	TM337	25.9 #	38.6 #	20.1 #	60.4 #
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 ng/l	TM337	<1 #	<1 #	<1 #	<1 #
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 ng/l	TM337	<1 #	<1 #	<1 #	<1 #
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<2 ng/l	TM337	5.15 #	<2 #	<2 #	<2 #
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<1 ng/l	TM337	<1 #	<1 #	<1 #	<1 #
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<1 ng/l	TM337	1.17 #	4.45 #	<1 #	9.9 #
Total PFOS	<0.65 ng/l	TM337	70.1 #	88.5 #	44.3 #	133 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 211023-91
Client Ref.: P21-195

Report Number: 618963
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211023-91
Client Ref.: P21-195

Report Number: 618963
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25206842	25206844	25206848	25206850
Customer Sample Ref.	Manhole 1	Manhole 2	Manhole 3	Manhole 4
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	28-Oct-2021	28-Oct-2021	28-Oct-2021	28-Oct-2021



CERTIFICATE OF ANALYSIS

SDG: 211023-91	Client Reference: P21-195	Report Number: 618963
Location: Dublin Airport	Order Number: Z2852	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Hawarden
Deeside
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 221117-114
Your Reference: P21-195
Location: Dublin Airport
Report No: 670800
Order Number: Z3689

This report has been revised and directly supersedes 670128 in its entirety.

We received 25 samples on Thursday November 17, 2022 and 25 of these samples were scheduled for analysis which was completed on Tuesday November 29, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176024	ASFB		0.00 - 0.00	15/11/2022
27176026	ASTB1		0.00 - 0.00	15/11/2022
27176043	ASTB2		0.00 - 0.00	16/11/2022
27176032	Gardeners Well A		0.00 - 0.00	15/11/2022
27176037	Gardeners Well B		0.00 - 0.00	15/11/2022
27176014	GW001-A		0.00 - 0.00	15/11/2022
27176063	GW004-A		0.00 - 0.00	15/11/2022
27176059	GW007-A		0.00 - 0.00	15/11/2022
27176053	GW008-A		0.00 - 0.00	15/11/2022
27176018	GW014-A		0.00 - 0.00	15/11/2022
27176016	GW001-B		0.00 - 0.00	15/11/2022
27176066	GW004-B		0.00 - 0.00	15/11/2022
27176061	GW007-B		0.00 - 0.00	15/11/2022
27176056	GW008-B		0.00 - 0.00	15/11/2022
27176020	GW014-B		0.00 - 0.00	15/11/2022
27176009	GW002D-A		0.00 - 0.00	15/11/2022
27176006	GW03D-A		0.00 - 0.00	15/11/2022
27176051	GW05D-A		0.00 - 0.00	15/11/2022
27176046	GW015D-A		0.00 - 0.00	16/11/2022
27176011	GW002D-B		0.00 - 0.00	15/11/2022
27176029	GW03D-B		0.00 - 0.00	15/11/2022
27176035	GW05D-B		0.00 - 0.00	15/11/2022
27176048	GW015D-B		0.00 - 0.00	16/11/2022
27176039	SWML5B-A		0.00 - 0.00	15/11/2022
27176041	SWML5B-B		0.00 - 0.00	15/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type														
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	27176046	GW015D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176051	GW05D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176006	GW03D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176009	GW002D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176020	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176056	GW008-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176061	GW007-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176066	GW004-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176016	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176018	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176053	GW008-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176059	GW007-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176063	GW004-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176014	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176037	Gardeners Well B		0.00 - 0.00	500ml Plastic (ALE208)	SW														
27176032	Gardeners Well A		0.00 - 0.00	500ml Plastic (ALE208)	SW															
27176043	ASTB2		0.00 - 0.00	500ml Plastic (ALE208)	GW															
27176026	ASTB1		0.00 - 0.00	500ml Plastic (ALE208)	GW															
27176024	ASFB		0.00 - 0.00	500ml Plastic (ALE208)	GW															
PFAS Liquids	All	NDPs: 0 Tests: 25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

27176041	SWMML5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176039	SWMML5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176048	GW015D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176035	GW05D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176029	GW03D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176011	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend			Customer Sample Ref.		GW015D-A	GW002D-B	GW03D-B	GW05D-B	GW015D-B	SWML5B-A
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Sample Type		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)
aq	Aqueous / settled sample.		Date Sampled		16/11/2022	15/11/2022	15/11/2022	15/11/2022	16/11/2022	15/11/2022
diss.filt	Dissolved / filtered sample.		Sample Time							
tot.unfilt	Total / unfiltered sample.		Date Received		17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref		221117-114	221117-114	221117-114	221117-114	221117-114	221117-114
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)		27176046	27176011	27176029	27176035	27176048	27176039
(F) Trigger breach confirmed			AGS Reference							
1-4*\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<2	<20	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	3.76	<20	<2	<2	3.29	10.9	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<20	<200	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	105	17.6	<20	10.6	136	60.4		
			#	#	#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	427	80.4	<10	18.5	469	86.7		
			#	#	#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	165	68	<10	22.6	190	78.8		
			#	#	#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<10	4.86	<10	8.67	<1	12.3		
			#	#	#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	43.9	76.8	<10	5.75	62	63.2		
			#	#	#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	13.6	12.2	<10	5.96	14.1	45.6		
			#	#	#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	13.3	38.1	<6.5	1.89	12	109		
			#	#	#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	<10	32.4	<10	4.54	1.39	171		
			#	#	#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<10	8.12	<10	<1	2.12	36.2		
			#	#	#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<10	2.23	<10	<1	<1	8.7		
			#	#	#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<10	<1	<10	<1	<1	1.7		
			#	#	#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<6.5	43.2	8.4	<0.65	1.75	138		
			#	#	#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	<6.5	54.7	<6.5	<0.65	1.24	147		
			#	#	#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<2	<20	<2	<2	<2		
			#	#	#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	2.93	<10	3.53	<1	13.8		
			#	#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	<6.5	97.8	8.4	<0.65	2.98	285		
			#	#	#	#	#	#	#	#
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<10	<1	<10	<1	<1	<1		
			#	#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Test Completion Dates

Lab Sample No(s)	27176024	27176026	27176043	27176032	27176037	27176014	27176063	27176059	27176053	27176018
Customer Sample Ref.	ASFB	ASTB1	ASTB2	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176016	27176066	27176061	27176056	27176020	27176009	27176006	27176051	27176046	27176011
Customer Sample Ref.	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176029	27176035	27176048	27176039	27176041
Customer Sample Ref.	GW03D-B	GW06D-B	GW015D-B	SWML5B-A	SWML5B-B
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water
PFAS Liquids	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022
PFAS Liquids (EU specified)	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
221117-114	27176046	GW016-A	02/12/2022	Sample ID Change	GW016-A	GW015D-A	641549
221117-114	27176048	GW016-B	02/12/2022	Sample ID Change	GW016-B	GW015D-B	641549



CERTIFICATE OF ANALYSIS

SDG: 221117-114
Client Ref: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
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Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 08 December 2021
Customer: Fehily Timoney
Sample Delivery Group (SDG): 211117-83
Your Reference: P21-195
Location: Dublin Airport
Report No: 624842
Order Number: Z2852

This report has been revised and directly supersedes 624756 in its entirety.

We received 11 samples on Wednesday November 17, 2021 and 11 of these samples were scheduled for analysis which was completed on Monday December 06, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-83
Client Ref.: P21-195

Report Number: 624842
Location: Dublin Airport

Superseded Report: 624756

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25350796	SL1-A		0.00 - 0.00	15/11/2021
25350791	SL2-A		0.00 - 0.00	15/11/2021
25350777	SL3-A		0.00 - 0.00	15/11/2021
25350785	SL4-A		0.00 - 0.00	15/11/2021
25350793	SL1-B		0.00 - 0.00	15/11/2021
25350775	SL2-B		0.00 - 0.00	15/11/2021
25350781	SL3-B		0.00 - 0.00	15/11/2021
25350787	SL4-B		0.00 - 0.00	15/11/2021
25350789	TRIP BLANK GW130	A		15/11/2021
25350773	TRIP BLANK GW1130	A		15/11/2021
25350770	TRIP BLANK SW1130	A		15/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-83
Client Ref.: P21-195

Report Number: 624842
Location: Dublin Airport

Superseded Report: 624756

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type												
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	25350770	TRIP BLANK SW/130	A		500ml Plastic (ALE208)	PW												
	25350773	TRIP BLANK GW/130	A		500ml Plastic (ALE208)	PW												
	25350789	TRIP BLANK GW/130	A		500ml Plastic (ALE208)	PW												
	25350787	SL4-B		0.00 - 0.00	1plastic (ALE208)	SW												
	25350781	SL3-B		0.00 - 0.00	1plastic (ALE221)	SW												
	25350775	SL2-B		0.00 - 0.00	1plastic (ALE221)	SW												
	25350793	SL1-B		0.00 - 0.00	1plastic (ALE221)	SW												
	25350785	SL4-A		0.00 - 0.00	1plastic (ALE221)	SW												
	25350777	SL3-A		0.00 - 0.00	1plastic (ALE221)	SW												
	25350791	SL2-A		0.00 - 0.00	1plastic (ALE221)	SW												
25350796	SL1-A		0.00 - 0.00	1plastic (ALE221)	SW													
PFAS Liquids	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-83
Client Ref.: P21-195

Report Number: 624842
Location: Dublin Airport

Superseded Report: 624756

Results Legend			Customer Sample Ref.		SL3-B	SL4-B	TRIP BLANK GW130	TRIP BLANK GW1130	TRIP BLANK SW1130
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.00 - 0.00 Surface Water (SW) 15/11/2021	0.00 - 0.00 Surface Water (SW) 15/11/2021	Process Water (PR) 15/11/2021				
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<10					
8:2 FTS (39108-34-4)	<2 ng/l	TM337	19.5	<10					
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<100					
PFBA (375-22-4)	<2 ng/l	TM337	12.5 #	15.5 #					
PFFA (2706-90-3)	<1 ng/l	TM337	18.9 #	29.4 #					
PFHxA (307-24-4)	<1 ng/l	TM337	13.1 #	18.8 #					
PFBS (375-73-5)	<1 ng/l	TM337	<1 #	<5 #					
PFHpA (375-85-9)	<1 ng/l	TM337	10.6 #	7.9 #					
6:2 FTS (27619-97-2)	<1 ng/l	TM337	53.8 #	<5 #					
PFOA (335-67-1)	<0.65 ng/l	TM337	4.33 #	4.88 #					
PFHxS (355-46-4)	<1 ng/l	TM337	2.36 #	<5 #					
PFNA (375-95-1)	<1 ng/l	TM337	1.57 #	<5 #					
PFHpS (375-92-8)	<1 ng/l	TM337	<1 #	<5 #					
PFDA (335-76-2)	<1 ng/l	TM337	<1 #	<5 #					
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	5.48 #	<3.25 #					
Branched PFOS	<0.65 ng/l	TM337	4.5 #	<3.25 #					
PFUnA (2058-94-8)	<1 ng/l	TM337	<1 #	<5 #					
PFDoA (307-55-1)	<1 ng/l	TM337	<1 #	<5 #					
PFOSA (754-91-6)	<2 ng/l	TM337	<2 #	<10 #					
PFDS (335-77-3)	<1 ng/l	TM337	<1 #	<5 #					
PFPeS (2706-91-4)	<1 ng/l	TM337	<1 #	<5 #					
Total PFOS	<0.65 ng/l	TM337	9.98 #	<3.25 #					
4:2 FTS (757124-72-4)	<2 ng/l	TM337			<2	<2	<2		
8:2 FTS (39108-34-4)	<2 ng/l	TM337			<2	<2	<2		
5:3 FTCA (914637-49-3)	<20 ng/l	TM337			<20	<20	<20		
PFBA (375-22-4)	<2 ng/l	TM337			<2	<2	<2		
PFFA (2706-90-3)	<1 ng/l	TM337			<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM337			<1	<1	<1		
PFBS (375-73-5)	<1 ng/l	TM337			<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM337			<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM337			<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM337			<0.65	<0.65	<0.65		
PFHxS (355-46-4)	<1 ng/l	TM337			<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-83
Client Ref.: P21-195

Report Number: 624842
Location: Dublin Airport

Superseded Report: 624756

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211117-83
Client Ref.: P21-195

Report Number: 624842
Location: Dublin Airport

Superseded Report: 624756

Test Completion Dates

	25350796	25350791	25350777	25350785	25350793	25350775	25350781	25350787	25350789	25350773
Lab Sample No(s)	SL1-A	SL2-A	SL3-A	SL4-A	SL1-B	SL2-B	SL3-B	SL4-B	TRIP BLANK GW13 0	TRIP BLANK GW11 30
Customer Sample Ref.										
AGS Ref.									A	A
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Process	Process
PFAS Liquids	29-Nov-2021	30-Nov-2021	30-Nov-2021	30-Nov-2021	29-Nov-2021	29-Nov-2021	30-Nov-2021	29-Nov-2021	06-Dec-2021	06-Dec-2021

Lab Sample No(s)	25350770
Customer Sample Ref.	TRIP BLANK SW11 30
AGS Ref.	A
Depth	
Type	Process
PFAS Liquids	06-Dec-2021

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
211117-83	N/A	N/A	08/12/2021	Site location change	Castlemoate	Dublin Airport	624756



CERTIFICATE OF ANALYSIS

SDG: 211117-83	Client Reference: P21-195	Report Number: 624842
Location: Dublin Airport	Order Number: Z2852	Superseded Report: 624756

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 February 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220210-96
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	633900
Order Number:	Z3164

We received 25 samples on Thursday February 10, 2022 and 25 of these samples were scheduled for analysis which was completed on Thursday February 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-96
Client Ref.: P21-195

Report Number: 633900
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25796495	SL1-A		0.00 - 0.00	02/09/2022
25796555	SL2-A		0.00 - 0.00	02/09/2022
25796566	SL3-A		0.00 - 0.00	02/09/2022
25796572	SL4-A		0.00 - 0.00	02/09/2022
25796581	SL5-A		0.00 - 0.00	02/09/2022
25796501	SL6-A		0.00 - 0.00	02/09/2022
25796507	SL7-A		0.00 - 0.00	02/09/2022
25796513	SL8-A		0.00 - 0.00	02/09/2022
25796520	SL9-A		0.00 - 0.00	02/09/2022
25796526	SL10-A		0.00 - 0.00	02/09/2022
25796536	SL11-A		0.00 - 0.00	02/09/2022
25796529	SL1-B		0.00 - 0.00	02/09/2022
25796562	SL2-B		0.00 - 0.00	02/09/2022
25796569	SL3-B		0.00 - 0.00	02/09/2022
25796577	SL4-B		0.00 - 0.00	02/09/2022
25796499	SL5-B		0.00 - 0.00	02/09/2022
25796504	SL6-B		0.00 - 0.00	02/09/2022
25796509	SL7-B		0.00 - 0.00	02/09/2022
25796516	SL8-B		0.00 - 0.00	02/09/2022
25796523	SL9-B		0.00 - 0.00	02/09/2022
25796533	SL10-B		0.00 - 0.00	02/09/2022
25796540	SL11-B		0.00 - 0.00	02/09/2022
25796545	SWFB1		0.00 - 0.00	02/09/2022
25796548	SWFB2		0.00 - 0.00	02/09/2022
25796551	SWTB		0.00 - 0.00	02/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-96
Client Ref.: P21-195

Report Number: 633900
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	25796616	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	25796609	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966504	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	25796499	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966577	SL4-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966569	SL3-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966562	SL2-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966529	SL1-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966536	SL11-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966526	SL10-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966520	SL9-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966513	SL8-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966507	SL7-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966501	SL6-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	257966581	SL5-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
257966572	SL4-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	
257966566	SL3-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	
257966555	SL2-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	
25796495	SL1-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	
PFAS Liquids	All	NDPs: 0 Tests: 25				
						X X X X X X X X X X X X X X X X X X X

25796551	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
25796548	SWFB2		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
25796545	SWFB1		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
25796540	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
25796533	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
25796523	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-96
Client Ref.: P21-195

Report Number: 633900
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SWTB			
#	ISO17025 accredited.		0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)			
aq	Aqueous / settled sample.	Depth (m)	02/09/2022			
diss.filt	Dissolved / filtered sample.	Sample Type	10/02/2022			
tot.unfilt	Total / unfiltered sample.	Date Sampled	220210-96			
	Subcontracted - refer to subcontractor report for accreditation status.	Sample Time	25796551			
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received				
(F)	Trigger breach confirmed	SDG Ref				
1-4*\$@	Sample deviation (see appendix)	Lab Sample No.(s)				
		AGS Reference				
Component	LOD/Units	Method				
PFBA (375-22-4)	<2 ng/l	TM337	<20	#		
PFPA (2706-90-3)	<1 ng/l	TM337	<10	#		
PFHxA (307-24-4)	<1 ng/l	TM337	<10	#		
PFBS (375-73-5)	<1 ng/l	TM337	<10	#		
PFHpA (375-85-9)	<1 ng/l	TM337	<10	#		
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	#		
PFOA (335-67-1)	<0.65 ng/l	TM337	<16	#		
PFHxS (355-46-4)	<1 ng/l	TM337	<10	#		
PFNA (375-95-1)	<1 ng/l	TM337	<10	#		
PFHpS (375-92-8)	<1 ng/l	TM337	<10	#		
PFDA (335-76-2)	<1 ng/l	TM337	<14.5	#		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<6.5	#		
Branched PFOS	<0.65 ng/l	TM337	<6.5	#		
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	#		
PFDoA (307-55-1)	<1 ng/l	TM337	<10	#		
PFOSA (754-91-6)	<2 ng/l	TM337	<20	#		
PFDS (335-77-3)	<1 ng/l	TM337	<10	#		
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	#		
Total PFOS	<0.65 ng/l	TM337	<6.5	#		



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-96
Client Ref.: P21-195

Report Number: 633900
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220210-96
Client Ref.: P21-195

Report Number: 633900
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25796495	25796555	25796566	25796572	25796581	25796501	25796507	25796513	25796520	25796526
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	17-Feb-2022	17-Feb-2022	16-Feb-2022	17-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022

Lab Sample No(s)	25796536	25796529	25796562	25796569	25796577	25796499	25796504	25796509	25796516	25796523
Customer Sample Ref.	SL11-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	17-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	17-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022

Lab Sample No(s)	25796533	25796540	25796545	25796548	25796551
Customer Sample Ref.	SL10-B	SL11-B	SWFB1	SWFB2	SWTB
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	17-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022	16-Feb-2022



CERTIFICATE OF ANALYSIS

SDG: 220210-96	Client Reference: P21-195	Report Number: 633900
Location: Dublin Airport	Order Number: Z3164	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 24 February 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220217-115
Your Reference: P21-195
Location: Dublin Airport
Report No: 635022
Order Number: Z3164

We received 2 samples on Thursday February 17, 2022 and 2 of these samples were scheduled for analysis which was completed on Thursday February 24, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-115
Client Ref.: P21-195

Report Number: 635022
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25836845	SWML5(B)-1		0.00 - 0.00	15/02/2022
25836849	SWML5(B)-2		0.00 - 0.00	15/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-115
Client Ref.: P21-195

Report Number: 635022
Location: Dublin Airport

Superseded Report:

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></div> X Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: red; color: white; margin-right: 5px;"></div> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	25836845	25836849	
	Customer Sample Reference	SWMML5(B)-1	SWMML5(B)-2	
	AGS Reference			
	Depth (m)	0.00 - 0.00	0.00 - 0.00	
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)	
	Sample Type	SW	SW	
PFAS Liquids	All	NDPs: 0 Tests: 2	X X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-115
Client Ref.: P21-195

Report Number: 635022
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220217-115
Client Ref.: P21-195

Report Number: 635022
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25836845	25836849
Customer Sample Ref.	SWML5(B)-1	SWML5(B)-2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	24-Feb-2022	24-Feb-2022



CERTIFICATE OF ANALYSIS

SDG:	220217-115	Client Reference:	P21-195	Report Number:	635022
Location:	Dublin Airport	Order Number:	Z3164	Superseded Report:	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park

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Hawarden

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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 12 April 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220316-134
Your Reference: P21-195
Location: Dublin Airport
Report No: 641972
Order Number: P3164

We received 29 samples on Wednesday March 16, 2022 and 29 of these samples were scheduled for analysis which was completed on Tuesday April 12, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-134
Client Ref.: P21-195

Report Number: 641972
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25979694	SL1-A		0.00 - 0.00	14/03/2022
25979742	SL2-A		0.00 - 0.00	14/03/2022
25979753	SL3-A		0.00 - 0.00	14/03/2022
25979761	SL4-A		0.00 - 0.00	14/03/2022
25979765	SL5-A		0.00 - 0.00	14/03/2022
25979700	SL6-A		0.00 - 0.00	14/03/2022
25979705	SL7-A		0.00 - 0.00	14/03/2022
25979709	SL8-A		0.00 - 0.00	14/03/2022
25979713	SL9-A		0.00 - 0.00	14/03/2022
25979718	SL10-A		0.00 - 0.00	14/03/2022
25979725	SL11-A		0.00 - 0.00	14/03/2022
25979736	SL12-A		0.00 - 0.00	14/03/2022
25979738	SL13-A		0.00 - 0.00	14/03/2022
25979740	SL14-A		0.00 - 0.00	14/03/2022
25979744	SL15-A		0.00 - 0.00	14/03/2022
25979720	SL1-B		0.00 - 0.00	14/03/2022
25979750	SL2-B		0.00 - 0.00	14/03/2022
25979757	SL3-B		0.00 - 0.00	14/03/2022
25979763	SL4-B		0.00 - 0.00	14/03/2022
25979698	SL5-B		0.00 - 0.00	14/03/2022
25979703	SL6-B		0.00 - 0.00	14/03/2022
25979707	SL7-B		0.00 - 0.00	14/03/2022
25979711	SL8-B		0.00 - 0.00	14/03/2022
25979715	SL9-B		0.00 - 0.00	14/03/2022
25979723	SL10-B		0.00 - 0.00	14/03/2022
25979727	SL11-B		0.00 - 0.00	14/03/2022
25979747	SL15-B		0.00 - 0.00	14/03/2022
25979729	SWFB1		0.00 - 0.00	14/03/2022
25979732	SWFB2		0.00 - 0.00	14/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

25979732	SWFB2		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979729	SWFB1		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979747	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979727	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979723	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979715	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979711	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979707	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979703	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
25979698	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

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SDG: 220316-134
Client Ref.: P21-195

Report Number: 641972
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.	Date Sampled	14/03/2022	14/03/2022	14/03/2022	14/03/2022	14/03/2022	14/03/2022
diss.filt	Dissolved / filtered sample.	Sample Time						
tot.unfilt	Total / unfiltered sample.	Date Received	16/03/2022	16/03/2022	16/03/2022	16/03/2022	16/03/2022	16/03/2022
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*# @ Sample deviation (see appendix)		SDG Ref	220316-134	220316-134	220316-134	220316-134	220316-134	220316-134
		Lab Sample No.(s)	25979763	25979698	25979703	25979707	25979711	25979715
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	<2	<2	7.86	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	11.4	5	9.26	9.04	3.3	<2
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	27.3	5.37	28.4	20.8	2.18	<2
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	16	3.36	23.4	11.5	<1	<1.5
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<1	<1	1.11	<1	<1	<1
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	10.8	2.32	7.91	8.79	<1	<1
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1	<1	10.7	16.4	<1	<1
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	2.16	1.69	3.73	6.53	1.59	0.84
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	1.01	<1	3.44	8.76	<1	<1
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<1	<1	1.27	2.42	<1	<1
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<1	<1	<1	1.24	<1	<1
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65	1.92	4	11.2	0.694	1.13
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	<1.5	1.34	3.64	12.5	<0.65	1.39
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<2	<1	<1	<1	<1	<2
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	<1.5	3.26	7.64	23.7	0.694	2.51
			#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<2	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<4	<2	<2	<2	<2	<2
			#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

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SDG: 220316-134
Client Ref.: P21-195

Report Number: 641972
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



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Test Completion Dates

Lab Sample No(s)	25979694	25979742	25979753	25979761	25979765	25979700	25979705	25979709	25979713	25979718
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022
PFAS Liquids (EU specified)	12-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022

Lab Sample No(s)	25979725	25979736	25979738	25979740	25979744	25979720	25979750	25979757	25979763	25979698
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	07-Apr-2022	08-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	12-Apr-2022
PFAS Liquids (EU specified)	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	07-Apr-2022	08-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	12-Apr-2022

Lab Sample No(s)	25979703	25979707	25979711	25979715	25979723	25979727	25979747	25979729	25979732
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL15-B	SWFB1	SWFB2
AGS Ref.									
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	07-Apr-2022	12-Apr-2022	12-Apr-2022
PFAS Liquids (EU specified)	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	12-Apr-2022	07-Apr-2022	12-Apr-2022	12-Apr-2022



CERTIFICATE OF ANALYSIS

SDG: 220316-134	Client Reference: P21-195	Report Number: 641972
Location: Dublin Airport	Order Number: P3164	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 April 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220316-129
Your Reference: P21-195
Location: Dublin Airport
Report No: 640587
Order Number: Z3164

This report has been revised and directly supersedes 639155 in its entirety.

We received 2 samples on Wednesday March 16, 2022 and 2 of these samples were scheduled for analysis which was completed on Friday April 01, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-129
Client Ref.: P21-195

Report Number: 640587
Location: Dublin Airport

Superseded Report: 639155

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25979566	SWML5(B)-1		0.00 - 0.00	15/03/2022
25979564	SWML5(B)-2		0.00 - 0.00	15/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-129
Client Ref.: P21-195

Report Number: 640587
Location: Dublin Airport

Superseded Report: 639155

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	25979566	25979564
Customer Sample Reference	SWMML5(B)-1	SWMML5(B)-2
AGS Reference		
Depth (m)	0.00 - 0.00	0.00 - 0.00
Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)
Sample Type	SW	SW
PFAS Liquids	All	NDPs: 0 Tests: 2
	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-129
Client Ref.: P21-195

Report Number: 640587
Location: Dublin Airport

Superseded Report: 639155

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220316-129
Client Ref.: P21-195

Report Number: 640587
Location: Dublin Airport

Superseded Report: 639155

Test Completion Dates

Lab Sample No(s)	25979566	25979564
Customer Sample Ref.	SWML5(B)-1	SWML5(B)-2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	01-Apr-2022	01-Apr-2022



CERTIFICATE OF ANALYSIS

SDG:	220316-129	Client Reference:	P21-195	Report Number:	640587
Location:	Dublin Airport	Order Number:	Z3164	Superseded Report:	639155

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Business Park
North Road
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 13 May 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220421-98
Your Reference: P21-195
Location: Dublin Airport
Report No: 646043
Order Number: P3164

We received 33 samples on Wednesday April 20, 2022 and 32 of these samples were scheduled for analysis which was completed on Friday May 13, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220421-98
Client Ref.: P21-195

Report Number: 646043
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26160862	SL1-A		0.00 - 0.00	19/04/2022
26160935	SL2-A		0.00 - 0.00	19/04/2022
26160949	SL3-A		0.00 - 0.00	19/04/2022
26160955	SL4-A		0.00 - 0.00	19/04/2022
26160961	SL5-A		0.00 - 0.00	19/04/2022
26160870	SL6-A		0.00 - 0.00	19/04/2022
26160876	SL7-A		0.00 - 0.00	19/04/2022
26160883	SL8-A		0.00 - 0.00	19/04/2022
26160887	SL9-A		0.00 - 0.00	19/04/2022
26160895	SL10-A		0.00 - 0.00	19/04/2022
26160906	SL11-A		0.00 - 0.00	19/04/2022
26160917	SL12-A		0.00 - 0.00	19/04/2022
26160920	SL13-A		0.00 - 0.00	19/04/2022
26160922	SL14-A		0.00 - 0.00	19/04/2022
26160924	SL15-A		0.00 - 0.00	19/04/2022
26160901	SL1-B		0.00 - 0.00	19/04/2022
26160947	SL2-B		0.00 - 0.00	19/04/2022
26160951	SL3-B		0.00 - 0.00	19/04/2022
26160959	SL4-B		0.00 - 0.00	19/04/2022
26160866	SL5-B		0.00 - 0.00	19/04/2022
26160872	SL6-B		0.00 - 0.00	19/04/2022
26160880	SL7-B		0.00 - 0.00	19/04/2022
26160885	SL8-B		0.00 - 0.00	19/04/2022
26160891	SL9-B		0.00 - 0.00	19/04/2022
26160903	SL10-B		0.00 - 0.00	19/04/2022
26160908	SL11-B		0.00 - 0.00	19/04/2022
26160938	SL12-B		0.00 - 0.00	19/04/2022
26160941	SL13-B		0.00 - 0.00	19/04/2022
26160945	SL14-B		0.00 - 0.00	19/04/2022
26160930	SL15-B		0.00 - 0.00	19/04/2022
26160912	SWFB1		0.00 - 0.00	19/04/2022
26160915	SWFB2		0.00 - 0.00	19/04/2022
26160860	TRIP BLANK			

Only received samples which have had analysis scheduled will be shown on the following pages.

26160915	SWFB2		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160912	SWFB1		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160930	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160945	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160941	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160938	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160908	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160903	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160891	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160885	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160880	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160872	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26160866	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220421-98
Client Ref.: P21-195

Report Number: 646043
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220421-98
Client Ref.: P21-195

Report Number: 646043
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26160862	26160935	26160949	26160955	26160961	26160870	26160876	26160883	26160887	26160895
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	13-May-2022	12-May-2022	12-May-2022	12-May-2022	12-May-2022	10-May-2022	12-May-2022	12-May-2022	12-May-2022	13-May-2022
PFAS Liquids (EU specified)	13-May-2022	12-May-2022	12-May-2022	12-May-2022	12-May-2022	10-May-2022	12-May-2022	12-May-2022	12-May-2022	13-May-2022

Lab Sample No(s)	26160906	26160917	26160920	26160922	26160924	26160901	26160947	26160951	26160959	26160866
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	13-May-2022	12-May-2022	12-May-2022	10-May-2022	13-May-2022	13-May-2022	13-May-2022	12-May-2022	12-May-2022	12-May-2022
PFAS Liquids (EU specified)	13-May-2022	12-May-2022	12-May-2022	10-May-2022	13-May-2022	13-May-2022	13-May-2022	12-May-2022	12-May-2022	12-May-2022

Lab Sample No(s)	26160872	26160880	26160885	26160891	26160903	26160908	26160938	26160941	26160945	26160930
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water									
PFAS Liquids	10-May-2022	12-May-2022	13-May-2022	12-May-2022	12-May-2022	13-May-2022	12-May-2022	13-May-2022	12-May-2022	13-May-2022
PFAS Liquids (EU specified)	10-May-2022	12-May-2022	13-May-2022	12-May-2022	12-May-2022	13-May-2022	12-May-2022	13-May-2022	12-May-2022	13-May-2022

Lab Sample No(s)	26160912	26160915
Customer Sample Ref.	SWFB1	SWFB2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	13-May-2022	10-May-2022
PFAS Liquids (EU specified)	13-May-2022	10-May-2022



CERTIFICATE OF ANALYSIS

SDG: 220421-98
Client Ref: P21-195

Report Number: 646043
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 April 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220422-95
Your Reference: P21-195
Location: Dublin Airport
Report No: 644322
Order Number: Z3164

We received 2 samples on Friday April 22, 2022 and 2 of these samples were scheduled for analysis which was completed on Friday April 29, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-95
Client Ref.: P21-195

Report Number: 644322
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26169149	SWML5(B)-1		0.00 - 0.00	20/04/2022
26169139	SWML5(B)-2		0.00 - 0.00	20/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-95
Client Ref.: P21-195

Report Number: 644322
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	26169149	26169139		
	Customer Sample Reference	SWMML5(B)-1	SWMML5(B)-2		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-95
Client Ref.: P21-195

Report Number: 644322
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220422-95
Client Ref.: P21-195

Report Number: 644322
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26169149	26169139
Customer Sample Ref.	SWML5(B)-1	SWML5(B)-2
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	29-Apr-2022	29-Apr-2022
PFAS Liquids (EU specified)	29-Apr-2022	29-Apr-2022



CERTIFICATE OF ANALYSIS

SDG: 220422-95
Client Ref: P21-195

Report Number: 644322
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g. volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 16 June 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220527-116
Your Reference: P21-195
Location: Dublin Airport
Report No: 650879
Order Number: Z3164

We received 32 samples on Friday May 27, 2022 and 32 of these samples were scheduled for analysis which was completed on Thursday June 16, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-116
Client Ref.: P21-195

Report Number: 650879
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26355868	SL1-A		0.00 - 0.00	26/05/2022
26355992	SL2-A		0.00 - 0.00	26/05/2022
26356008	SL3-A		0.00 - 0.00	26/05/2022
26356014	SL4-A		0.00 - 0.00	26/05/2022
26356024	SL5-A		0.00 - 0.00	26/05/2022
26355876	SL6-A		0.00 - 0.00	26/05/2022
26355883	SL7-A		0.00 - 0.00	26/05/2022
26355889	SL8-A		0.00 - 0.00	26/05/2022
26355903	SL9-A		0.00 - 0.00	26/05/2022
26355909	SL10-A		0.00 - 0.00	26/05/2022
26355920	SL11-A		0.00 - 0.00	26/05/2022
26355946	SL12-A		0.00 - 0.00	26/05/2022
26355961	SL13-A		0.00 - 0.00	26/05/2022
26355972	SL14-A		0.00 - 0.00	26/05/2022
26355980	SL15-A		0.00 - 0.00	26/05/2022
26355912	SL1-B		0.00 - 0.00	26/05/2022
26356005	SL2-B		0.00 - 0.00	26/05/2022
26356011	SL3-B		0.00 - 0.00	26/05/2022
26356019	SL4-B		0.00 - 0.00	26/05/2022
26355873	SL5-B		0.00 - 0.00	26/05/2022
26355880	SL6-B		0.00 - 0.00	26/05/2022
26355886	SL7-B		0.00 - 0.00	26/05/2022
26355893	SL8-B		0.00 - 0.00	26/05/2022
26355906	SL9-B		0.00 - 0.00	26/05/2022
26355915	SL10-B		0.00 - 0.00	26/05/2022
26355925	SL11-B		0.00 - 0.00	26/05/2022
26355989	SL12-B		0.00 - 0.00	26/05/2022
26355997	SL13-B		0.00 - 0.00	26/05/2022
26356000	SL14-B		0.00 - 0.00	26/05/2022
26355983	SL15-B		0.00 - 0.00	26/05/2022
26355931	SWFB		0.00 - 0.00	26/05/2022
26356003	SWTB		0.00 - 0.00	26/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26356003	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355931	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355983	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26356000	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355997	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355989	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355925	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355915	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355906	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355893	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355886	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355880	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26355873	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-116
Client Ref.: P21-195

Report Number: 650879
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-116
Client Ref.: P21-195

Report Number: 650879
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26355868	26355992	26356008	26356014	26356024	26355876	26355883	26355889	26355903	26355909
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	13-Jun-2022	15-Jun-2022	15-Jun-2022	13-Jun-2022	13-Jun-2022	15-Jun-2022	15-Jun-2022	15-Jun-2022	15-Jun-2022	15-Jun-2022
PFAS Liquids (EU specified)	13-Jun-2022	16-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022	16-Jun-2022	16-Jun-2022	16-Jun-2022	16-Jun-2022	16-Jun-2022

Lab Sample No(s)	26355920	26355946	26355961	26355972	26355980	26355912	26356005	26356011	26356019	26355873
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	15-Jun-2022	13-Jun-2022	15-Jun-2022	13-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022	15-Jun-2022	13-Jun-2022	13-Jun-2022
PFAS Liquids (EU specified)	16-Jun-2022	13-Jun-2022	16-Jun-2022	13-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022

Lab Sample No(s)	26355880	26355886	26355893	26355906	26355915	26355925	26355989	26355997	26356000	26355983
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	13-Jun-2022	15-Jun-2022	13-Jun-2022	13-Jun-2022	13-Jun-2022	15-Jun-2022	13-Jun-2022	13-Jun-2022	15-Jun-2022	15-Jun-2022
PFAS Liquids (EU specified)	13-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022	13-Jun-2022	16-Jun-2022	13-Jun-2022	13-Jun-2022	16-Jun-2022	16-Jun-2022

Lab Sample No(s)	26355931	26356003
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	15-Jun-2022	16-Jun-2022
PFAS Liquids (EU specified)	16-Jun-2022	16-Jun-2022



CERTIFICATE OF ANALYSIS

SDG: 220527-116
Client Ref: P21-195

Report Number: 650879
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 June 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220526-54
Your Reference: P21-195
Location: Dublin Airport
Report No: 649187
Order Number: Z3164

We received 2 samples on Wednesday May 25, 2022 and 2 of these samples were scheduled for analysis which was completed on Monday June 06, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-54
Client Ref.: P21-195

Report Number: 649187
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26344061	SWML5(B)-A		0.00 - 0.00	24/05/2022
26344063	SWML5(B)-B		0.00 - 0.00	24/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-54
Client Ref.: P21-195

Report Number: 649187
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	26344061	26344063
	Customer Sample Reference	SWMLE(B)-A	SWMLE(B)-B
	AGS Reference		
	Depth (m)	0.00 - 0.00	0.00 - 0.00
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)
	Sample Type	SW	SW
PFAS Liquids	All	NDPs: 0 Tests: 2	<div style="display: flex; justify-content: space-around;"> X X </div>



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-54
Client Ref.: P21-195

Report Number: 649187
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220526-54
Client Ref.: P21-195

Report Number: 649187
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26344061	26344063
Customer Sample Ref.	SWML5(B)-A	SWML5(B)-B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	06-Jun-2022	06-Jun-2022



CERTIFICATE OF ANALYSIS

SDG: 220526-54
Client Ref: P21-195

Report Number: 649187
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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North Park Business Park
North Road
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Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 July 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220623-46
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	653316
Order Number:	Z3393

We received 32 samples on Wednesday June 22, 2022 and 33 of these samples were scheduled for analysis which was completed on Wednesday July 06, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220623-46
Client Ref.: P21-195

Report Number: 653316
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26474801	SL1-A		0.00 - 0.00	21/06/2022
26474854	SL2-A		0.00 - 0.00	21/06/2022
26474868	SL3-A		0.00 - 0.00	21/06/2022
26474874	SL4-A		0.00 - 0.00	21/06/2022
26474878	SL5-A		0.00 - 0.00	21/06/2022
26474806	SL6-A		0.00 - 0.00	21/06/2022
26474812	SL7-A		0.00 - 0.00	21/06/2022
26474816	SL8-A		0.00 - 0.00	21/06/2022
26474821	SL9-A		0.00 - 0.00	21/06/2022
26474825	SL10-A		0.00 - 0.00	21/06/2022
26474832	SL11-A		0.00 - 0.00	21/06/2022
26474838	SL12-A		0.00 - 0.00	21/06/2022
26474840	SL13-A		0.00 - 0.00	21/06/2022
26474842	SL14-A		0.00 - 0.00	21/06/2022
26474844	SL15-A		0.00 - 0.00	21/06/2022
26474828	SL1-B		0.00 - 0.00	21/06/2022
26474865	SL2-B		0.00 - 0.00	21/06/2022
26474870	SL3-B		0.00 - 0.00	21/06/2022
26474876	SL4-B		0.00 - 0.00	21/06/2022
26474803	SL5-B		0.00 - 0.00	21/06/2022
26474809	SL6-B		0.00 - 0.00	21/06/2022
26474814	SL7-B		0.00 - 0.00	21/06/2022
26474819	SL8-B		0.00 - 0.00	21/06/2022
26474823	SL9-B		0.00 - 0.00	21/06/2022
26474830	SL10-B		0.00 - 0.00	21/06/2022
26474834	SL11-B		0.00 - 0.00	21/06/2022
26474851	SL12-B		0.00 - 0.00	21/06/2022
26474857	SL13-B		0.00 - 0.00	21/06/2022
26474860	SL14-B		0.00 - 0.00	21/06/2022
26474847	SL15-B		0.00 - 0.00	21/06/2022
26474836	SWFB		0.00 - 0.00	21/06/2022
26474863	SWTB		0.00 - 0.00	21/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26474863	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474836	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474847	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474860	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474857	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474851	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474834	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474830	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474823	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474819	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474814	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474809	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26474803	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220623-46
Client Ref.: P21-195

Report Number: 653316
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220623-46
Client Ref.: P21-195

Report Number: 653316
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26474801	26474854	26474868	26474874	26474878	26474806	26474812	26474816	26474821	26474825
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	04-Jul-2022	01-Jul-2022	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	06-Jul-2022
PFAS Liquids (EU specified)	04-Jul-2022	01-Jul-2022	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	06-Jul-2022

Lab Sample No(s)	26474832	26474838	26474840	26474842	26474844	26474828	26474865	26474870	26474876	26474803
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	01-Jul-2022	01-Jul-2022	04-Jul-2022	06-Jul-2022	04-Jul-2022	04-Jul-2022
PFAS Liquids (EU specified)	01-Jul-2022	01-Jul-2022	06-Jul-2022	01-Jul-2022	01-Jul-2022	01-Jul-2022	04-Jul-2022	06-Jul-2022	04-Jul-2022	04-Jul-2022

Lab Sample No(s)	26474809	26474814	26474819	26474823	26474830	26474834	26474851	26474857	26474860	26474847
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	01-Jul-2022	01-Jul-2022	04-Jul-2022	04-Jul-2022	01-Jul-2022	04-Jul-2022	04-Jul-2022	04-Jul-2022	01-Jul-2022	01-Jul-2022
PFAS Liquids (EU specified)	01-Jul-2022	01-Jul-2022	04-Jul-2022	04-Jul-2022	01-Jul-2022	04-Jul-2022	04-Jul-2022	04-Jul-2022	01-Jul-2022	01-Jul-2022

Lab Sample No(s)	26474836	26474863
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	01-Jul-2022	04-Jul-2022
PFAS Liquids (EU specified)	01-Jul-2022	04-Jul-2022



CERTIFICATE OF ANALYSIS

SDG: 220623-46
Client Ref: P21-195

Report Number: 653316
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Deeside
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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 July 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220627-5
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	653057
Order Number:	Z3393

We received 2 samples on Wednesday June 22, 2022 and 2 of these samples were scheduled for analysis which was completed on Monday July 04, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-5
Client Ref.: P21-195

Report Number: 653057
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26494661	SWML5(B)-A		0.00 - 0.00	21/06/2022
26494656	SWML5(B)-B		0.00 - 0.00	21/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-5
Client Ref.: P21-195

Report Number: 653057
Location: Dublin Airport

Superseded Report:

<p>Results Legend</p> <p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	26494661	26494656		
	Customer Sample Reference	SWMLE(B)-A	SWMLE(B)-B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 2	X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-5
Client Ref.: P21-195

Report Number: 653057
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220627-5
Client Ref.: P21-195

Report Number: 653057
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26494661	26494656
Customer Sample Ref.	SWML5(B)-A	SWML5(B)-B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	04-Jul-2022	04-Jul-2022
PFAS Liquids (EU specified)	04-Jul-2022	04-Jul-2022



CERTIFICATE OF ANALYSIS

SDG: 220627-5
Client Ref: P21-195

Report Number: 653057
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220921-106
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	662524
Order Number:	Z3164

We received 32 samples on Wednesday September 21, 2022 and 32 of these samples were scheduled for analysis which was completed on Monday September 26, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220921-106
Client Ref.: P21-195

Report Number: 662524
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26903485	SL1-A		0.00 - 0.00	19/09/2022
26903550	SL2-A		0.00 - 0.00	19/09/2022
26903562	SL3-A		0.00 - 0.00	19/09/2022
26903568	SL4-A		0.00 - 0.00	19/09/2022
26903572	SL5-A		0.00 - 0.00	19/09/2022
26903489	SL6-A		0.00 - 0.00	19/09/2022
26903494	SL7-A		0.00 - 0.00	19/09/2022
26903503	SL8-A		0.00 - 0.00	19/09/2022
26903510	SL9-A		0.00 - 0.00	19/09/2022
26903517	SL10-A		0.00 - 0.00	19/09/2022
26903526	SL11-A		0.00 - 0.00	19/09/2022
26903536	SL12-A		0.00 - 0.00	19/09/2022
26903539	SL13-A		0.00 - 0.00	19/09/2022
26903541	SL14-A		0.00 - 0.00	19/09/2022
26903543	SL15-A		0.00 - 0.00	19/09/2022
26903520	SL1-B		0.00 - 0.00	19/09/2022
26903559	SL2-B		0.00 - 0.00	19/09/2022
26903565	SL3-B		0.00 - 0.00	19/09/2022
26903570	SL4-B		0.00 - 0.00	19/09/2022
26903487	SL5-B		0.00 - 0.00	19/09/2022
26903492	SL6-B		0.00 - 0.00	19/09/2022
26903499	SL7-B		0.00 - 0.00	19/09/2022
26903506	SL8-B		0.00 - 0.00	19/09/2022
26903512	SL9-B		0.00 - 0.00	19/09/2022
26903523	SL10-B		0.00 - 0.00	19/09/2022
26903529	SL11-B		0.00 - 0.00	19/09/2022
26903548	SL12-B		0.00 - 0.00	19/09/2022
26903552	SL13-B		0.00 - 0.00	19/09/2022
26903554	SL14-B		0.00 - 0.00	19/09/2022
26903545	SL15-B		0.00 - 0.00	19/09/2022
26903532	SWFB		0.00 - 0.00	19/09/2022
26903556	SWTB		0.00 - 0.00	19/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26903556	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903532	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903545	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903554	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903552	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903548	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903529	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903523	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903512	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903506	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903499	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903492	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
26903487	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220921-106
Client Ref.: P21-195

Report Number: 662524
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220921-106
Client Ref.: P21-195

Report Number: 662524
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26903485	26903550	26903562	26903568	26903572	26903489	26903494	26903503	26903510	26903517
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water									
PFAS Liquids	26-Sep-2022									
PFAS Liquids (EU specified)	26-Sep-2022									

Lab Sample No(s)	26903526	26903536	26903539	26903541	26903543	26903520	26903559	26903565	26903570	26903487
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water									
PFAS Liquids	26-Sep-2022									
PFAS Liquids (EU specified)	26-Sep-2022									

Lab Sample No(s)	26903492	26903499	26903506	26903512	26903523	26903529	26903548	26903552	26903554	26903545
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water									
PFAS Liquids	26-Sep-2022									
PFAS Liquids (EU specified)	26-Sep-2022									

Lab Sample No(s)	26903532	26903556
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	26-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022



CERTIFICATE OF ANALYSIS

SDG: 220921-106
Client Ref: P21-195

Report Number: 662524
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	30 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220922-79
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	663098
Order Number:	P3393

We received 22 samples on Thursday September 22, 2022 and 21 of these samples were scheduled for analysis which was completed on Friday September 30, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26909466	Gardeners Well A		0.00 - 0.00	20/09/2022
26909470	Gardeners Well B		0.00 - 0.00	20/09/2022
26909448	GW001-A		0.00 - 0.00	20/09/2022
26909493	GW004-A		0.00 - 0.00	20/09/2022
26909488	GW007-A		0.00 - 0.00	20/09/2022
26909483	GW008-A		0.00 - 0.00	20/09/2022
26909453	GW014-A		0.00 - 0.00	20/09/2022
26909450	GW001-B		0.00 - 0.00	20/09/2022
26909497	GW004-B		0.00 - 0.00	20/09/2022
26909490	GW007-B		0.00 - 0.00	20/09/2022
26909486	GW008-B		0.00 - 0.00	20/09/2022
26909436	GW013-B	A		
26909443	GW002D-A		0.00 - 0.00	20/09/2022
26909440	GW03D-A		0.00 - 0.00	20/09/2022
26909479	GW05D-A		0.00 - 0.00	20/09/2022
26909446	GW002D-B		0.00 - 0.00	20/09/2022
26909463	GW03D-B		0.00 - 0.00	20/09/2022
26909468	GW05D-B		0.00 - 0.00	20/09/2022
26909456	GWFB		0.00 - 0.00	20/09/2022
26909458	GWTB		0.00 - 0.00	20/09/2022
26909473	SWML5B-A		0.00 - 0.00	20/09/2022
26909475	SWML5B-B		0.00 - 0.00	20/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26909475	SWML 5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X
26909473	SWML 5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW		X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB
# ISO17025 accredited.	M mCERTS accredited.		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
aq Aqueous / settled sample.	dis.filter Dissolved / filtered sample.	Depth (m)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
tot.unfilt Total / unfiltered sample.	Subcontracted - refer to subcontractor report for accreditation status.	Sample Type	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022	20/09/2022
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Trigger breach confirmed	Date Sampled	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022	22/09/2022
1-4*% Sample deviation (see appendix)	AGS Reference	Date Received	220922-79	220922-79	220922-79	220922-79	220922-79	220922-79
	Lab Sample No.(s)	SDG Ref	26909440	26909479	26909446	26909463	26909468	26909456
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20	<2	12	<20	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200	<20	<20	<200	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	2180	<14	<34	903	<14	<5
PFPA (2706-90-3)	<1 ng/l	TM337	14.7	15.8	55.8	<10	15.3	<1
PFHxA (307-24-4)	<1 ng/l	TM337	<10	23.2	59.6	<10	21.6	<1
PFBS (375-73-5)	<1 ng/l	TM337	<10	10.4	5.37	<10	9.3	<1
PFHpA (375-85-9)	<1 ng/l	TM337	<10	5.84	71.4	<10	5.53	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	6.78	35.8	<10	6.77	<1
PFOA (335-67-1)	<0.65 ng/l	TM337	<17	2	33.6	<13.5	2.03	<0.65
PFHxS (355-46-4)	<1 ng/l	TM337	<10	5.72	30.1	<10	5.39	<1
PFNA (375-95-1)	<1 ng/l	TM337	<10	<1	8.7	<10	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<10	<1	2.53	<10	<1	<1
PFDA (335-76-2)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	11.2	<0.65	49.8	9.36	<1	<0.65
Branched PFOS	<0.65 ng/l	TM337	<6.5	<2.5	62.4	<6.5	<2.5	<0.65
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<20	<2	<2	<20	<2	<2
PFDS (335-77-3)	<1 ng/l	TM337	<10	<1	<1	<10	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	3.85	2.88	<10	3.77	<1
Total PFOS	<0.65 ng/l	TM337	11.2	<2.5	112	9.36	<2.5	<0.65
PFTrDA (72629-94-8)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFNS (68259-12-1)	<1 ng/l	TM433	<10	<1	<1	<10	<1	<1
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFDoS (79780-39-5)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM433	<10	<2	<2	<10	<2	<2



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220922-79
Client Ref.: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26909466	26909470	26909448	26909493	26909488	26909483	26909453	26909450	26909497	26909490
Customer Sample Ref.	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A	GW001-B	GW004-B	GW007-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909486	26909443	26909440	26909479	26909446	26909463	26909468	26909456	26909458	26909473
Customer Sample Ref.	GW008-B	GW002D-A	GW03D-A	GW05D-A	GW002D-B	GW03D-B	GW05D-B	GWFB	GWTB	SWML5B-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water
PFAS Liquids	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	30-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	27-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022	26-Sep-2022

Lab Sample No(s)	26909475
Customer Sample Ref.	SWML5B-B
AGS Ref.	
Depth	0.00 - 0.00
Type	Surface Water
PFAS Liquids	26-Sep-2022
PFAS Liquids (EU specified)	26-Sep-2022



CERTIFICATE OF ANALYSIS

SDG: 220922-79
Client Ref: P21-195

Report Number: 663098
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
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Website: www.alsenvironmental.co.uk

Post Certification Report

Fehily Timoney
Unit 3/4
Northwood House
Northwood Crescent
Northwood
Dublin
Dublin
DO9 X899
Attention: Declan Morrisey

Date:	19/12/2023	Location:	Dublin Airport
Customer:	Fehily Timoney	No. Of Samples Received:	33
Your Reference:	P21-195	Samples Scheduled:	33

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176194	SL10-A		0.00 - 0.00	16/11/2022
27176198	SL10-B		0.00 - 0.00	16/11/2022
27176201	SL11-A		0.00 - 0.00	16/11/2022
27176204	SL11-B		0.00 - 0.00	16/11/2022
27176209	SL12-A		0.00 - 0.00	16/11/2022
27176223	SL12-B		0.00 - 0.00	16/11/2022
27176211	SL13-A		0.00 - 0.00	16/11/2022
27176230	SL13-B		0.00 - 0.00	16/11/2022
27176214	SL14-A		0.00 - 0.00	16/11/2022
27176233	SL14-B		0.00 - 0.00	16/11/2022
27176218	SL15-A		0.00 - 0.00	16/11/2022
27176220	SL15-B		0.00 - 0.00	16/11/2022
27176167	SL1-A		0.00 - 0.00	16/11/2022
27176196	SL1-B		0.00 - 0.00	16/11/2022
27176227	SL2-A		0.00 - 0.00	16/11/2022
27176246	SL2-B		0.00 - 0.00	16/11/2022
27176249	SL3-A		0.00 - 0.00	16/11/2022
27176251	SL3-B		0.00 - 0.00	16/11/2022
27176255	SL4-A		0.00 - 0.00	16/11/2022
27176257	SL4-B		0.00 - 0.00	16/11/2022
27176259	SL5-A		0.00 - 0.00	16/11/2022
27176169	SL5-B		0.00 - 0.00	16/11/2022
27176171	SL6-A		0.00 - 0.00	16/11/2022
27176173	SL6-B		0.00 - 0.00	16/11/2022
27176175	SL7-A		0.00 - 0.00	16/11/2022
27176177	SL7-B		0.00 - 0.00	16/11/2022
27176180	SL8-A		0.00 - 0.00	16/11/2022
27176183	SL8-B		0.00 - 0.00	16/11/2022
27176189	SL9-A		0.00 - 0.00	16/11/2022
27176191	SL9-B		0.00 - 0.00	16/11/2022
27176206	SWFB		0.00 - 0.00	16/11/2022
27176236	SWTB1		0.00 - 0.00	16/11/2022
27176239	SWTB2		0.00 - 0.00	16/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Results Legend			Customer Sample Ref.	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
diss.filt	Dissolved / filtered sample.			17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
tot.unfilt	Total / unfiltered sample.			221117-120	221117-120	221117-120	221117-120	221117-120	221117-120	221117-120
*	Subcontracted - refer to subcontractor report for accreditation status.		27176198	27176204	27176223	27176230	27176233	27176220		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.									
1-4*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
8:2 FTS (39108-34-4)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
PFBA (375-22-4)	<2 ng/l	TM337		<10	10	<2	<2	<2	<2	
				#	#	#	#	#	#	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337		<20	<20	<20	<20	<20	<20	
PFPA (2706-90-3)	<1 ng/l	TM337		8.83	22.1	16.5	33.8	31.7	13.5	
				#	#	#	#	#	#	
PFHxA (307-24-4)	<1 ng/l	TM337		4.22	12	8.8	8.84	8.92	7.42	
				#	#	#	#	#	#	
PFBS (375-73-5)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFHpA (375-85-9)	<1 ng/l	TM337		2.56	3.66	3.74	5.46	5.24	3.15	
				#	#	#	#	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM337		<1	4.11	1.88	11.6	12.5	1.52	
				#	#	#	#	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM337		1.25	1.56	2.25	3.13	3.45	1.71	
				#	#	#	#	#	#	
PFHxS (355-46-4)	<1 ng/l	TM337		<1	1.18	<1	4.8	5.11	<1	
				#	#	#	#	#	#	
PFNA (375-95-1)	<1 ng/l	TM337		<1	<1	<1	<1	1.06	<1	
				#	#	#	#	#	#	
PFHpS (375-92-8)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDA (335-76-2)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337		0.963	1.28	1.66	7.91	8.14	1.15	
				#	#	#	#	#	#	
Branched PFOS	<0.65 ng/l	TM337		0.66	1.03	1.25	4.53	5.1	0.963	
				#	#	#	#	#	#	
PFUnA (2058-94-8)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDoA (307-55-1)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
				#	#	#	#	#	#	
PFDS (335-77-3)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM337		1.62	2.32	2.9	12.4	13.2	2.11	
				#	#	#	#	#	#	
PFTTrDA (72629-94-8)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFNS (68259-12-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFUnDS (749786-16-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDoS (79780-39-5)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFTTrDS (174675-49-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



Post Certification Report

Customer : Fehily Timoney
 Client Reference : P21-195

Location : Dublin Airport

Test Completion Dates

Lab Sample No(s)	27176167	27176227	27176249	27176255	27176259	27176171	27176175	27176180	27176189	27176194
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W
PFAS Liquids	24-Nov-2022	29-Nov-2022	25-Nov-2022	24-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	24-Nov-2022
PFAS Liquids (EU specified)	24-Nov-2022	29-Nov-2022	25-Nov-2022	24-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	24-Nov-2022

Lab Sample No(s)	27176201	27176209	27176211	27176214	27176218	27176196	27176246	27176251	27176257	27176169
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W
PFAS Liquids	24-Nov-2022	25-Nov-2022	25-Nov-2022	24-Nov-2022	24-Nov-2022	25-Nov-2022	24-Nov-2022	22-Nov-2022	29-Nov-2022	29-Nov-2022
PFAS Liquids (EU specified)	24-Nov-2022	25-Nov-2022	25-Nov-2022	24-Nov-2022	24-Nov-2022	25-Nov-2022	24-Nov-2022	22-Nov-2022	29-Nov-2022	29-Nov-2022

Lab Sample No(s)	27176173	27176177	27176183	27176191	27176198	27176204	27176223	27176230	27176233	27176220
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W	SURFACE_W
PFAS Liquids	29-Nov-2022	29-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	29-Nov-2022	25-Nov-2022
PFAS Liquids (EU specified)	29-Nov-2022	29-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	29-Nov-2022	25-Nov-2022

Lab Sample No(s)	27176206	27176236	27176239
Customer Sample Ref.	SWFB	SWTB1	SWTB2
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	SURFACE_W	SURFACE_W	SURFACE_W
PFAS Liquids	25-Nov-2022	25-Nov-2022	24-Nov-2022
PFAS Liquids (EU specified)	25-Nov-2022	25-Nov-2022	24-Nov-2022



Post Certification Report

Customer : Fehily Timoney
Client Reference : P21-195

Location : Dublin Airport

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 December 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 221117-114
Your Reference: P21-195
Location: Dublin Airport
Report No: 670800
Order Number: Z3689

This report has been revised and directly supersedes 670128 in its entirety.

We received 25 samples on Thursday November 17, 2022 and 25 of these samples were scheduled for analysis which was completed on Tuesday November 29, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27176024	ASFB		0.00 - 0.00	15/11/2022
27176026	ASTB1		0.00 - 0.00	15/11/2022
27176043	ASTB2		0.00 - 0.00	16/11/2022
27176032	Gardeners Well A		0.00 - 0.00	15/11/2022
27176037	Gardeners Well B		0.00 - 0.00	15/11/2022
27176014	GW001-A		0.00 - 0.00	15/11/2022
27176063	GW004-A		0.00 - 0.00	15/11/2022
27176059	GW007-A		0.00 - 0.00	15/11/2022
27176053	GW008-A		0.00 - 0.00	15/11/2022
27176018	GW014-A		0.00 - 0.00	15/11/2022
27176016	GW001-B		0.00 - 0.00	15/11/2022
27176066	GW004-B		0.00 - 0.00	15/11/2022
27176061	GW007-B		0.00 - 0.00	15/11/2022
27176056	GW008-B		0.00 - 0.00	15/11/2022
27176020	GW014-B		0.00 - 0.00	15/11/2022
27176009	GW002D-A		0.00 - 0.00	15/11/2022
27176006	GW03D-A		0.00 - 0.00	15/11/2022
27176051	GW05D-A		0.00 - 0.00	15/11/2022
27176046	GW015D-A		0.00 - 0.00	16/11/2022
27176011	GW002D-B		0.00 - 0.00	15/11/2022
27176029	GW03D-B		0.00 - 0.00	15/11/2022
27176035	GW05D-B		0.00 - 0.00	15/11/2022
27176048	GW015D-B		0.00 - 0.00	16/11/2022
27176039	SWML5B-A		0.00 - 0.00	15/11/2022
27176041	SWML5B-B		0.00 - 0.00	15/11/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type														
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	27176046	GW015D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176051	GW05D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176006	GW03D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176009	GW002D-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176020	GW014-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176056	GW008-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176061	GW007-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176066	GW004-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176016	GW001-B		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176018	GW014-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176053	GW008-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176059	GW007-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176063	GW004-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176014	GW001-A		0.00 - 0.00	500ml Plastic (ALE208)	GW														
	27176037	Gardeners Well B		0.00 - 0.00	500ml Plastic (ALE208)	SW														
27176032	Gardeners Well A		0.00 - 0.00	500ml Plastic (ALE208)	SW															
27176043	ASTB2		0.00 - 0.00	500ml Plastic (ALE208)	GW															
27176026	ASTB1		0.00 - 0.00	500ml Plastic (ALE208)	GW															
27176024	ASFB		0.00 - 0.00	500ml Plastic (ALE208)	GW															
PFAS Liquids	All	NDPs: 0 Tests: 25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

27176041	SWMML5B-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176039	SWMML5B-A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X		X
27176048	GW015D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176035	GW05D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176029	GW03D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X
27176011	GW002D-B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Results Legend			Customer Sample Ref.		GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A	GW05D-A
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022	15/11/2022
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	221117-114	221117-114	221117-114	221117-114	221117-114	221117-114
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	27176061	27176056	27176020	27176009	27176006	27176051
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)						
	(F) Trigger breach confirmed		AGS Reference	AGS Reference						
	1-4*\$@Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<2	<2	<2	<2	<4	<2	
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<2	<2	<2	6.39	<4	<2	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<20	<20	<20	<20	<40	<20	
PFBA (375-22-4)	<2 ng/l	TM337	<10	8.43	7.92	<28	<4	13.5	#	
PFFA (2706-90-3)	<1 ng/l	TM337	21.4	3.06	4.17	87.1	<2	21.3	#	
PFHxA (307-24-4)	<1 ng/l	TM337	26.3	5.31	2.32	59.3	<2	26.3	#	
PFBS (375-73-5)	<1 ng/l	TM337	9.03	3.95	<1	3.7	<2	9.53	#	
PFHpA (375-85-9)	<1 ng/l	TM337	8.47	1.82	1.03	82	<2	7.17	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM337	12	<1	<1	9.31	2.4	6.97	#	
PFOA (335-67-1)	<0.65 ng/l	TM337	7.66	2.58	0.702	36.8	1.97	2.31	#	
PFHxS (355-46-4)	<1 ng/l	TM337	30.5	19.1	<1	27.2	2.69	5.46	#	
PFNA (375-95-1)	<1 ng/l	TM337	<5	<1	<1	9.11	<2	<1	#	
PFHpS (375-92-8)	<1 ng/l	TM337	<5	1.01	<1	2.6	<2	<1	#	
PFDA (335-76-2)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	5.92	30	<0.65	46.9	4.97	<0.65	#	
Branched PFOS	<0.65 ng/l	TM337	7.35	16.8	<0.65	43.2	2.99	<0.65	#	
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	#	
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	#	
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<2	<2	<2	<4	<2	#	
PFDS (335-77-3)	<1 ng/l	TM337	<5	<1	<1	<1	<2	<1	#	
PFPeS (2706-91-4)	<1 ng/l	TM337	5.51	2.78	<1	2.57	<2	4.02	#	
Total PFOS	<0.65 ng/l	TM337	13.3	46.8	<0.65	90	7.96	<0.65	#	
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	#	
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	#	
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	#	
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	#	
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<5	<1	<1	<1	<2	<1	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 221117-114
Client Ref.: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Test Completion Dates

Lab Sample No(s)	27176024	27176026	27176043	27176032	27176037	27176014	27176063	27176059	27176053	27176018
Customer Sample Ref.	ASFB	ASTB1	ASTB2	Gardeners Well A	Gardeners Well B	GW001-A	GW004-A	GW007-A	GW008-A	GW014-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	24-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176016	27176066	27176061	27176056	27176020	27176009	27176006	27176051	27176046	27176011
Customer Sample Ref.	GW001-B	GW004-B	GW007-B	GW008-B	GW014-B	GW002D-A	GW03D-A	GW05D-A	GW015D-A	GW002D-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022
PFAS Liquids (EU specified)	22-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022	22-Nov-2022	25-Nov-2022	29-Nov-2022	22-Nov-2022	25-Nov-2022	22-Nov-2022

Lab Sample No(s)	27176029	27176035	27176048	27176039	27176041
Customer Sample Ref.	GW03D-B	GW06D-B	GW015D-B	SWML5B-A	SWML5B-B
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water
PFAS Liquids	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022
PFAS Liquids (EU specified)	29-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022	24-Nov-2022

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
221117-114	27176046	GW016-A	02/12/2022	Sample ID Change	GW016-A	GW015D-A	641549
221117-114	27176048	GW016-B	02/12/2022	Sample ID Change	GW016-B	GW015D-B	641549



CERTIFICATE OF ANALYSIS

SDG: 221117-114
Client Ref: P21-195

Report Number: 670800
Location: Dublin Airport

Superseded Report: 670128

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 March 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230220-47
Your Reference: P21-195
Location: Dublin Airport
Report No: 680378
Order Number: Z3788

We received 32 samples on Monday February 20, 2023 and 32 of these samples were scheduled for analysis which was completed on Wednesday March 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-47
Client Ref.: P21-195

Report Number: 680378
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27578847	SL1-A		0.00 - 0.00	13/02/2023
27578840	SL2-A		0.00 - 0.00	13/02/2023
27578836	SL3-A		0.00 - 0.00	13/02/2023
27578832	SL4-A		0.00 - 0.00	13/02/2023
27578828	SL5-A		0.00 - 0.00	13/02/2023
27578822	SL6-A		0.00 - 0.00	13/02/2023
27578882	SL7-A		0.00 - 0.00	13/02/2023
27578878	SL8-A		0.00 - 0.00	13/02/2023
27578874	SL9-A		0.00 - 0.00	13/02/2023
27578820	SL10-A		0.00 - 0.00	13/02/2023
27578851	SL11-A		0.00 - 0.00	13/02/2023
27578863	SL12-A		0.00 - 0.00	13/02/2023
27578867	SL13-A		0.00 - 0.00	13/02/2023
27578869	SL14-A		0.00 - 0.00	13/02/2023
27578871	SL15-A		0.00 - 0.00	13/02/2023
27578844	SL1-B		0.00 - 0.00	13/02/2023
27578838	SL2-B		0.00 - 0.00	13/02/2023
27578834	SL3-B		0.00 - 0.00	13/02/2023
27578830	SL4-B		0.00 - 0.00	13/02/2023
27578824	SL5-B		0.00 - 0.00	13/02/2023
27578884	SL6-B		0.00 - 0.00	13/02/2023
27578880	SL7-B		0.00 - 0.00	13/02/2023
27578876	SL8-B		0.00 - 0.00	13/02/2023
27578865	SL9-B		0.00 - 0.00	13/02/2023
27578826	SL10-B		0.00 - 0.00	13/02/2023
27578859	SL11-B		0.00 - 0.00	13/02/2023
27578849	SL12-B		0.00 - 0.00	13/02/2023
27578853	SL13-B		0.00 - 0.00	13/02/2023
27578855	SL14-B		0.00 - 0.00	13/02/2023
27578842	SL15-B		0.00 - 0.00	13/02/2023
27578861	SWFB		0.00 - 0.00	13/02/2023
27578857	SWTB		0.00 - 0.00	13/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

27578857	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578861	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578842	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578855	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578853	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578849	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578859	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578826	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578865	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578876	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578880	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578884	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27578824	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-47
Client Ref.: P21-195

Report Number: 680378
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230220-47
Client Ref.: P21-195

Report Number: 680378
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27578847	27578840	27578836	27578832	27578828	27578822	27578882	27578878	27578874	27578820
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	27-Feb-2023	27-Feb-2023	01-Mar-2023	28-Feb-2023	23-Feb-2023	23-Feb-2023	24-Feb-2023	27-Feb-2023	23-Feb-2023	27-Feb-2023
PFAS Liquids (EU specified)	27-Feb-2023	27-Feb-2023	01-Mar-2023	28-Feb-2023	23-Feb-2023	23-Feb-2023	24-Feb-2023	27-Feb-2023	23-Feb-2023	27-Feb-2023

Lab Sample No(s)	27578851	27578863	27578867	27578869	27578871	27578844	27578838	27578834	27578830	27578824
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	24-Feb-2023	27-Feb-2023	27-Feb-2023	24-Feb-2023	23-Feb-2023	27-Feb-2023	27-Feb-2023	01-Mar-2023	27-Feb-2023	01-Mar-2023
PFAS Liquids (EU specified)	24-Feb-2023	27-Feb-2023	27-Feb-2023	24-Feb-2023	23-Feb-2023	27-Feb-2023	27-Feb-2023	01-Mar-2023	27-Feb-2023	01-Mar-2023

Lab Sample No(s)	27578884	27578880	27578876	27578865	27578826	27578859	27578849	27578853	27578855	27578842
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	24-Feb-2023	01-Mar-2023	27-Feb-2023	24-Feb-2023	27-Feb-2023	24-Feb-2023	27-Feb-2023	27-Feb-2023	24-Feb-2023	28-Feb-2023
PFAS Liquids (EU specified)	24-Feb-2023	01-Mar-2023	27-Feb-2023	24-Feb-2023	27-Feb-2023	24-Feb-2023	27-Feb-2023	27-Feb-2023	24-Feb-2023	28-Feb-2023

Lab Sample No(s)	27578861	27578857
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	28-Feb-2023	28-Feb-2023
PFAS Liquids (EU specified)	28-Feb-2023	28-Feb-2023



CERTIFICATE OF ANALYSIS

SDG: 230220-47
Client Ref: P21-195

Report Number: 680378
Location: Dublin Airport

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Deeside
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 April 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230325-27
Your Reference: P21-195
Location: Dublin Airport
Report No: 684637
Order Number: Z3788

We received 48 samples on Friday March 24, 2023 and 48 of these samples were scheduled for analysis which was completed on Tuesday April 04, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27740077	GW11 A		0.00 - 0.00	21/03/2023
27740121	GW12 A		0.00 - 0.00	21/03/2023
27740163	GW13 A		0.00 - 0.00	21/03/2023
27740167	GW14 A		0.00 - 0.00	21/03/2023
27740173	GW15 A		0.00 - 0.00	21/03/2023
27740081	GW16 A		0.00 - 0.00	21/03/2023
27740085	GW17 A		0.00 - 0.00	21/03/2023
27740159	GW18 A		0.00 - 0.00	21/03/2023
27740129	GW19 A		0.00 - 0.00	21/03/2023
27740099	GW11 B		0.00 - 0.00	21/03/2023
27740143	GW12 B		0.00 - 0.00	21/03/2023
27740165	GW13 B		0.00 - 0.00	21/03/2023
27740169	GW14 B		0.00 - 0.00	21/03/2023
27740079	GW15 B		0.00 - 0.00	21/03/2023
27740083	GW16 B		0.00 - 0.00	21/03/2023
27740087	GW17 B		0.00 - 0.00	21/03/2023
27740161	GW18 B		0.00 - 0.00	21/03/2023
27740131	GW19 B		0.00 - 0.00	21/03/2023
27740139	GWFB		0.00 - 0.00	21/03/2023
27740089	GWMP5 A		0.00 - 0.00	22/03/2023
27740091	GWMP5 B		0.00 - 0.00	22/03/2023
27740137	GWTB		0.00 - 0.00	21/03/2023
27740093	P2 A		0.00 - 0.00	21/03/2023
27740097	P3 A		0.00 - 0.00	21/03/2023
27740103	P7 A		0.00 - 0.00	21/03/2023
27740107	P8 A		0.00 - 0.00	21/03/2023
27740095	P2 B		0.00 - 0.00	21/03/2023
27740101	P3 B		0.00 - 0.00	21/03/2023
27740105	P7 B		0.00 - 0.00	21/03/2023
27740109	P8 B		0.00 - 0.00	21/03/2023
27740147	R1 A		0.00 - 0.00	22/03/2023
27740151	R2 A		0.00 - 0.00	22/03/2023
27740149	R1 B		0.00 - 0.00	22/03/2023
27740153	R2 B		0.00 - 0.00	22/03/2023
27740135	SWFB		0.00 - 0.00	22/03/2023
27740119	SWML3 A		0.00 - 0.00	22/03/2023
27740115	SWML4 A		0.00 - 0.00	22/03/2023
27740155	SWML5(A) A		0.00 - 0.00	22/03/2023
27740125	SWML7(A) A		0.00 - 0.00	22/03/2023
27740157	SWML5(A) B		0.00 - 0.00	22/03/2023
27740127	SWML7(A) B		0.00 - 0.00	22/03/2023
27740123	SWML3 B		0.00 - 0.00	22/03/2023
27740117	SWML4 B		0.00 - 0.00	22/03/2023
27740111	SWML5(B) A		0.00 - 0.00	21/03/2023
27740141	SWML7(B) A		0.00 - 0.00	22/03/2023
27740113	SWML5(B) B		0.00 - 0.00	21/03/2023
27740145	SWML7(B) B		0.00 - 0.00	22/03/2023
27740133	SWTB		0.00 - 0.00	22/03/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

27740157	SWML5(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740125	SWML7(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740155	SWML5(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740115	SWML4 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740119	SWML3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740135	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740153	R2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740149	R1 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740151	R2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740147	R1 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740109	P8 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740105	P7 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740101	P3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740095	P2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740107	P8 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740103	P7 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740097	P3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740093	P2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X	X
27740137	GWTB		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
27740091	GWMP5 B		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X
27740089	GWMP5 A		0.00 - 0.00	500ml Plastic (ALE208)	GW	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type						
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	27740127	SWML7(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740123	SWML3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740117	SWML4 B		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740111	SWML5(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740141	SWML7(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740113	SWML5(B) B		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740145	SWML7(B) B		0.00 - 0.00	500ml Plastic (ALE208)	SW						
	27740133	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW						
PFAS Liquids	All	NDPs: 0 Tests: 48	X	X	X	X	X	X	X	X	X	X
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 48	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Sample Type		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		Date Sampled		21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
diss.filt	Dissolved / filtered sample.		Sample Time							
tot.unfilt	Total / unfiltered sample.		Date Received		24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230325-27	230325-27	230325-27	230325-27	230325-27	230325-27
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		27740077	27740121	27740163	27740167	27740173	27740081
(F)	Trigger breach confirmed		AGS Reference							
1-4*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337			<10	<50	<50	<20	<20	<20
8:2 FTS (39108-34-4)	<2 ng/l	TM337			168	<50	<50	<20	<20	<20
5:3 FTCA (914637-49-3)	<20 ng/l	TM337			<100	<500	<500	<200	<200	<200
PFBA (375-22-4)	<2 ng/l	TM337			113	<100	<100	116	<20	70.4
					#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337			326	<25	<25	310	<10	67.7
					#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337			270	<25	<25	158	<10	52.7
					#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337			11.6	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337			168	<25	<25	40.9	<10	23.1
					#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337			774	47.4	<25	13.6	<10	20.6
					#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337			58.6	90.2	<16.3	8.13	<7.5	12.2
					#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337			62.6	<25	<25	<10	<10	13.5
					#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337			13.8	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337			72.5	<16.3	<16.3	<6.5	<6.5	8.47
					#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337			19.2	<16.3	<16.3	<6.5	<6.5	9.63
					#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337			<10	<50	<50	<20	<20	<20
					#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337			8.29	<25	<25	<10	<10	<10
					#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337			91.7	<16.3	<16.3	<6.5	<6.5	18.1
					#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433			<5	<25	<25	<10	<10	<10
					#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fltr Dissolved / filtered sample. tot.unfltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023	0.00 - 0.00 Ground Water (GW) 21/03/2023
Component	LOD/Units	Method							
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<10	<20	<10	<20	<20	<20	<50
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<10	<20	<10	206	<20	<20	<50
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<100	<200	<100	<200	<200	<200	<500
PFBA (375-22-4)	<2 ng/l	TM337	<10	<20	<10	129	24	<90	#
PFPA (2706-90-3)	<1 ng/l	TM337	<5	<10	<5	378	16.3	<25	#
PFHxA (307-24-4)	<1 ng/l	TM337	<5	<10	<5	273	11.4	<25	#
PFBS (375-73-5)	<1 ng/l	TM337	<5	<10	<5	13.8	<10	<25	#
PFHpA (375-85-9)	<1 ng/l	TM337	<5	<10	<5	177	<10	<25	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<5	<10	<5	862	41.1	<25	#
PFOA (335-67-1)	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	79.4	8.29	<16.3	#
PFHxS (355-46-4)	<1 ng/l	TM337	<5	<10	<5	67.4	<10	<25	#
PFNA (375-95-1)	<1 ng/l	TM337	<5	<10	<5	15.3	<10	<25	#
PFHpS (375-92-8)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFDA (335-76-2)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	82	6.57	<16.3	#
Branched PFOS	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	24	<6.5	<16.3	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFDoA (307-55-1)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFOSA (754-91-6)	<2 ng/l	TM337	<10	<20	<10	<20	<20	<50	#
PFDS (335-77-3)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<5	<10	<5	<10	<10	<25	#
Total PFOS	<0.65 ng/l	TM337	<3.25	<6.5	<3.25	106	6.57	<16.3	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFNS (68259-12-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<5	<10	<5	<10	<10	<25	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	P7 A	P8 A	P2 B	P3 B	P7 B	P8 B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
dis.sol	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*#	Sample deviation (see appendix)									
Component	LOD/Units	Method								
4:2 FTS (757124-72-4)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
8:2 FTS (39108-34-4)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
5:3 FTCA (914637-49-3)	<20 ng/l	TM337		<20	<20	<20	<20	<20	<20	
PFBA (375-22-4)	<2 ng/l	TM337		35.6	7.19	29.7	13.5	27.8	<4	
				#	#	#	#	#	#	
PFPA (2706-90-3)	<1 ng/l	TM337		20.8	6.71	49.9	14.6	22.9	5.01	
				#	#	#	#	#	#	
PFHxA (307-24-4)	<1 ng/l	TM337		16.4	4.62	32.3	11.5	14.2	5.25	
				#	#	#	#	#	#	
PFBS (375-73-5)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFHpA (375-85-9)	<1 ng/l	TM337		8.89	2.32	14.8	6.06	7.45	2.09	
				#	#	#	#	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM337		<1	1.17	<1	<1	<1	1.22	
				#	#	#	#	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM337		2.41	1.43	2.47	1.56	1.82	1.16	
				#	#	#	#	#	#	
PFHxS (355-46-4)	<1 ng/l	TM337		1.09	<1	1.35	1.76	1.08	<1	
				#	#	#	#	#	#	
PFNA (375-95-1)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFHpS (375-92-8)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDA (335-76-2)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337		<0.65	1.18	0.948	0.706	<0.65	1.01	
				#	#	#	#	#	#	
Branched PFOS	<0.65 ng/l	TM337		0.767	0.816	1.04	1.13	0.777	0.824	
				#	#	#	#	#	#	
PFUnA (2058-94-8)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDoA (307-55-1)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM337		<2	<2	<2	<2	<2	<2	
				#	#	#	#	#	#	
PFDS (335-77-3)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM337		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM337		0.767	1.99	1.99	1.84	0.777	1.83	
				#	#	#	#	#	#	
PFTrDA (72629-94-8)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFNS (68259-12-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFUnDS (749786-16-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFDoS (79780-39-5)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	
PFTrDS (174675-49-1)	<1 ng/l	TM433		<1	<1	<1	<1	<1	<1	
				#	#	#	#	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230325-27
Client Ref.: P21-195

Report Number: 684637
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B	SWML3 B
# ISO17025 accredited.	M mCERTS accredited.							
aq Aqueous / settled sample.	aq Aqueous / filtered sample.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfilt Total / unfiltered sample.	tot.unfilt Total / filtered sample.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
* Subcontracted - refer to subcontractor report for accreditation status.		Date Sampled	22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Sample Time	.	.	.	.	.	.
(F) Trigger breach confirmed		Date Received	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023
1-4* Sample deviation (see appendix)		SDG Ref	230325-27	230325-27	230325-27	230325-27	230325-27	230325-27
		Lab Sample No.(s)	27740115	27740155	27740125	27740157	27740127	27740123
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	3.11	<2	2.63	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	14.7	22	5.25	22.8	<5	<7
PFPA (2706-90-3)	<1 ng/l	TM337	22.5	34	2.56	31.4	3.64	13.8
PFHxA (307-24-4)	<1 ng/l	TM337	16.3	24	2.13	22	2.5	8.75
PFBS (375-73-5)	<1 ng/l	TM337	<1	2.15	<1	1.59	<1	<1
PFHpA (375-85-9)	<1 ng/l	TM337	8.27	16.6	<1	14.9	<1	3.95
6:2 FTS (27619-97-2)	<1 ng/l	TM337	7.92	29.1	<1	28.9	<1	2.32
PFOA (335-67-1)	<0.65 ng/l	TM337	4.39	14	1.04	14.1	<0.65	1.69
PFHxS (355-46-4)	<1 ng/l	TM337	2.37	17.6	<1	16.3	<1	<1
PFNA (375-95-1)	<1 ng/l	TM337	<1	3.57	<1	3.37	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<1	1.19	<1	1.07	<1	<1
PFDA (335-76-2)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	2.03	17.9	<0.65	16.4	<0.65	1.95
Branched PFOS	<0.65 ng/l	TM337	2.41	13.3	<0.65	12.9	<0.65	1.05
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	1.56	<1	1.3	<1	<1
Total PFOS	<0.65 ng/l	TM337	4.44	31.2	<0.65	29.4	<0.65	3
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
PFDoS (79780-39-5)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
PFTrDS (174675-49-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1



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Results Legend		Customer Sample Ref.	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B	SWTB
# ISO17025 accredited.	M mCERTS accredited.							
aq Aqueous / settled sample.	dis.s.fltr Dissolved / filtered sample.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
tot.unfltr Total / unfiltered sample.		Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
* Subcontracted - refer to subcontractor report for accreditation status.		Date Sampled	22/03/2023	21/03/2023	22/03/2023	21/03/2023	22/03/2023	22/03/2023
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Sample Time						
(F) Trigger breach confirmed		Date Received	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023	24/03/2023
1-4*\$@ Sample deviation (see appendix)		SDG Ref	230325-27	230325-27	230325-27	230325-27	230325-27	230325-27
		Lab Sample No.(s)	27740117	27740111	27740141	27740113	27740145	27740133
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<2	8.19	<2	6.23	<2	<2
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<20	<20	<20	<20	<20	<20
PFBA (375-22-4)	<2 ng/l	TM337	<15	104	3.88	92.8	<3.5	<2
			#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM337	31.2	152	1.92	140	1.44	<1
			#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM337	19	137	1.41	121	1.39	<1
			#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM337	<1	19.4	<1	18.2	<1	<1
			#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM337	9.18	135	<1	132	<1	<1
			#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM337	9.18	46.9	<1	43.5	<1	<1
			#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM337	3.78	173	1.08	185	1.38	<0.65
			#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM337	2.29	297	<1	266	<1	<1
			#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM337	<1	47	<1	45	<1	<1
			#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM337	<1	15.3	<1	15.7	<1	<1
			#	#	#	#	#	#
PFDA (335-76-2)	<1 ng/l	TM337	<1	1.5	<1	1.62	<1	<1
			#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	4.07	168	<0.65	153	<0.65	<0.65
			#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM337	3.14	160	<0.65	173	<0.65	<0.65
			#	#	#	#	#	#
PFUnA (2058-94-8)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoA (307-55-1)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM337	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#
PFDS (335-77-3)	<1 ng/l	TM337	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM337	<1	24.6	<1	22.4	<1	<1
			#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM337	7.2	327	<0.65	326	<0.65	<0.65
			#	#	#	#	#	#
PFTrDA (72629-94-8)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFUnDS (749786-16-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFDoS (79780-39-5)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM433	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#



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Table of Results - Appendix

Method No	Description
TM337	Analysis of PFAS
TM433	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



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Test Completion Dates

Lab Sample No(s)	27740077	27740121	27740163	27740167	27740173	27740081	27740085	27740159	27740129	27740099
Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	04-Apr-2023	30-Mar-2023	30-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	04-Apr-2023	30-Mar-2023	30-Mar-2023

Lab Sample No(s)	27740143	27740165	27740169	27740079	27740083	27740087	27740161	27740131	27740139	27740089
Customer Sample Ref.	GW12 B	GW13 B	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	GWFB	GWMP5 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023

Lab Sample No(s)	27740091	27740137	27740093	27740097	27740103	27740107	27740095	27740101	27740105	27740109
Customer Sample Ref.	GWMP5 B	GWTB	P2 A	P3 A	P7 A	P8 A	P2 B	P3 B	P7 B	P8 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023

Lab Sample No(s)	27740147	27740151	27740149	27740153	27740135	27740119	27740115	27740155	27740125	27740157
Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	SWFB	SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023
PFAS Liquids (EU specified)	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023

Lab Sample No(s)	27740123	27740117	27740127	27740111	27740141	27740113	27740145	27740133
Customer Sample Ref.	SWML3 B	SWML4 B	SWML7(A) B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B	SWTB
AGS Ref.								
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023
PFAS Liquids (EU specified)	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	31-Mar-2023



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Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 July 2023
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	230602-81
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	696139
Order Number:	Z3893

This report has been revised and directly supersedes 695930 in its entirety.

We received 32 samples on Friday June 02, 2023 and 32 of these samples were scheduled for analysis which was completed on Wednesday July 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28092788	SL1-A		0.00 - 0.00	29/05/2023
28092778	SL2-A		0.00 - 0.00	29/05/2023
28092763	SL3-A		0.00 - 0.00	29/05/2023
28092752	SL4-A		0.00 - 0.00	29/05/2023
28092744	SL5-A		0.00 - 0.00	29/05/2023
28092731	SL6-A		0.00 - 0.00	29/05/2023
28092721	SL7-A		0.00 - 0.00	29/05/2023
28092712	SL8-A		0.00 - 0.00	29/05/2023
28092704	SL9-A		0.00 - 0.00	29/05/2023
28092690	SL10-A		0.00 - 0.00	29/05/2023
28092798	SL11-A		0.00 - 0.00	29/05/2023
28092820	SL12-A		0.00 - 0.00	29/05/2023
28092824	SL13-A		0.00 - 0.00	29/05/2023
28092828	SL14-A		0.00 - 0.00	29/05/2023
28092832	SL15-A		0.00 - 0.00	29/05/2023
28092784	SL1-B		0.00 - 0.00	29/05/2023
28092771	SL2-B		0.00 - 0.00	29/05/2023
28092757	SL3-B		0.00 - 0.00	29/05/2023
28092748	SL4-B		0.00 - 0.00	29/05/2023
28092735	SL5-B		0.00 - 0.00	29/05/2023
28092725	SL6-B		0.00 - 0.00	29/05/2023
28092717	SL7-B		0.00 - 0.00	29/05/2023
28092708	SL8-B		0.00 - 0.00	29/05/2023
28092700	SL9-B		0.00 - 0.00	29/05/2023
28092739	SL10-B		0.00 - 0.00	29/05/2023
28092814	SL11-B		0.00 - 0.00	29/05/2023
28092794	SL12-B		0.00 - 0.00	29/05/2023
28092802	SL13-B		0.00 - 0.00	29/05/2023
28092806	SL14-B		0.00 - 0.00	29/05/2023
28092696	SL15-B		0.00 - 0.00	29/05/2023
28092818	SWFB		0.00 - 0.00	29/05/2023
28092811	SWTB		0.00 - 0.00	29/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28092735	SL5-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092748	SL4-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092757	SL3-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092771	SL2-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092784	SL1-B		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092832	SL15-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092828	SL14-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092824	SL13-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092820	SL12-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092798	SL11-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092690	SL10-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092704	SL9-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092712	SL8-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092721	SL7-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092731	SL6-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092744	SL5-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092752	SL4-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092763	SL3-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092778	SL2-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
	28092788	SL1-A		0.00 - 0.00	500ml Plastic (ALE208)	SW
PFAS Liquids	All					NDPs: 0 Tests: 32
						X X X X X X X X X X X X X X X X X X X

28092811	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092818	SWFB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092696	SL15-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092806	SL14-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092802	SL13-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092794	SL12-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092814	SL11-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092739	SL10-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092700	SL9-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092708	SL8-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092717	SL7-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092725	SL6-B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend			Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092788	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092778	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092763	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092752	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092744	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092731					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	4.24	#	10.3	#	8.76	#	11.7	#	4.39	#	9.28	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	5.64	#	25.6	#	31.8	#	21.5	#	3.13	#	23.9	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	1.85	#	12.1	#	17.2	#	8.19	#	1.32	#	17.6	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<1	#	5.1	#	8.27	#	3.31	#	<1	#	4.67	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	2.08	#	26.9	#	<1	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	#	3.86	#	6.6	#	1.27	#	<0.65	#	3.25	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	4.76	#	10.7	#	<1	#	<1	#	3.58	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	1.76	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	8.62	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	4.89	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	3.28	#	25.2	#	1.2	#	0.716	#	3.47	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	3.92	#	25.4	#	1.21	#	0.726	#	2.06	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend			Customer Sample Ref.	SL7-A	SL8-A	SL9-A	SL10-A	SL11-A	SL12-A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092721	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092712	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092704	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092690	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092798	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092820					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	13.1	#	2.96	#	<2	#	<2	#	9.86	#	3.02	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	32.7	#	1.85	#	2.01	#	1.4	#	30.6	#	2.24	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	20	#	<1	#	<1	#	<1	#	15.6	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.28	#	<1	#	<1	#	<1	#	3.79	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	16.2	#	<1	#	<1	#	<1	#	1.56	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	6.4	#	<0.65	#	<0.65	#	0.68	#	1.72	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	6.32	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	2.04	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	5.62	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	10.7	#	0.772	#	<0.65	#	<0.65	#	2.14	#	0.837	#
Branched PFOS	<0.65 ng/l	TM434	7.6	#	0.777	#	<0.65	#	<0.65	#	2.15	#	0.847	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend			Customer Sample Ref.	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092824	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092828	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092832	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092784	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092771	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092757					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	10.8	#	3.58	#	5.81	#	<2	#	11.4	#	11.2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	35.8	#	6.34	#	11.3	#	6.42	#	24.1	#	29.3	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	19.4	#	2.41	#	4.64	#	2.85	#	12.2	#	16.5	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.61	#	<1	#	1.63	#	<1	#	6.27	#	6.52	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	6.83	#	<1	#	<1	#	<1	#	2.05	#	21.9	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.73	#	<0.65	#	1.42	#	0.894	#	3.83	#	7.38	#
PFHxS (355-46-4)	<1 ng/l	TM434	4.5	#	<1	#	<1	#	<1	#	4.58	#	10.6	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	1.19	#
PFecHS (133201-07-7)	<1 ng/l	TM434	3.69	#	<1	#	<1	#	<1	#	<1	#	7.27	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	2.24	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	2.96	#	<0.65	#	<0.65	#	<0.65	#	2.34	#	10.9	#
Branched PFOS	<0.65 ng/l	TM434	4.3	#	<0.65	#	<0.65	#	<0.65	#	3.37	#	9.48	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend			Customer Sample Ref.	SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092748	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092735	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092725	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092717	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092708	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092700					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	11.6	#	3.71	#	9.1	#	11	#	<2	#	2.71	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	21	#	4.28	#	20.3	#	34	#	2.06	#	1.65	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	8.36	#	1.41	#	17.8	#	19.5	#	<1	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	2.97	#	<1	#	4.91	#	7.36	#	<1	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	16.5	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.08	#	<0.65	#	2.54	#	6.41	#	0.955	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.34	#	<1	#	2.83	#	6.89	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	1.24	#	2.07	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	5.36	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	2.33	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.72	#	0.755	#	3.48	#	10.2	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	1.71	#	0.764	#	2.74	#	6.61	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend			Customer Sample Ref.	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092739	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092814	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092794	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092802	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092806	0.00 - 0.00 Surface Water (SW) 29/05/2023 02/06/2023 230602-81 28092696					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	2.49	#	10.3	#	<2	#	9.9	#	4.65	#	4.85	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	2.5	#	29.5	#	<1	#	34.9	#	5.12	#	12.1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	<1	#	14.7	#	1.02	#	18.8	#	2.44	#	5.53	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<1	#	3.68	#	<1	#	8.19	#	<1	#	1.09	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	1.31	#	<1	#	7.31	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	#	1.32	#	<0.65	#	5.22	#	1.18	#	1.15	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	4.7	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	4.5	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	1.65	#	<0.65	#	3.06	#	<0.65	#	1.33	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	1.6	#	<0.65	#	3.59	#	<0.65	#	1.33	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Results Legend		Customer Sample Ref.	SWFB	SWTB			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*@\$ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 29/05/2023 . 02/06/2023 230602-81 28092818	0.00 - 0.00 Surface Water (SW) 29/05/2023 . 02/06/2023 230602-81 28092811			
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	#	
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Data Amendment

Sample No. :	28092717	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL7-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	17.6	6.61
SL7-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	18.7	10.2
SL7-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	36.3	16.8
Sample No. :	28092721	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL7-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	17.7	7.60
SL7-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	17.3	10.7
SL7-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	35.0	18.3
Sample No. :	28092725	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL6-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.26	2.74
SL6-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	6.25	3.48
SL6-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.5	6.23
Sample No. :	28092731	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL6-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.12	2.06
SL6-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	5.90	3.47
SL6-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.0	5.53
Sample No. :	28092757	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL3-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	21.8	9.48
SL3-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	22.3	10.9
SL3-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	44.1	20.3
Sample No. :	28092771	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL2-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	5.24	3.37
SL2-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	5.18	2.34
SL2-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	10.4	5.71
Sample No. :	28092778	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL2-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.45	3.92
SL2-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.7	3.28
SL2-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.2	7.21
Sample No. :	28092802	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SL13-B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.37	3.59
SL13-B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.42	3.06
SL13-B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	14.8	6.65
Sample No. :	28092824	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended



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SL13-A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.43	4.30
SL13-A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.68	2.96
SL13-A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.1	7.26



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Client Ref.: P21-195

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Location: Dublin Airport

Superseded Report: 695930

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



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Validated

SDG: 230602-81
Client Ref.: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Test Completion Dates

Lab Sample No(s)	28092788	28092778	28092763	28092752	28092744	28092731	28092721	28092712	28092704	28092690
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	09-Jun-2023	12-Jul-2023	08-Jun-2023	12-Jun-2023	09-Jun-2023	12-Jul-2023	12-Jul-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023

Lab Sample No(s)	28092798	28092820	28092824	28092828	28092832	28092784	28092771	28092757	28092748	28092735
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	09-Jun-2023	09-Jun-2023	12-Jul-2023	09-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jul-2023	12-Jul-2023	09-Jun-2023	09-Jun-2023

Lab Sample No(s)	28092725	28092717	28092708	28092700	28092739	28092814	28092794	28092802	28092806	28092696
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Jul-2023	12-Jul-2023	08-Jun-2023	09-Jun-2023	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jul-2023	12-Jun-2023	09-Jun-2023

Lab Sample No(s)	28092818	28092811
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	09-Jun-2023	12-Jun-2023



CERTIFICATE OF ANALYSIS

SDG: 230602-81
Client Ref: P21-195

Report Number: 696139
Location: Dublin Airport

Superseded Report: 695930

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 July 2023
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	230602-83
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	696146
Order Number:	Z3893

This report has been revised and directly supersedes 695877 in its entirety.

We received 44 samples on Friday June 02, 2023 and 42 of these samples were scheduled for analysis which was completed on Wednesday July 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28092868	GW11 A		0.00 - 0.00	30/05/2023
28092970	GW12 A		0.00 - 0.00	30/05/2023
28093067	GW13 A		0.00 - 0.00	30/05/2023
28093091	GW14 A		0.00 - 0.00	30/05/2023
28093112	GW15 A		0.00 - 0.00	30/05/2023
28092879	GW16 A		0.00 - 0.00	30/05/2023
28092888	GW17 A		0.00 - 0.00	30/05/2023
28093049	GW18 A		0.00 - 0.00	30/05/2023
28092987	GW19 A		0.00 - 0.00	30/05/2023
28092920	GW11 B		0.00 - 0.00	30/05/2023
28093033	GW12 B		0.00 - 0.00	30/05/2023
28093078	GW13 B		0.00 - 0.00	30/05/2023
28093102	GW14 B		0.00 - 0.00	30/05/2023
28092872	GW15 B		0.00 - 0.00	30/05/2023
28092884	GW16 B		0.00 - 0.00	30/05/2023
28092893	GW17 B		0.00 - 0.00	30/05/2023
28093057	GW18 B		0.00 - 0.00	30/05/2023
28092991	GW19 B		0.00 - 0.00	30/05/2023
28092897	GWMP5 A		0.00 - 0.00	31/05/2023
28092903	GWMP5 B		0.00 - 0.00	31/05/2023
28092907	P2 A		0.00 - 0.00	30/05/2023
28092915	P3 A		0.00 - 0.00	30/05/2023
28093123	P4 A			
28092928	P7 A		0.00 - 0.00	30/05/2023
28092938	P8 A		0.00 - 0.00	30/05/2023
28092911	P2 B		0.00 - 0.00	30/05/2023
28092924	P3 B		0.00 - 0.00	30/05/2023
28093127	P4 B			
28092933	P7 B		0.00 - 0.00	30/05/2023
28092943	P8 B		0.00 - 0.00	30/05/2023
28093012	R1 A		0.00 - 0.00	31/05/2023
28093028	R2 A		0.00 - 0.00	31/05/2023
28093019	R1 B		0.00 - 0.00	31/05/2023
28093044	R2 B		0.00 - 0.00	31/05/2023
28092965	SWML3 A		0.00 - 0.00	31/05/2023
28092957	SWML4 A		0.00 - 0.00	31/05/2023
28092979	SWML7(A) A		0.00 - 0.00	31/05/2023
28092983	SWML7(A) B		0.00 - 0.00	31/05/2023
28092975	SWML3 B		0.00 - 0.00	31/05/2023
28092961	SWML4 B		0.00 - 0.00	31/05/2023
28092947	SWML5(B) A		0.00 - 0.00	30/05/2023
28092995	SWML7(B) A		0.00 - 0.00	31/05/2023
28092951	SWML5(B) B		0.00 - 0.00	30/05/2023
28093004	SWML7(B) B		0.00 - 0.00	31/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28092903	GMW/P5 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092897	GMW/P5 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092991	GW19 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093057	GW18 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092893	GW17 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092884	GW16 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092872	GW15 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093102	GW14 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093078	GW13 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093033	GW12 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092920	GW11 B		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092987	GW19 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093049	GW18 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092888	GW17 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092879	GW16 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093112	GW15 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093091	GW14 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28093067	GW13 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092970	GW12 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
	28092868	GW11 A		0.00 - 0.00	500ml Plastic (ALE208)	GW
PFAS Liquids	All					NDPs: 0 Tests: 42
						X X X X X X X X X X X X X X X X X X X

28092995	SWML7(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092947	SWML5(B) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092961	SWML4 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092975	SWML3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092983	SWML7(A) B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092979	SWML7(A) A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092957	SWML4 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092965	SWML3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093044	R2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093019	R1 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093028	R2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28093012	R1 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092943	P8 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092933	P7 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092924	P3 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092911	P2 B		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092938	P8 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092928	P7 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092915	P3 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28092907	P2 A		0.00 - 0.00	500ml Plastic (ALE208)	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; background-color: yellow; padding: 2px; width: 20px; text-align: center;">X</div> Test <div style="border: 1px solid black; background-color: red; color: white; padding: 2px; width: 20px; text-align: center;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	28092951	28093004		
	Customer Sample Reference	SWMLE5(B) B	SWMLE7(B) B		
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00		
	Container	500ml Plastic (ALE208)	500ml Plastic (ALE208)		
	Sample Type	SW	SW		
PFAS Liquids	All	NDPs: 0 Tests: 42	X	X	



CERTIFICATE OF ANALYSIS

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Client Ref.: P21-195

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Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092868	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092970	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093067	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093091	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093112	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092879
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	77.4	8.28	<2	60.6	3.39	20.2	
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
PFPA (2706-90-3)	<1 ng/l	TM434	440	35.6	<1	272	3.98	106	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	
PFBS (375-73-5)	<1 ng/l	TM434	8.43	<1	<1	<1	<1	<1	
PFHxA (307-24-4)	<1 ng/l	TM434	195	12.9	<1	98.1	2.42	41.9	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
PFHpA (375-85-9)	<1 ng/l	TM434	112	4.24	<1	25.6	1.71	13.7	
PFPeS (2706-91-4)	<1 ng/l	TM434	4.99	<1	<1	<1	<1	<1	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	489	26.7	<1	3.56	<1	16.5	
FBSA (30334-69-1)	<1 ng/l	TM434	3.36	<1	<1	<1	<1	<1	
PFOA (335-67-1)	<0.65 ng/l	TM434	52.1	1.96	<0.65	3.12	0.861	3.89	
PFHxS (355-46-4)	<1 ng/l	TM434	61.6	1.4	<1	1.1	<1	11.2	
PFNA (375-95-1)	<1 ng/l	TM434	15.1	<1	<1	<1	<1	<1	
PFechS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	135	<2	<2	<2	<2	<2	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	96.5	2.43	<0.65	<0.65	<0.65	2.42	
Branched PFOS	<0.65 ng/l	TM434	95.9	2.03	<0.65	<0.65	<0.65	6.38	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092888	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093049	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092987	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092920	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093033	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093078
Component	LOD/Units	Method							
PFBA (375-22-4)	<2 ng/l	TM434	7.45	<2	<2	<2	54.6	7.07	<2
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFPA (2706-90-3)	<1 ng/l	TM434	3.28	<1	<1	383	40.4	<1	<1
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<30	<3	<3	<3
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHxA (307-24-4)	<1 ng/l	TM434	1.14	<1	<1	187	12.1	<1	<1
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	<1	106	3.63	<1	<1
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<1	609	4.04	<1	<1
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	<0.65	62.6	1.17	<0.65	<0.65
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	56	1.99	<1	<1
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	14.6	<1	<1	<1
PFechS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	171	<2	<2	<2
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<50	<5	<5	<5
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.43	<0.65	<0.65	151	1.45	<0.65	<0.65
Branched PFOS	<0.65 ng/l	TM434	1.53	<0.65	<0.65	169	2.17	<0.65	<0.65
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<20	<2	<2	<2
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<10	<1	<1	<1



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093102	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092872	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092884	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092893	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093057	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092991					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	42.6	#	2.96	#	31.9	#	<20	#	<20	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	263	#	3.71	#	101	#	<10	#	<10	#	<1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<30	#	<30	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	84.9	#	2.13	#	38.8	#	<10	#	<10	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	22.6	#	<1	#	14.5	#	<10	#	<10	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<50	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	3.28	#	<1	#	16.3	#	<10	#	<10	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	1.16	#	<10	#	<10	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.48	#	1.12	#	3.74	#	<6.5	#	<6.5	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.19	#	<1	#	9.91	#	<10	#	<10	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<50	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<50	#	<50	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#	7.95	#	<6.5	#	<6.5	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	<0.65	#	6.49	#	<6.5	#	<6.5	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093102	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092872	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092884	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092893	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28093057	0.00 - 0.00 Ground Water (GW) 30/05/2023 02/06/2023 230602-83 28092991					
Component	LOD/Units	Method												
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFDaA (307-55-1)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<30	#	<30	#	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<20	#	<20	#	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	#	<10	#	<10	#	<100	#	<100	#	<10	#
N-MeFOSE (31506-32-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	#	<10	#	<10	#	<100	#	<100	#	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
N-EiFOSE (4151-50-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<10	#	<10	#	<1	#
Total PFOS	<0.65 ng/l	TM434	<0.65	#	<0.65	#	14.4	#	<6.5	#	<6.5	#	<0.65	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	GWMP5 A	GWMP5 B	P2 A	P3 A	P7 A	P8 A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 31/05/2023 02/06/2023 230602-83 28092897	0.00 - 0.00 Ground Water (GW) 31/05/2023 02/06/2023 230602-83 28092903	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092907	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092915	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092928	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092938					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	4.6	#	6.29	#	24.1	#	11.5	#	27.2	#	5.2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	4.64	#	4.52	#	55.7	#	23.7	#	23.7	#	10.8	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	1.35	#	1.35	#	20.6	#	9.11	#	8.44	#	5.13	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	<1	#	<1	#	8.48	#	3.35	#	4.37	#	2.32	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	0.79	#	<0.65	#	2.52	#	1.17	#	1.84	#	0.826	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	1.54	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.22	#	1.16	#	2.42	#	0.727	#	<0.65	#	1.84	#
Branched PFOS	<0.65 ng/l	TM434	1.28	#	1.21	#	2.44	#	0.809	#	<0.65	#	1.88	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	P2 B	P3 B	P7 B	P8 B	R1 A	R2 A					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092911	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092924	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092933	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092943	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093012	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093028					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	19.8	#	9.38	#	20.7	#	3.24	#	13.5	#	8.41	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	49.9	#	22	#	23.5	#	8.95	#	49.5	#	36.6	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	19.3	#	7.83	#	8.22	#	3.94	#	19.1	#	14.1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.33	#	3.01	#	4.39	#	1.14	#	10.3	#	7.45	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	4.87	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	3.17	#	0.783	#	1.85	#	0.818	#	5.37	#	4.03	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	2.1	#	<1	#	<1	#	2.16	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1	#	0.826	#	<0.65	#	1.35	#	4.05	#	2.1	#
Branched PFOS	<0.65 ng/l	TM434	1.05	#	0.905	#	<0.65	#	1.38	#	4.08	#	1.13	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	R1 B	R2 B	SWML3 A	SWML4 A	SWML7(A) A	SWML7(A) B					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093019	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093044	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092965	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092957	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092979	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092983					
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	12.8	#	9.21	#	7.07	#	17.3	#	<2	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	45.7	#	33.4	#	23.2	#	50.1	#	2.62	#	2.8	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	18.3	#	12.8	#	9.49	#	21	#	<1	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.68	#	7.89	#	3.26	#	10.2	#	<1	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	6.16	#	<1	#	2.2	#	4.11	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.14	#	2.93	#	2.29	#	5.88	#	<0.65	#	<0.65	#
PFHxS (355-46-4)	<1 ng/l	TM434	2.77	#	1.68	#	<1	#	1.82	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.7	#	1.33	#	4.52	#	2.41	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	1.72	#	1.29	#	1.03	#	1.33	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Results Legend			Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B				
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*§@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092975	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092961	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092947	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28092995	0.00 - 0.00 Surface Water (SW) 30/05/2023 02/06/2023 230602-83 28092951	0.00 - 0.00 Surface Water (SW) 31/05/2023 02/06/2023 230602-83 28093004				
Component	LOD/Units	Method											
PFBA (375-22-4)	<2 ng/l	TM434	10.3	#	12.1	#	70.2	<2	#	66.8	#	<2	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	22.2	#	49.6	#	71.8	<1	#	80.6	#	<1	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	9.57	<1	#	9.1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	9.13	#	21.1	#	59.9	1.06	#	59.7	#	1.56	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.24	#	9.76	#	49.3	<1	#	42.6	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	8.57	<1	#	7.45	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	1.99	#	2.96	#	39.3	<1	#	39.5	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	4.78	<1	#	4.64	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.74	#	3.68	#	69.7	0.69	#	69.4	#	0.793	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	1.47	#	140	<1	#	126	#	4.35	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	21	<1	#	27.5	#	<1	#
PFechS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	21.8	<1	#	19.1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	6.45	<1	#	5.65	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	3.81	<2	#	4.51	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	4.4	#	1.95	#	116	<0.65	#	139	#	4.91	#
Branched PFOS	<0.65 ng/l	TM434	1.59	#	1.29	#	116	0.709	#	141	#	2.59	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Data Amendment

Sample No. :	28092879	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW16 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	8.81	6.38
GW16 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	8.85	2.42
GW16 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	17.7	8.80
Sample No. :	28092884	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW16 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.95	6.49
GW16 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.94	7.95
GW16 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.9	14.4
Sample No. :	28092957	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	4.13	1.33
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	4.09	2.41
SWML4 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	8.22	3.74
Sample No. :	28092961	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.60	1.29
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.57	1.95
SWML4 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.17	3.23
Sample No. :	28092965	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.09	1.03
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	6.06	4.52
SWML3 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.2	5.55
Sample No. :	28092970	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW12 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	4.86	2.03
GW12 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	4.77	2.43
GW12 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	9.63	4.47
Sample No. :	28092975	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	6.33	1.59
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	6.51	4.40
SWML3 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	12.8	5.98
Sample No. :	28093004	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	7.72	2.59
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	7.94	4.91
SWML7(B) B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	15.7	7.49
Sample No. :	28093019	Date of Amendment :	10/07/2023	Authorised:	Geraint Pumford	
Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended



CERTIFICATE OF ANALYSIS

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SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

R1 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.62	1.72
R1 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.70	1.70
R1 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.32	3.42

Sample No. : 28093028 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
R2 A	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.52	1.13
R2 A	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.48	2.10
R2 A	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.00	3.23

Sample No. : 28093033 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
GW12 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	3.99	2.17
GW12 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	3.95	1.45
GW12 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	7.94	3.62

Sample No. : 28093044 Date of Amendment : 10/07/2023 Authorised: Geraint Pumford

Sample Ref.	Reason	Test Name	Result Name	Units	Previous	Amended
R2 B	Analytical/Quality Issue	PFAS Liquids	Branched PFOS	ng/l	2.86	1.29
R2 B	Analytical/Quality Issue	PFAS Liquids	Linear PFOS (1763-23-1)	ng/l	2.84	1.33
R2 B	Analytical/Quality Issue	PFAS Liquids	Total PFOS	ng/l	5.70	2.62



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230602-83
Client Ref.: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Test Completion Dates

Lab Sample No(s)	28092868	28092970	28093067	28093091	28093112	28092879	28092888	28093049	28092987	28092920
Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water									
PFAS Liquids	07-Jun-2023	12-Jul-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	12-Jul-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	12-Jun-2023

Lab Sample No(s)	28093033	28093078	28093102	28092872	28092884	28092893	28093057	28092991	28092897	28092903
Customer Sample Ref.	GW12 B	GW13 B	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	GWMP5 A	GWMP5 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids	12-Jul-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	12-Jul-2023	12-Jun-2023	12-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023

Lab Sample No(s)	28092907	28092915	28092928	28092938	28092911	28092924	28092933	28092943	28093012	28093028
Customer Sample Ref.	P2 A	P3 A	P7 A	P8 A	P2 B	P3 B	P7 B	P8 B	R1 A	R2 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023	12-Jul-2023

Lab Sample No(s)	28093019	28093044	28092965	28092957	28092975	28092961	28092979	28092983	28092947	28092995
Customer Sample Ref.	R1 B	R2 B	SWML3 A	SWML4 A	SWML3 B	SWML4 B	SWML7(A) A	SWML7(A) B	SWML5(B) A	SWML7(B) A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jun-2023	12-Jun-2023	07-Jun-2023	06-Jun-2023

Lab Sample No(s)	28092951	28093004
Customer Sample Ref.	SWML5(B) B	SWML7(B) B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids	06-Jun-2023	12-Jul-2023



CERTIFICATE OF ANALYSIS

SDG: 230602-83
Client Ref: P21-195

Report Number: 696146
Location: Dublin Airport

Superseded Report: 695877

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 August 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-106
Your Reference: P21-195
Location: Dublin Airport
Report No: 701633
Order Number: Z4069

We received 32 samples on Friday August 18, 2023 and 32 of these samples were scheduled for analysis which was completed on Tuesday August 29, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28501780	SL1-A		0.00 - 0.00	14/08/2023
28501789	SL2-A		0.00 - 0.00	14/08/2023
28501796	SL3-A		0.00 - 0.00	14/08/2023
28501810	SL4-A		0.00 - 0.00	14/08/2023
28501760	SL5-A		0.00 - 0.00	14/08/2023
28501748	SL6-A		0.00 - 0.00	14/08/2023
28501740	SL7-A		0.00 - 0.00	14/08/2023
28501731	SL8-A		0.00 - 0.00	14/08/2023
28501725	SL9-A		0.00 - 0.00	14/08/2023
28501712	SL10-A		0.00 - 0.00	14/08/2023
28501800	SL11-A		0.00 - 0.00	14/08/2023
28501826	SL12-A		0.00 - 0.00	14/08/2023
28501829	SL13-A		0.00 - 0.00	14/08/2023
28501835	SL14-A		0.00 - 0.00	14/08/2023
28501839	SL15-A		0.00 - 0.00	14/08/2023
28501785	SL1-B		0.00 - 0.00	14/08/2023
28501792	SL2-B		0.00 - 0.00	14/08/2023
28501806	SL3-B		0.00 - 0.00	14/08/2023
28501813	SL4-B		0.00 - 0.00	14/08/2023
28501751	SL5-B		0.00 - 0.00	14/08/2023
28501744	SL6-B		0.00 - 0.00	14/08/2023
28501736	SL7-B		0.00 - 0.00	14/08/2023
28501728	SL8-B		0.00 - 0.00	14/08/2023
28501721	SL9-B		0.00 - 0.00	14/08/2023
28501756	SL10-B		0.00 - 0.00	14/08/2023
28501817	SL11-B		0.00 - 0.00	14/08/2023
28501776	SL12-B		0.00 - 0.00	14/08/2023
28501773	SL13-B		0.00 - 0.00	14/08/2023
28501769	SL14-B		0.00 - 0.00	14/08/2023
28501716	SL15-B		0.00 - 0.00	14/08/2023
28501821	SWFB		0.00 - 0.00	14/08/2023
28501765	SWTB		0.00 - 0.00	14/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water
- Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
28501813	SL4-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501806	SL3-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501792	SL2-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501785	SL1-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501839	SL15-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501835	SL14-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501829	SL13-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501826	SL12-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501800	SL11-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501712	SL10-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501725	SL9-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501731	SL8-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501740	SL7-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501748	SL6-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501760	SL5-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501810	SL4-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501796	SL3-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501789	SL2-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28501780	SL1-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
PFAS Liquids (Full Suite)	All			NDPs: 0 Tests: 32	

X X

28501765	- SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28501821	- SWFB		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501716	- SL15-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501769	- SL14-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501773	- SL13-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501776	- SL12-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501817	- SL11-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501756	- SL10-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501721	- SL9-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501728	- SL8-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501736	- SL7-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501744	- SL6-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28501751	- SL5-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A				
#	ISO17025 accredited.		Depth (m)	Surface Water (SW)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023			
aq	Aqueous / settled sample.		Sample Type	Surface Water (SW)										
diss.filt	Dissolved / filtered sample.		Date Sampled	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023				
tot.unfilt	Total / unfiltered sample.		Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		Date Received	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		SDG Ref	28501780	28501789	28501796	28501810	28501760	28501748	28501748				
	(F) Trigger breach confirmed		Lab Sample No.(s)											
	1-4*\$@Sample deviation (see appendix)		AGS Reference											
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	6.98	#	10.6	#	15.5	#	12.1	#	4.72	#	13.1	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	12.2	#	20.1	#	49.2	#	22.5	#	6.57	#	31	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	1.22	#	1.39	#	<1	#	<1	#	1.77	#
PFHxA (307-24-4)	<1 ng/l	TM434	6.02	#	7.47	#	24	#	10.5	#	3.16	#	23.3	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	2.8	#	4.9	#	9.13	#	4.98	#	1.85	#	7.13	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	4.13	#	92.3	#	<1	#	<1	#	3.83	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.91	#	2.77	#	5.57	#	2.05	#	1.27	#	4.76	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	3.34	#	6.27	#	2.65	#	<1	#	3.12	#
PFNA (375-95-1)	<1 ng/l	TM434	1.05	#	<1	#	2.01	#	<1	#	<1	#	1.7	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	1.96	#	10.7	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	6.35	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.09	#	2.36	#	5.8	#	<0.65	#	0.898	#	3.46	#
Branched PFOS	<0.65 ng/l	TM434	0.824	#	2.07	#	4.09	#	1.19	#	0.779	#	2.52	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
*	Subcontracted - refer to subcontractor report for accreditation status.		28501780	28501789	28501796	28501810	28501760	28501748	28501748
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	1.91	4.43	9.89	1.19	1.68	5.98	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL7-A	SL8-A	SL9-A	SL10-A	SL11-A	SL12-A
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
* Subcontracted - refer to subcontractor report for accreditation status.			AGS Reference		28501740	28501731	28501725	28501712	28501800	28501826
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery										
(F) Trigger breach confirmed										
1-4*@\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	12.2	#	4.77	#	3.59	#	7.91	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	32.5	#	2.93	#	1.75	#	6.23	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.23	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	21	#	2.24	#	1.32	#	3.07	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.29	#	1.6	#	<1	#	1.78	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	83.7	#	<1	#	<1	#	2.91	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.87	#	1.98	#	0.972	#	1.35	#
PFHxS (355-46-4)	<1 ng/l	TM434	6.52	#	<1	#	<1	#	2.5	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	8.17	#	<1	#	<1	#	4.35	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	3.6	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	6.6	#	<0.65	#	<0.65	#	0.954	#
Branched PFOS	<0.65 ng/l	TM434	3.66	#	<0.65	#	<0.65	#	0.757	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL7-A	SL8-A	SL9-A	SL10-A	SL11-A	SL12-A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
dis.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
*	Subcontracted - refer to subcontractor report for accreditation status.		28501740	28501731	28501725	28501712	28501800	28501826	28501826
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	10.3	<0.65	<0.65	1.71	2.2	<0.65	<0.65
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	28501829	28501835	28501839	28501785	28501792	28501806
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)						
(F) Trigger breach confirmed			AGS Reference	AGS Reference						
1-4*\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	11.6	6.87	7.66	8.2	9.54	11.1	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	29.3	4.9	18.6	13.2	19.9	31.8	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	1.31	<1	1.22	<1	1.34	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	15.3	2.89	7.97	5.73	10.4	16.3	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.86	1.77	2.99	3.13	4.65	6.19	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	29.4	<1	1.84	<1	3.41	63.4	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	5.65	1.97	2.48	1.74	2.39	4.22	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	6.89	<1	<1	1.24	2.91	4.33	#	#
PFNA (375-95-1)	<1 ng/l	TM434	1.8	<1	1.17	<1	<1	1.36	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	13.1	<1	<1	<1	2.69	8.37	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	3.81	<2	<2	<2	<2	4.37	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	5.77	<0.65	1.23	0.93	2.31	4.24	#	#
Branched PFOS	<0.65 ng/l	TM434	3.84	<0.65	1.12	0.832	1.93	2.78	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfiltTotal	Unfiltered sample.			230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
	Subcontracted - refer to subcontractor report for accreditation status.		28501829	28501835	28501839	28501785	28501792	28501806	28501806	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3	
			#	#	#	#	#	#	#	
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10	
			#	#	#	#	#	#	#	
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10	
			#	#	#	#	#	#	#	
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM434	9.62	<0.65	2.34	1.76	4.25	7.03		
			#	#	#	#	#	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B		
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.				Surface Water (SW)							
aq	Aqueous / settled sample.		Date Sampled	Date Received	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023		
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023		
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106		
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28501813	28501751	28501744	28501736	28501728	28501721		
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
(F)	Trigger breach confirmed											
1-4	§@Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	11.6	#	4.79	#	9	#	13.5	#	4.01	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	20.6	#	5.56	#	19	#	40.2	#	2.51	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.04	#	<1	#	1.31	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	9.74	#	3.3	#	16.7	#	18.8	#	1.57	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	4.31	#	1.63	#	5.31	#	7.15	#	1.3	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	3.12	#	73.9	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.81	#	1.17	#	3.08	#	4.94	#	1.55	#
PFHxS (355-46-4)	<1 ng/l	TM434	2.5	#	<1	#	3.75	#	5.3	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	1.02	#	<1	#	1.33	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	1.3	#	12.1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	3.11	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	0.825	#	2.62	#	6.41	#	1.23	#
Branched PFOS	<0.65 ng/l	TM434	1.11	#	0.894	#	2.07	#	2.68	#	0.753	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501813	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501751	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501744	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501736	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501728	0.00 - 0.00 Surface Water (SW) 14/08/2023 18/08/2023 230818-106 28501721
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFUn _D S (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
Total PFOS	<0.65 ng/l	TM434	1.11	1.72	4.69	9.09	1.99	0.708	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B		
#	ISO17025 accredited.		Depth (m)	Surface Water (SW)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.				14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	
aq	Aqueous / settled sample.		Sample Type	Surface Water (SW)								
diss.filt	Dissolved / filtered sample.		Date Sampled	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023		
tot.unfilt	Total / unfiltered sample.		Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023		
	* Subcontracted - refer to subcontractor report for accreditation status.		Date Received	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106		
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		SDG Ref	28501756	28501817	28501776	28501773	28501769	28501716	28501716		
	(F) Trigger breach confirmed		Lab Sample No.(s)									
	1-4*\$@Sample deviation (see appendix)		AGS Reference									
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	6.2	#	12.1	#	3.69	#	9.93	#	6.87	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	8.13	#	29.9	#	2.02	#	23.9	#	3.64	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	1.07	#
PFHxA (307-24-4)	<1 ng/l	TM434	3.96	#	13.5	#	1.35	#	13.3	#	2.35	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	2.09	#	3.84	#	1.26	#	5.94	#	1.58	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	3.64	#	<1	#	25.3	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.47	#	3.26	#	1.02	#	4.84	#	1.59	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	<2	#	<1	#	8.07	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	1.23	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	5.35	#	<1	#	15.8	#	1.1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	4.09	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.806	#	1.57	#	<0.65	#	6.17	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	0.76	#	<0.65	#	<0.65	#	4.93	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfiltTotal	unfiltered sample.			230818-106	230818-106	230818-106	230818-106	230818-106	230818-106	230818-106
	* Subcontracted - refer to subcontractor report for accreditation status.		28501756	28501817	28501776	28501773	28501769	28501716	28501716	
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
	(F) Trigger breach confirmed									
	1-4* @ Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3	
			#	#	#	#	#	#	#	
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2	
			#	#	#	#	#	#	#	
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10	
			#	#	#	#	#	#	#	
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10	
			#	#	#	#	#	#	#	
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	#	
Total PFOS	<0.65 ng/l	TM434	1.57	1.57	<0.65	11.1	<0.65	2.2		
			#	#	#	#	#	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SWFB	SWTB			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		14/08/2023	14/08/2023			
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023			
tot.unfilt	Total / unfiltered sample.		230818-106	230818-106			
*	Subcontracted - refer to subcontractor report for accreditation status.		28501821	28501765			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$	Sample deviation (see appendix)						
Component	LOD/Units		Method				
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	2 #	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	2 #	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	2 #	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	2 #	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	2 #	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	2 #	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	2 #	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	2 #	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	2 #	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	2 #	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	2 #	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	2 #	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	2 #	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	2 #	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	2 #	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	2 #	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	2 #	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	2 #	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	2 #	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	2 #	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	2 #	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	2 #	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	2 #	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	2 #	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-106
Client Ref.: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28501780	28501789	28501796	28501810	28501760	28501748	28501740	28501731	28501725	28501712
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	24-Aug-2023	25-Aug-2023	29-Aug-2023	25-Aug-2023	25-Aug-2023	24-Aug-2023	25-Aug-2023	23-Aug-2023	25-Aug-2023

Lab Sample No(s)	28501800	28501826	28501829	28501835	28501839	28501785	28501792	28501806	28501813	28501751
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	23-Aug-2023	23-Aug-2023	25-Aug-2023	29-Aug-2023	25-Aug-2023	23-Aug-2023	23-Aug-2023	25-Aug-2023	23-Aug-2023	25-Aug-2023

Lab Sample No(s)	28501744	28501736	28501728	28501721	28501756	28501817	28501776	28501773	28501769	28501716
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	24-Aug-2023	23-Aug-2023	23-Aug-2023	24-Aug-2023	25-Aug-2023	29-Aug-2023	23-Aug-2023	23-Aug-2023	23-Aug-2023	25-Aug-2023

Lab Sample No(s)	28501821	28501765
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-106
Client Ref: P21-195

Report Number: 701633
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US

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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 September 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230818-142
Your Reference: P21-195
Location: Dublin Airport
Report No: 702250
Order Number: Z4069

We received 62 samples on Friday August 18, 2023 and 62 of these samples were scheduled for analysis which was completed on Friday September 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28503044	C1 A		0.00 - 0.00	16/08/2023
28503079	C-2A (A)		0.00 - 0.00	16/08/2023
28503084	C-2A (B)		0.00 - 0.00	16/08/2023
28503049	C1 B		0.00 - 0.00	16/08/2023
28503094	C-2B (A)		0.00 - 0.00	16/08/2023
28503103	C-2B (B)		0.00 - 0.00	16/08/2023
28502879	GW11 A		0.00 - 0.00	16/08/2023
28502974	GW12 A		0.00 - 0.00	16/08/2023
28503057	GW13 A		0.00 - 0.00	16/08/2023
28503138	GW14 A		0.00 - 0.00	16/08/2023
28503147	GW15 A		0.00 - 0.00	16/08/2023
28502886	GW16 A		0.00 - 0.00	16/08/2023
28502895	GW17 A		0.00 - 0.00	16/08/2023
28503026	GW18 A		0.00 - 0.00	15/08/2023
28502989	GW19 A		0.00 - 0.00	15/08/2023
28502924	GW11 B		0.00 - 0.00	16/08/2023
28503018	GW12 B		0.00 - 0.00	16/08/2023
28503126	GW13 B		0.00 - 0.00	16/08/2023
28503143	GW14 B		0.00 - 0.00	16/08/2023
28502883	GW15 B		0.00 - 0.00	16/08/2023
28502891	GW16 B		0.00 - 0.00	16/08/2023
28502900	GW17 B		0.00 - 0.00	16/08/2023
28503029	GW18 B		0.00 - 0.00	15/08/2023
28502995	GW19 B		0.00 - 0.00	15/08/2023
28502904	GWMP5 A		0.00 - 0.00	16/08/2023
28502908	GWMP5 B		0.00 - 0.00	16/08/2023
28503123	K Stream A		0.00 - 0.00	16/08/2023
28503129	K Stream B		0.00 - 0.00	16/08/2023
28503052	M5 A		0.00 - 0.00	16/08/2023
28503063	M5 B		0.00 - 0.00	16/08/2023
28502911	P2 A		0.00 - 0.00	15/08/2023
28502920	P3 A		0.00 - 0.00	15/08/2023
28503038	P4 A		0.00 - 0.00	16/08/2023
28502930	P7 A		0.00 - 0.00	15/08/2023
28502945	P8 A		0.00 - 0.00	15/08/2023
28502917	P2 B		0.00 - 0.00	15/08/2023
28502927	P3 B		0.00 - 0.00	15/08/2023
28503041	P4 B		0.00 - 0.00	16/08/2023
28502937	P7 B		0.00 - 0.00	15/08/2023
28502949	P8 B		0.00 - 0.00	15/08/2023
28503008	R1 A		0.00 - 0.00	16/08/2023
28503015	R2 A		0.00 - 0.00	16/08/2023
28503012	R1 B		0.00 - 0.00	16/08/2023
28503021	R2 B		0.00 - 0.00	16/08/2023
28503069	S1 A		0.00 - 0.00	16/08/2023
28503116	S3 A		0.00 - 0.00	16/08/2023
28503075	S1 B		0.00 - 0.00	16/08/2023
28503120	S3 B		0.00 - 0.00	16/08/2023
28502971	SWML3 A		0.00 - 0.00	16/08/2023
28502962	SWML4 A		0.00 - 0.00	16/08/2023
28503032	SWML5(A) A		0.00 - 0.00	16/08/2023
28502981	SWML7(A) A		0.00 - 0.00	16/08/2023
28503035	SWML5(A) B		0.00 - 0.00	16/08/2023
28502984	SWML7(A) B		0.00 - 0.00	16/08/2023
28502977	SWML3 B		0.00 - 0.00	16/08/2023
28502965	SWML4 B		0.00 - 0.00	16/08/2023
28502953	SWML5(B) A		0.00 - 0.00	16/08/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142 **Report Number:** 702250 **Superseded Report:**
Client Ref.: P21-195 **Location:** Dublin Airport

28502999	SWML7(B) A	0.00 - 0.00	16/08/2023
28502958	SWML5(B) B	0.00 - 0.00	16/08/2023
28503004	SWML7(B) B	0.00 - 0.00	16/08/2023
28503132	WAD Stream A	0.00 - 0.00	16/08/2023
28503135	WAD Stream B	0.00 - 0.00	16/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28503143	GW14 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503126	GW13 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503018	GW12 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502924	GW11 B		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502989	GW19 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503026	GW18 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502895	GW17 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502886	GW16 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503147	GW15 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503138	GW14 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503057	GW13 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502974	GW12 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28502879	GW11 A		0.00 - 0.00	Digitube fo PFAS analysis.	GW
	28503103	C-2B (B)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503094	C-2B (A)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503049	C1 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503084	C-2A (B)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503079	C-2A (A)		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28503044	C1 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
PFAS Liquids (Full Suite)	All				NDPs: 0 Tests: 62	

28502949	P8 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502937	P7 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503041	P4 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502927	P3 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502917	P2 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502945	P8 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502930	P7 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503038	P4 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502920	P3 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502911	P2 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503063	M5 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503052	M5 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503129	K Stream B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503123	K Stream A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28502908	GWMMP5 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502904	GWMMP5 A		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502995	CW19 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28503029	CW18 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502900	CW17 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502891	CW16 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X
28502883	CW15 B		0.00 - 0.00	Digitube fo PFAS analysis.	CW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	28502958	SWML5(B) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502999	SWML7(B) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502953	SWML5(B) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502965	SWML4 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502977	SWML3 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502984	SWML7(A) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503035	SWML5(A) B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502981	SWML7(A) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503032	SWML5(A) A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502962	SWML4 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28502971	SWML3 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503120	S3 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503075	S1 B		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503116	S3 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
	28503069	S1 A		0.00 - 0.00	Digitube for PFAS analysis.	SW
28503021	R2 B		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503012	R1 B		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503015	R2 A		0.00 - 0.00	Digitube for PFAS analysis.	SW	
28503008	R1 A		0.00 - 0.00	Digitube for PFAS analysis.	SW	
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 62				

28503135	WAD Stream B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503132	WAD Stream A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28503004	SWML7(B) B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		C1 A	C-2A (A)	C-2A (B)	C1 B	C-2B (A)	C-2B (B)
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received
	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)
(F)	Trigger breach confirmed		AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference
1-4*	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	3.84	34.4	32.3	3.61	15.2	14.9	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	3.42	73.1	69.9	2.24	32	33.5	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	1	<1	<1	1.05	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	1.64	24.5	22.6	1.87	13.1	14.2	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	1.33	13.3	12.3	1.32	6.09	6.55	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	2.98	2.67	<1	<1	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.26	8.19	6.83	1.3	3.27	3.25	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	<1	2.21	2.53	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	1.87	1.55	<1	<1	1.04	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.916	0.985	<0.65	0.966	1.05	1.09	#	#
Branched PFOS	<0.65 ng/l	TM434	0.784	<0.65	<0.65	0.769	1.31	1.48	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	C1 A	C-2A (A)	C-2A (B)	C1 B	C-2B (A)	C-2B (B)
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28503044	28503079	28503084	28503049	28503094	28503094	28503103
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUn _D S (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	1.7	0.985	<0.65	1.74	2.37	2.57	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	28502879	28502974	28503057	28503138	28503147	28502886
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)						
(F) Trigger breach confirmed			AGS Reference	AGS Reference						
1-4*@\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	184	5.57	<2	90.8	4.88	30.7	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	979	19.2	<1	582	4.97	106	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	1.14	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	15.9	<1	<1	2.08	1.02	1.89	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	468	8.1	<1	302	3.32	46.1	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	198	4.15	<1	84.8	3.9	14.3	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	13.6	<1	<1	2.15	<1	1.56	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	664	45.3	<1	15.1	<1	13.6	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	17.5	<1	<1	1.84	<1	1.33	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	157	3.62	<0.85	8.15	1.11	3.94	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	103	6.79	<1	16	2.88	8.62	#	#
PFNA (375-95-1)	<1 ng/l	TM434	16.5	<1	<1	<1	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	1.2	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	93.3	<2	<2	<2	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	58.7	3.71	<0.65	0.862	<0.65	1.27	#	#
Branched PFOS	<0.65 ng/l	TM434	18.4	4.09	<0.65	0.751	<0.65	6.09	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW11 A	GW12 A	GW13 A	GW14 A	GW15 A	GW16 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
dis.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502879	28502974	28503057	28503138	28503147	28503147	28502886
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	28.8	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	77.1	7.8	<0.65	1.61	<0.65	7.35	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	SDG Ref	28502895	28503026	28502989	28502924	28503018	28503126
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	Lab Sample No.(s)						
(F)	Trigger breach confirmed		AGS Reference	AGS Reference						
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	13.1	<2	<2	323	5.46	<2	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	7.97	<1	<1	2010	17.1	<1	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	1.57	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	24.3	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	4.39	<1	<1	886	7.26	<1	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.91	<1	<1	370	3.27	<1	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	16.6	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<1	1230	6.48	<1	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	24.4	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.49	<0.65	<0.65	223	1.39	<0.65	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	<1	126	3.79	<1	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	25	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	2.08	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	128	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	2.11	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.42	<0.65	<0.65	75.6	1.83	<0.65	#	#
Branched PFOS	<0.65 ng/l	TM434	1.01	<0.65	<0.65	26.1	2.04	<0.65	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502895	28503026	28502989	28502924	28503018	28503018	28503126
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	48	<1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434				8360			#
Total PFOS	<0.65 ng/l	TM434	2.44	<0.65	<0.65	102	3.87	<0.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Ground Water (GW)						
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	15/08/2023	15/08/2023	15/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.			230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
	Subcontracted - refer to subcontractor report for accreditation status.			28503143	28502883	28502891	28502900	28503029	28502995	28502995
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4**	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	122	4.33	22.1	12.1	<2	<2		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	987	4.34	68.9	7.82	<1	<1		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	2.66	<1	1.74	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	457	5.98	33.6	4.41	<1	<1		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	121	3.28	11	3.56	<1	<1		
PFPeS (2706-91-4)	<1 ng/l	TM434	2.56	<1	1.26	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	20.5	<1	10.8	<1	<1	<1		
FBSA (30334-69-1)	<1 ng/l	TM434	1.35	<1	1.5	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	12.2	2.03	2.75	2.31	<0.65	<0.65		
PFHxS (355-46-4)	<1 ng/l	TM434	7.58	3.35	13.9	<1	<1	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	1.87	0.885	<0.65	<0.65		
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	3.55	0.759	<0.65	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GW14 B	GW15 B	GW16 B	GW17 B	GW18 B	GW19 B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 15/08/2023	0.00 - 0.00 Ground Water (GW) 15/08/2023
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	5.42	1.64	<0.65	<0.65	<0.65
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	28502904	28502908	28503123	28503129	28503052	28503063
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)						
(F) Trigger breach confirmed			AGS Reference	AGS Reference						
1-4*@\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	4.04	5.93	27.6	25.9	6.01	5.48	#	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	2.76	3.7	76.4	75.9	9.93	12.4	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	1.16	2.2	2.08	<1	<1	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	<1	1.87	35.6	34.7	5.5	6.86	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	1.18	1.43	20.1	20.3	2.93	2.78	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	1.47	1.35	<1	<1	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	12.4	12.3	1.18	1.19	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	1.27	1.06	<1	<1	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	0.915	1.33	15.6	14.7	2.27	2.15	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	16.3	12	1.23	1.29	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	3.69	3.8	<1	<1	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	8.19	5.37	2.32	2.62	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	4.4	4.11	<2	<2	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	9.41	7.1	<0.65	0.652	#	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	7.02	7.96	0.882	0.718	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Ground Water (GW) 16/08/2023	0.00 - 0.00 Surface Water (SW) 16/08/2023			
M	mCERTS accredited.			18/08/2023 230818-142 28502904	18/08/2023 230818-142 28502908	18/08/2023 230818-142 28503123	18/08/2023 230818-142 28503129	18/08/2023 230818-142 28503052	18/08/2023 230818-142 28503063
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	2.25	1.93	<1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	16.4	15.1	0.882	1.37	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		P2 A	P3 A	P4 A	P7 A	P8 A	P2 B				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	15/08/2023	15/08/2023	16/08/2023	15/08/2023	15/08/2023	15/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28502911	28502920	28503038	28502930	28502945	28502917				
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
(F)	Trigger breach confirmed													
1-4	Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	20.2	#	10.4	#	12.3	#	21	#	7.29	#	26.9	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	47.6	#	20.5	#	30.3	#	16.4	#	23.6	#	63.5	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.02	#	1.06	#	1.17	#	<1	#	1.09	#	1.04	#
PFHxA (307-24-4)	<1 ng/l	TM434	21	#	9.58	#	13.7	#	7.37	#	11.3	#	25.7	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	6.85	#	4.15	#	7.2	#	3.84	#	4.11	#	9.43	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	1.39	#	<1	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.3	#	1.82	#	4.3	#	1.5	#	2.24	#	3.29	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	2.17	#	5.52	#	1.21	#	1.64	#	1.08	#
PFNA (375-95-1)	<1 ng/l	TM434	1.01	#	<1	#	<1	#	<1	#	1.06	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.7	#	0.728	#	1.45	#	<0.65	#	1.2	#	0.757	#
Branched PFOS	<0.65 ng/l	TM434	1.18	#	1.67	#	1.27	#	<0.65	#	1.16	#	0.989	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	P2 A	P3 A	P4 A	P7 A	P8 A	P2 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			15/08/2023	15/08/2023	16/08/2023	15/08/2023	15/08/2023	15/08/2023
diss.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502911	28502920	28503038	28502930	28502945	28502945	28502917
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	1.88	2.4	2.72	<0.65	2.36	1.75	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		P3 B	P4 B	P7 B	P8 B	R1 A	R2 A				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled				
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time	Sample Time				
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received	Date Received				
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)				
(F) Trigger breach confirmed			AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference				
1-4*\$@Sample deviation (see appendix)														
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	10.4	#	15.5	#	21.9	#	6.76	#	13.3	#	13.2	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	22.2	#	42.1	#	18.5	#	24.4	#	42.5	#	46.2	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.06	#	1.11	#	<1	#	1.09	#	<1	#	1.08	#
PFHxA (307-24-4)	<1 ng/l	TM434	11.5	#	16	#	6.56	#	12.2	#	19.6	#	18.8	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	4.43	#	8.32	#	4.21	#	5.17	#	7.27	#	10.6	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	1.34	#	1.21	#	<1	#	3.38	#	1.89	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.67	#	5.25	#	1.82	#	2.65	#	4.67	#	5.55	#
PFHxS (355-46-4)	<1 ng/l	TM434	3.53	#	2.76	#	1.06	#	1.55	#	3.18	#	1.83	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	1.19	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	2.13	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.812	#	1.31	#	0.787	#	1.06	#	2.28	#	1.54	#
Branched PFOS	<0.65 ng/l	TM434	1.6	#	0.942	#	<0.65	#	1.16	#	2.45	#	1.45	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	P3 B	P4 B	P7 B	P8 B	R1 A	R2 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			15/08/2023	16/08/2023	15/08/2023	15/08/2023	16/08/2023	16/08/2023
dis.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28502927	28503041	28502937	28502949	28503008	28503015	28503015
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	2.41	2.25	0.787	2.22	4.73	2.99	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		R1 B	R2 B	S1 A	S3 A	S1 B	S3 B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Sampled	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	Sample Time	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Date Received	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status.			SDG Ref	SDG Ref	28503012	28503021	28503069	28503116	28503075	28503120
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			Lab Sample No.(s)	Lab Sample No.(s)						
(F) Trigger breach confirmed			AGS Reference	AGS Reference						
1-4*@\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	12.9	12.3	<4	4.33	4.63	4.77		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	40.3	44.8	<1	3.18	<1	2.76		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	1.11	1.15	<1	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	17	22.2	<1	1.57	<1	1.53		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	6.88	11.2	<1	1.25	<1	1.18		
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	2.66	2.45	<1	<1	<1	1.05		
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	3.78	4.6	<0.85	1.1	<0.65	1.1		
PFHxS (355-46-4)	<1 ng/l	TM434	5.6	2.99	<1	<1	<1	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	2.15	1.86	<0.65	<0.65	<0.65	<0.65		
Branched PFOS	<0.65 ng/l	TM434	2.12	1.97	<0.65	<0.65	<0.65	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	R1 B	R2 B	S1 A	S3 A	S1 B	S3 B
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
dis.filt	Dissolved / filtered sample.			18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
*	Subcontracted - refer to subcontractor report for accreditation status.		28503012	28503021	28503069	28503116	28503075	28503120	28503120
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUn _d S (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
Total PFOS	<0.65 ng/l	TM434	4.28	3.83	<0.65	<0.65	<0.65	<0.65	<0.65
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.				Surface Water (SW)					
aq	Aqueous / settled sample.		Date Sampled	Date Received	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	230818-142	230818-142	230818-142	230818-142	230818-142	230818-142
* Subcontracted - refer to subcontractor report for accreditation status.			AGS Reference		28502971	28502962	28503032	28502981	28503035	28502984
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery										
(F) Trigger breach confirmed										
1-4*§@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	<10	13.9	17	2.71	14.8	3.31		
			◆ #	#	#	#	#	#	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	26.7	44.3	41.2	3.76	39.5	3.88		
			◆ #	#	#	#	#	#	#	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<15	<3	<3	<3	<3	<3	<3	<3
			◆ #	#	#	#	#	#	#	#
PFBS (375-73-5)	<1 ng/l	TM434	<5	<1	1.53	<1	1.22	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFHxA (307-24-4)	<1 ng/l	TM434	12.1	20.3	20.7	2.14	19.9	2.31		
			◆ #	#	#	#	#	#	#	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.04	9.8	9.44	<1	10.3	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<25	<5	<5	<5	<5	<5	<5	<5
			◆ #	#	#	#	#	#	#	#
ADONA (919005-14-4)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	5.89	1.85	24.7	<1	24.3	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
FBSA (30334-69-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFOA (335-67-1)	<0.65 ng/l	TM434	5.63	4.84	6.09	0.727	7.45	0.854		
			◆ #	#	#	#	#	#	#	#
PFHxS (355-46-4)	<1 ng/l	TM434	5.63	3.49	7.04	<1	6.8	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFNA (375-95-1)	<1 ng/l	TM434	<5	<1	1.15	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<5	<1	1.42	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFHpS (375-92-8)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<10	<2	2.31	<2	2.26	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<25	<5	<5	<5	<5	<5	<5	<5
			◆ #	#	#	#	#	#	#	#
PFDA (335-76-2)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<25	<5	<5	<5	<5	<5	<5	<5
			◆ #	#	#	#	#	#	#	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<3.25	1.52	3.62	<0.65	3.72	<0.65	<0.65	<0.65
			◆ #	#	#	#	#	#	#	#
Branched PFOS	<0.65 ng/l	TM434	<3.25	1.94	2.62	<0.65	2.43	<0.65	<0.65	<0.65
			◆ #	#	#	#	#	#	#	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#
PFNS (68259-12-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 16/08/2023					
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<15	<3	<3	<3	<3	<3	<3
			◆ #	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<10	<2	<2	<2	<2	<2	<2
			◆ #	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<50	<10	<10	<10	<10	<10	<10
			◆ #	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<50	<10	<10	<10	<10	<10	<10
			◆ #	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<5	<1	<1	<1	<1	<1	<1
			◆ #	#	#	#	#	#	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<50						
			◆						
Total PFOS	<0.65 ng/l	TM434	<3.25	3.47	6.24	<0.65	6.15	<0.65	
			◆ #	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B				
#	ISO17025 accredited.		Depth (m)		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.		Sample Type		Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled		16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023				
diss.filt	Dissolved / filtered sample.		Sample Time											
tot.unfilt	Total / unfiltered sample.		Date Received		18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023				
	* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref		230818-142	230818-142	230818-142	230818-142	230818-142	230818-142				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)		28502977	28502965	28502953	28502999	28502958	28503004				
	(F) Trigger breach confirmed		AGS Reference											
	1-4*§@Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	10.2	#	13.3	#	40.3	#	6.32	#	64.4	#	2.76	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	21.3	#	45.2	#	41.1	#	4.73	#	62.1	#	1.86	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	1.08	#	3.45	#	<1	#	5.25	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	10	#	21.4	#	27.1	#	3.03	#	39	#	<1	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	3.97	#	8.99	#	12.6	#	1.6	#	18.6	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	2.11	#	<1	#	2.46	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	1.43	#	1.74	#	17.9	#	<1	#	24.2	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	2.02	#	<1	#	2.16	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	2.43	#	4.32	#	12.9	#	1.95	#	18.5	#	1.05	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.48	#	2.03	#	27	#	<1	#	27.4	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	1.18	#	3.96	#	1.09	#	4.87	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	6.81	#	<1	#	18.1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	4.82	#	<2	#	5.96	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	2.14	#	1.39	#	18.9	#	0.872	#	22.2	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	0.815	#	1.54	#	10.1	#	1.1	#	14.6	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502977	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502965	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502953	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502999	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28502958	0.00 - 0.00 Surface Water (SW) 16/08/2023 18/08/2023 230818-142 28503004
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	2.77	<1	3.1	<1	<1
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFUn _D S (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
Total PFOS	<0.65 ng/l	TM434	2.96	2.92	29.1	1.97	36.8	<0.65	<0.65



CERTIFICATE OF ANALYSIS

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SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	WAD Stream A	WAD Stream B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		16/08/2023	16/08/2023			
diss.filt	Dissolved / filtered sample.		18/08/2023	18/08/2023			
tot.unfilt	Total / unfiltered sample.		230818-142	230818-142			
	* Subcontracted - refer to subcontractor report for accreditation status.		28503132	28503135			
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
	(F) Trigger breach confirmed						
	1-4*\$@Sample deviation (see appendix)						
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	<6	8.91	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	16.1	18.7	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	1.78	1.88	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	7.13	9.75	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	3.32	4	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	2.52	2.92	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	2.15	<2	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	1.33	1.18	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.41	1.59	#	#	
Branched PFOS	<0.65 ng/l	TM434	1.01	1.25	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28503044	28503049	28503079	28503084	28503094	28503103	28502879	28502974	28503057	28503138
Customer Sample Ref.	C1 A	C1 B	C-2A (A)	C-2A (B)	C-2B (A)	C-2B (B)	GW11 A	GW12 A	GW13 A	GW14 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023	29-Aug-2023	29-Aug-2023	29-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	29-Aug-2023	24-Aug-2023

Lab Sample No(s)	28503147	28502886	28502895	28503026	28502989	28502924	28503018	28503126	28503143	28502883
Customer Sample Ref.	GW15 A	GW16 A	GW17 A	GW18 A	GW19 A	GW11 B	GW12 B	GW13 B	GW14 B	GW15 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	24-Aug-2023	29-Aug-2023	25-Aug-2023	29-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023

Lab Sample No(s)	28502891	28502900	28503029	28502995	28502904	28502908	28503123	28503129	28503052	28503063
Customer Sample Ref.	GW16 B	GW17 B	GW18 B	GW19 B	GWMP5 A	GWMP5 B	K Stream A	K Stream B	M5 A	M5 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	24-Aug-2023	29-Aug-2023	29-Aug-2023	25-Aug-2023	24-Aug-2023	29-Aug-2023	23-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023

Lab Sample No(s)	28502911	28502920	28503038	28502930	28502945	28502917	28502927	28503041	28502937	28502949
Customer Sample Ref.	P2 A	P3 A	P4 A	P7 A	P8 A	P2 B	P3 B	P4 B	P7 B	P8 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	25-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023

Lab Sample No(s)	28503008	28503015	28503012	28503021	28503069	28503116	28503075	28503120	28502971	28502962
Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	S1 A	S3 A	S1 B	S3 B	SWML3 A	SWML4 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	24-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	29-Aug-2023	25-Aug-2023	25-Aug-2023	25-Aug-2023	01-Sep-2023	24-Aug-2023

Lab Sample No(s)	28502977	28502965	28503032	28502981	28503035	28502984	28502953	28502999	28502958	28503004
Customer Sample Ref.	SWML3 B	SWML4 B	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B	SWML5(B) A	SWML7(B) A	SWML5(B) B	SWML7(B) B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	29-Aug-2023	25-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	24-Aug-2023	25-Aug-2023	25-Aug-2023	25-Aug-2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230818-142
Client Ref.: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Lab Sample No(s)	28503132	28503135
Customer Sample Ref.	WAD Stream A	WAD Stream B
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	23-Aug-2023	29-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230818-142
Client Ref: P21-195

Report Number: 702250
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
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Dublin
DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 December 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-136
Your Reference: P21-195
Location: Dublin Airport
Report No: 713028
Order Number: Z4209

We received 32 samples on Friday November 24, 2023 and 32 of these samples were scheduled for analysis which was completed on Friday December 01, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997614	SL1-A		0.00 - 0.00	21/11/2023
28997621	SL2-A		0.00 - 0.00	21/11/2023
28997637	SL3-A		0.00 - 0.00	21/11/2023
28997647	SL4-A		0.00 - 0.00	21/11/2023
28997599	SL5-A		0.00 - 0.00	21/11/2023
28997586	SL6-A		0.00 - 0.00	21/11/2023
28997580	SL7-A		0.00 - 0.00	21/11/2023
28997574	SL8-A		0.00 - 0.00	21/11/2023
28997564	SL9-A		0.00 - 0.00	21/11/2023
28997553	SL10-A		0.00 - 0.00	21/11/2023
28997641	SL11-A		0.00 - 0.00	21/11/2023
28997659	SL12-A		0.00 - 0.00	21/11/2023
28997664	SL13-A		0.00 - 0.00	21/11/2023
28997671	SL14-A		0.00 - 0.00	21/11/2023
28997677	SL15-A		0.00 - 0.00	21/11/2023
28997617	SL1-B		0.00 - 0.00	21/11/2023
28997632	SL2-B		0.00 - 0.00	21/11/2023
28997644	SL3-B		0.00 - 0.00	21/11/2023
28997650	SL4-B		0.00 - 0.00	21/11/2023
28997592	SL5-B		0.00 - 0.00	21/11/2023
28997583	SL6-B		0.00 - 0.00	21/11/2023
28997577	SL7-B		0.00 - 0.00	21/11/2023
28997569	SL8-B		0.00 - 0.00	21/11/2023
28997561	SL9-B		0.00 - 0.00	21/11/2023
28997596	SL10-B		0.00 - 0.00	21/11/2023
28997652	SL11-B		0.00 - 0.00	21/11/2023
28997610	SL12-B		0.00 - 0.00	21/11/2023
28997607	SL13-B		0.00 - 0.00	21/11/2023
28997604	SL14-B		0.00 - 0.00	21/11/2023
28997556	SL15-B		0.00 - 0.00	21/11/2023
28997655	SWFB		0.00 - 0.00	21/11/2023
28997602	SWTB		0.00 - 0.00	21/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water</p> <p>Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	28997650	SL4-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997644	SL3-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997632	SL2-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997617	SL1-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997677	SL15-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997671	SL14-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997664	SL13-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997659	SL12-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997641	SL11-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997553	SL10-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997564	SL9-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997574	SL8-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997580	SL7-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997586	SL6-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997599	SL5-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
	28997647	SL4-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW
28997637	SL3-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	
28997621	SL2-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	
28997614	SL1-A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 32				

28997602	SWTB		0.00 - 0.00	500ml Plastic (ALE208)	SW	X
28997655	SWFB		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997556	SL15-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997604	SL14-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997607	SL13-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997610	SL12-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997652	SL11-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997596	SL10-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997561	SL9-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997569	SL8-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997577	SL7-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997583	SL6-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997592	SL5-B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.			231124-136	231124-136	231124-136	231124-136	231124-136	231124-136	231124-136
*	Subcontracted - refer to subcontractor report for accreditation status.			28997614	28997621	28997637	28997647	28997599	28997586	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*\$	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	6.35	7.87	10.3	20.1	5.88	11		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	10.2	16.7	28.8	38.2	8.61	19		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	1.31		
PFHxA (307-24-4)	<1 ng/l	TM434	4.84	8.24	17.9	17	4.24	12		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	2.27	4	7.68	7.61	1.77	4.34		
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	3.13	33	<1	<1	3.56		
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	1.23	2.03	4.83	2.33	1.45	2.86		
PFHxS (355-46-4)	<1 ng/l	TM434	<1	1.91	7.6	2.04	<1	2.27		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	6.25	<1	<1	1.33		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	4.12	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.686	1.7	7.15	<0.65	<0.65	1.91		
Branched PFOS	<0.65 ng/l	TM434	<0.65	1.5	6.52	1.15	0.773	1.89		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL7-A	SL8-A	SL9-A	SL10-A	SL11-A	SL12-A		
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.				Surface Water (SW)							
aq	Aqueous / settled sample.		Date Sampled	Date Received	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023		
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	231124-136	24/11/2023	231124-136	24/11/2023	231124-136		
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	24/11/2023	231124-136	24/11/2023	231124-136	24/11/2023	231124-136		
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997580	28997574	28997564	28997553	28997641	28997659		
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
(F)	Trigger breach confirmed											
1-4	@Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	12.1	#	4.42	#	4.04	#	5.48	#	3.46	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	30.8	#	3.41	#	2.38	#	8.64	#	1.98	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.17	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	17.3	#	2.31	#	1.86	#	4.28	#	9.86	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.06	#	<1	#	<1	#	2.35	#	3.41	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	31.5	#	<1	#	<1	#	<1	#	3.2	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.01	#	1.13	#	1.09	#	1.67	#	2.09	#
PFHxS (355-46-4)	<1 ng/l	TM434	6.61	#	<1	#	<1	#	<1	#	1.33	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	5.16	#	<1	#	<1	#	<1	#	1.18	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	3.23	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	5.61	#	<0.65	#	<0.65	#	1.7	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	5.64	#	<0.65	#	<0.65	#	1.75	#	0.996	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-136	231124-136	231124-136	231124-136	231124-136	231124-136				
	* Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997664	28997671	28997677	28997617	28997632	28997644				
	** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
	(F) Trigger breach confirmed													
	1-4* @ Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	9.81	#	5.89	#	7.26	#	6.93	#	8.45	#	12.1	#
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	27.4	#	4.96	#	12.4	#	10.9	#	16.9	#	26.7	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	1.02	#	1.2	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	14.8	#	3.18	#	7.55	#	5.86	#	8.71	#	16	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	6.31	#	1.33	#	2.48	#	1.96	#	3.65	#	6.64	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	19.6	#	<1	#	1.38	#	<1	#	3.5	#	31.6	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	3.6	#	1.8	#	1.68	#	1.38	#	2.15	#	5.05	#
PFHxS (355-46-4)	<1 ng/l	TM434	4.91	#	<1	#	<1	#	1.04	#	1.99	#	7.21	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	3.94	#	<1	#	<1	#	<1	#	<1	#	6.28	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	4.38	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	3.61	#	<0.65	#	<0.65	#	<0.65	#	1.96	#	6.95	#
Branched PFOS	<0.65 ng/l	TM434	3.9	#	0.7	#	<0.65	#	0.666	#	1.64	#	5.82	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997664	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997671	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997677	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997617	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997632	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997644
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	29.7	<10	<10	<10	<10	26.8	37.4
Total PFOS	<0.65 ng/l	TM434	7.5	0.7	<0.65	0.666	3.6	12.8	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SL4-B	SL5-B	SL6-B	SL7-B	SL8-B	SL9-B				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-136	231124-136	231124-136	231124-136	231124-136	231124-136				
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997650	28997592	28997583	28997577	28997569	28997561				
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
(F)	Trigger breach confirmed													
1-4	@Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	18.7	#	5.41	#	7.9	#	10	#	5.06	#	3.28	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	35.9	#	8.2	#	16.5	#	28.8	#	3.81	#	2.07	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	1.35	#	1.13	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	15.8	#	4.2	#	10.5	#	14.1	#	2.61	#	1.78	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.17	#	1.83	#	4.02	#	6.81	#	<1	#	<1	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	<1	#	3.3	#	29	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.99	#	1.05	#	2.19	#	3.46	#	1.58	#	1.1	#
PFHxS (355-46-4)	<1 ng/l	TM434	1.75	#	<1	#	2.04	#	6.18	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	1.18	#	4.46	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	3.06	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#	1.57	#	4.62	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	1.1	#	<0.65	#	1.67	#	4.75	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.			231124-136	231124-136	231124-136	231124-136	231124-136	231124-136	231124-136
	Subcontracted - refer to subcontractor report for accreditation status.			28997596	28997652	28997610	28997607	28997604	28997556	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	4.97	9.18	3.53	10.9	6.11	7.3		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	7.77	17.8	2.44	28	4.42	14.7		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	3.69	9.59	1.84	14.3	3.02	7.38		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	1.63	3.05	<1	6.72	<1	2.46		
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	3.35	<1	20.2	<1	1.49		
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	1.36	1.79	<0.65	3.32	1.9	1.76		
PFHxS (355-46-4)	<1 ng/l	TM434	<1	1.28	<1	5.18	<1	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	1.16	<1	4.26	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	0.83	0.678	<0.65	3.76	<0.65	<0.65		
Branched PFOS	<0.65 ng/l	TM434	0.875	1.14	<0.65	4.56	0.791	0.836		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997596	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997652	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997610	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997607	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997604	0.00 - 0.00 Surface Water (SW) 21/11/2023 24/11/2023 231124-136 28997556
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10	<10	31.4	<10	<10	<10
Total PFOS	<0.65 ng/l	TM434	1.7	1.81	<0.65	8.33	0.791	0.836	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	SWFB	SWTB			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		21/11/2023	21/11/2023			
diss.filt	Dissolved / filtered sample.		24/11/2023	24/11/2023			
tot.unfilt	Total / unfiltered sample.		231124-136	231124-136			
*	Subcontracted - refer to subcontractor report for accreditation status.		28997655	28997602			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$	Sample deviation (see appendix)						
Component	LOD/Units		Method				
PFBA (375-22-4)	<2 ng/l	TM434	<2	<2	#	2 #	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	2 #	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	2 #	
PFPA (2706-90-3)	<1 ng/l	TM434	<1	<1	#	2 #	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	2 #	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	2 #	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	2 #	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHxA (307-24-4)	<1 ng/l	TM434	<1	<1	#	2 #	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	2 #	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<1	#	2 #	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	2 #	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	2 #	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	2 #	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	2 #	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	#	2 #	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	2 #	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	2 #	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	2 #	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	2 #	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	2 #	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	2 #	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	2 #	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	2 #	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	2 #	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	2 #	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	2 #	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	SWFB	SWTB					
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00					
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)					
aq	Aqueous / settled sample.			21/11/2023	21/11/2023					
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.			24/11/2023	24/11/2023					
*	Subcontracted - refer to subcontractor report for accreditation status.			231124-136	231124-136					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			28997655	28997602					
(F)	Trigger breach confirmed									
1-4*	Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	#	2 #				
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	#	2 #				
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	#	2 #				
PFTTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	#	2 #				
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	#	2 #				
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	#	2 #				
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	#	2 #				
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	#	2 #				
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	#	2 #				
PFTTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	#	2 #				
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	#	2 #				
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	#	2 #				
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	#	2 #				
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	#	2 #				
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	#	2 #				
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	#	2 #				
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10		2				
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	#	2 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-136
Client Ref.: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

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SDG: 231124-136
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Location: Dublin Airport

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Test Completion Dates

Lab Sample No(s)	28997614	28997621	28997637	28997647	28997599	28997586	28997580	28997574	28997564	28997553
Customer Sample Ref.	SL1-A	SL2-A	SL3-A	SL4-A	SL5-A	SL6-A	SL7-A	SL8-A	SL9-A	SL10-A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	01-Dec-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023

Lab Sample No(s)	28997641	28997659	28997664	28997671	28997677	28997617	28997632	28997644	28997650	28997592
Customer Sample Ref.	SL11-A	SL12-A	SL13-A	SL14-A	SL15-A	SL1-B	SL2-B	SL3-B	SL4-B	SL5-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	30-Nov-2023	01-Dec-2023	01-Dec-2023	30-Nov-2023	01-Dec-2023	30-Nov-2023	30-Nov-2023	01-Dec-2023	01-Dec-2023	01-Dec-2023

Lab Sample No(s)	28997583	28997577	28997569	28997561	28997596	28997652	28997610	28997607	28997604	28997556
Customer Sample Ref.	SL6-B	SL7-B	SL8-B	SL9-B	SL10-B	SL11-B	SL12-B	SL13-B	SL14-B	SL15-B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	30-Nov-2023	01-Dec-2023	01-Dec-2023	30-Nov-2023	01-Dec-2023

Lab Sample No(s)	28997655	28997602
Customer Sample Ref.	SWFB	SWTB
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water
PFAS Liquids (Full Suite)	30-Nov-2023	30-Nov-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-136
Client Ref: P21-195

Report Number: 713028
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
Unit 3/4
Northwood House
Northwood Crescent
Northwood
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Dublin
DO9 X899

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 December 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 231124-141
Your Reference: P21-195
Location: Dublin Airport
Report No: 713475
Order Number: Z4209

We received 44 samples on Friday November 24, 2023 and 44 of these samples were scheduled for analysis which was completed on Wednesday December 06, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28997908	C1 A		0.00 - 0.00	22/11/2023
28997946	C-2A (A)		0.00 - 0.00	22/11/2023
28997801	C-2A (B)		0.00 - 0.00	22/11/2023
28997912	C1 B		0.00 - 0.00	22/11/2023
28997804	C-2B (A)		0.00 - 0.00	22/11/2023
28997817	C-2B (B)		0.00 - 0.00	22/11/2023
28997795	GWMP5 A		0.00 - 0.00	22/11/2023
28997791	GWMP5 B		0.00 - 0.00	22/11/2023
28997834	K Stream A		0.00 - 0.00	22/11/2023
28997837	K Stream B		0.00 - 0.00	22/11/2023
28997960	M1 (A)		0.00 - 0.00	23/11/2023
28997916	M5 A		0.00 - 0.00	22/11/2023
28997968	M1(B)		0.00 - 0.00	23/11/2023
28997919	M5 B		0.00 - 0.00	22/11/2023
28997786	P2 A		0.00 - 0.00	22/11/2023
28997765	P3 A		0.00 - 0.00	22/11/2023
28997901	P4 A		0.00 - 0.00	22/11/2023
28997870	P7 A		0.00 - 0.00	22/11/2023
28997977	P8 A		0.00 - 0.00	22/11/2023
28997782	P2 B		0.00 - 0.00	22/11/2023
28997811	P3 B		0.00 - 0.00	22/11/2023
28997904	P4 B		0.00 - 0.00	22/11/2023
28997923	P7 B		0.00 - 0.00	22/11/2023
28997984	P8 B		0.00 - 0.00	22/11/2023
28997857	R1 A		0.00 - 0.00	22/11/2023
28997878	R2 A		0.00 - 0.00	22/11/2023
28997864	R1 B		0.00 - 0.00	22/11/2023
28997885	R2 B		0.00 - 0.00	22/11/2023
28997930	S1 A		0.00 - 0.00	22/11/2023
28997821	S3 A		0.00 - 0.00	22/11/2023
28997935	S1 B		0.00 - 0.00	22/11/2023
28997830	S3 B		0.00 - 0.00	22/11/2023
28998005	SWML3 A		0.00 - 0.00	22/11/2023
28997992	SWML4 A		0.00 - 0.00	22/11/2023
28997891	SWML5(A) A		0.00 - 0.00	22/11/2023
28997773	SWML7(A) A		0.00 - 0.00	22/11/2023
28997898	SWML5(A) B		0.00 - 0.00	22/11/2023
28997777	SWML7(A) B		0.00 - 0.00	22/11/2023
28997768	SWML3 B		0.00 - 0.00	22/11/2023
28997999	SWML4 B		0.00 - 0.00	22/11/2023
28997798	SWML7(B) A		0.00 - 0.00	22/11/2023
28997850	SWML7(B) B		0.00 - 0.00	22/11/2023
28997842	WAD Stream A		0.00 - 0.00	22/11/2023
28997846	WAD Stream B		0.00 - 0.00	22/11/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
	X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	28997977 28997870 28997901 28997765 28997786 28997919 28997968 28997916 28997960 28997837 28997834 28997791 28997795 28997817 28997804 28997912 28997801 28997946 28997908	P8 A P7 A P4 A P3 A P2 A M5 B M1(B) M5 A M1 (A) K Stream B K Stream A GWMPS B GWMPS A C-2B (B) C-2B (A) C1 B C-2A (B) C-2A (A) C1 A		0.00 - 0.00 0.00 - 0.00	Digitube fo PFAS analysis. Digitube fo PFAS analysis.	SW SW
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 44					X X

28997999	SWML4 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997768	SWML3 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997777	SWML7(A) B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997898	SWML5(A) B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997773	SWML7(A) A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997891	SWML5(A) A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997992	SWML4 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28998005	SWML3 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997830	S3 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997935	S1 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997821	S3 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997930	S1 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997885	R2 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997864	R1 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997878	R2 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997857	R1 A		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997984	P8 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997923	P7 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997904	P4 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997811	P3 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X
28997782	P2 B		0.00 - 0.00	Digitube fo PFAS analysis.	SW	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend						
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	28997798	28997850	28997842	28997846	
	Customer Sample Reference	SWML7(B) A	SWML7(B) B	WAD Stream A	WAD Stream B	
	AGS Reference					
	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
	Container	Digitube for PFAS analysis.				
	Sample Type	SW	SW	SW	SW	
PFAS Liquids (Full Suite)	All	NDPs: 0 Tests: 44	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	C1 A	C-2A (A)	C-2A (B)	C1 B	C-2B (A)	C-2B (B)	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.			231124-141	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141
				28997908	28997946	28997801	28997912	28997804	28997817	
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*@\$@Sample deviation (see appendix)										
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	<4	18.1	6.12	<2	10.6	13.9		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	<1	13.7	8.18	<1	12.8	11		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<15	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	<1	7.67	4.33	<1	6.51	5.3		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	<1	<5	1.88	<1	3.06	3.01		
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<25	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65	<3.25	1.31	<0.65	1.85	1.92		
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<5	1.01	<1	<1	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<25	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<25	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<3.25	<0.65	<0.65	<0.65	<0.65		
Branched PFOS	<0.65 ng/l	TM434	<0.65	<3.25	<0.65	<0.65	<0.65	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<10	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<5	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		GWMP5 A	GWMP5 B	K Stream A	K Stream B	M1 (A)	M5 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 22/11/2023	0.00 - 0.00 Ground Water (GW) 22/11/2023	0.00 - 0.00 Surface Water (SW) 22/11/2023	0.00 - 0.00 Surface Water (SW) 22/11/2023	0.00 - 0.00 Surface Water (SW) 23/11/2023	0.00 - 0.00 Surface Water (SW) 23/11/2023	0.00 - 0.00 Surface Water (SW) 24/11/2023
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*\$	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434		5.97	9.45	34.6	53.1	11.1	6.15	
PFMOPrA (377-73-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
3:3 FTCA (356-02-5)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
PFPA (2706-90-3)	<1 ng/l	TM434		3	4.49	118	136	5.94	8.4	
PFMOBA (863090-89-5)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
4:2 FTS (757124-72-4)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
NFDHA (151772-58-6)	<3 ng/l	TM434		<3	<3	<3	<3	<3	<3	
PFBS (375-73-5)	<1 ng/l	TM434		<1	<1	2.41	2.6	<1	<1	
PFHxA (307-24-4)	<1 ng/l	TM434		2.25	1.87	57.5	55.4	4.13	3.74	
HFPO-DA (13252-13-6)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
PFEESA (113507-82-7)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
PFHpA (375-85-9)	<1 ng/l	TM434		<1	<1	27.5	37.1	2	2.05	
PFPeS (2706-91-4)	<1 ng/l	TM434		<1	<1	1.41	1.34	<1	<1	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434		<5	<5	30.2	23.3	<5	<5	
ADONA (919005-14-4)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
6:2 FTS (27619-97-2)	<1 ng/l	TM434		<1	<1	20.1	23	<1	<1	
FBSA (30334-69-1)	<1 ng/l	TM434		<1	<1	1.51	<1	<1	<1	
PFOA (335-67-1)	<0.65 ng/l	TM434		1.12	1.1	14.5	17.6	1.36	1.47	
PFHxS (355-46-4)	<1 ng/l	TM434		<1	<1	16.4	18.9	<1	<1	
PFNA (375-95-1)	<1 ng/l	TM434		<1	<1	6.15	7.98	<1	<1	
PFecHS (133201-07-7)	<1 ng/l	TM434		<1	<1	7.19	7.84	<1	1.3	
PFHpS (375-92-8)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
8:2 FTS (39108-34-4)	<2 ng/l	TM434		<2	<2	15.2	16.6	<2	<2	
HFPO-TA (13252-14-7)	<5 ng/l	TM434		<5	<5	<5	<5	<5	<5	
PFDA (335-76-2)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
MeFOSAA (2355-31-9)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
7:3 FTCA (812-70-4)	<5 ng/l	TM434		<5	<5	6.37	<5	<5	<5	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434		<0.65	<0.65	12.6	13.7	<0.65	<0.65	
Branched PFOS	<0.65 ng/l	TM434		<0.65	<0.65	16	14.6	<0.65	<0.65	
EtFOSAA (2991-50-6)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
PFUnA (2058-94-8)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	
PFNS (68259-12-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1	



CERTIFICATE OF ANALYSIS

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SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	GWMP5 A	GWMP5 B	K Stream A	K Stream B	M1 (A)	M5 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			22/11/2023	22/11/2023	22/11/2023	22/11/2023	23/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.		231124-141	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141
*	Subcontracted - refer to subcontractor report for accreditation status.		28997795	28997791	28997834	28997837	28997960	28997960	28997916
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4**@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	1.54	1.31	<1	<1	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10	118	105	<10	<10	#
Total PFOS	<0.65 ng/l	TM434	<0.65	<0.65	28.6	28.2	<0.65	<0.65	#



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Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	M1(B)	M5 B	P2 A	P3 A	P4 A	P7 A	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)						
aq	Aqueous / settled sample.			23/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.			231124-141	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141
*	Subcontracted - refer to subcontractor report for accreditation status.			28997968	28997919	28997786	28997765	28997901	28997870	28997870
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*	@Sample deviation (see appendix)									
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	5.29	14	31.9	19.1	14.7	28.8		
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434	4.55	8.35	72.9	35.6	41.4	35.9		
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	1.18	1.03	1.06	<1		
PFHxA (307-24-4)	<1 ng/l	TM434	3.63	5.71	37.6	17.7	18.3	15		
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434	1.33	2.43	12	7.19	10.2	6.35		
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	<1	<1	5.5	<1		
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434	1.26	2.11	3.19	1.98	4.31	1.76		
PFHxS (355-46-4)	<1 ng/l	TM434	<1	<1	1.7	2.5	2.33	<1		
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	1.59	<1	<1	<1	<1		
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	<0.65	<0.65	<0.65	1.27	<0.65		
Branched PFOS	<0.65 ng/l	TM434	<0.65	<0.65	1.08	0.956	1.61	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		P8 A	P2 B	P3 B	P4 B	P7 B	P8 B				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141				
* Subcontracted - refer to subcontractor report for accreditation status.			AGS Reference		28997977	2899782	28997811	28997904	28997923	28997984				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery														
(F) Trigger breach confirmed														
1-4*§@Sample deviation (see appendix)														
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	6.51	#	31.5	#	18.3	#	15.3	#	28.2	#	6.52	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	7.31	#	75.5	#	34.5	#	44.4	#	40.2	#	9.3	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	1.09	#	1.01	#	1.08	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	4.73	#	35.9	#	17.4	#	18.7	#	16.8	#	5.26	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	2.37	#	10.6	#	7.08	#	10.1	#	5.89	#	2.43	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	2.25	#	<1	#	<1	#	4.24	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	1.22	#	2.93	#	1.93	#	4.39	#	1.81	#	1.01	#
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	1.68	#	2.01	#	2.57	#	1.01	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	<0.65	#	<0.65	#	0.951	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	1.04	#	1.22	#	1.65	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		R1 A	R2 A	R1 B	R2 B	S1 A	S3 A				
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00				
M	mCERTS accredited.				Surface Water (SW)									
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023				
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023				
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141				
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997857	28997878	28997864	28997885	28997930	28997821				
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
(F)	Trigger breach confirmed													
1-4	Sample deviation (see appendix)													
Component	LOD/Units	Method												
PFBA (375-22-4)	<2 ng/l	TM434	13.8	#	12.5	#	14.1	#	11.6	#	12.3	#	4.01	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	46	#	29.9	#	46.4	#	27.9	#	<1	#	3.78	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	<1	#	<1	#	1.07	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	21.3	#	12.5	#	20.8	#	11.3	#	<1	#	2.43	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	7.08	#	9.89	#	6.76	#	7.37	#	<1	#	1.22	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	6.66	#	2.17	#	7.27	#	1.59	#	<1	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	1.03	#	<1	#	1.1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.11	#	4.02	#	4	#	3.7	#	1.17	#	0.954	#
PFHxS (355-46-4)	<1 ng/l	TM434	2.88	#	1.58	#	2.83	#	1.33	#	<1	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	1.67	#	<1	#	1.89	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	1.48	#	0.844	#	1.3	#	0.95	#	<0.65	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	1.78	#	0.825	#	1.63	#	0.677	#	<0.65	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	R1 A	R2 A	R1 B	R2 B	S1 A	S3 A
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
diss.filt	Dissolved / filtered sample.			24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023
tot.unfilt	Total / unfiltered sample.		231124-141	231124-141	231124-141	231124-141	231124-141	231124-141	231124-141
*	Subcontracted - refer to subcontractor report for accreditation status.		28997857	28997878	28997864	28997885	28997930	28997821	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4	@ Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#	#
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<2	<2	<2	<2	<2
			#	#	#	#	#	#	#
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<10	<10	<10	<10	<10
			#	#	#	#	#	#	#
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#	#
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	75.2	45.1	74.7	35.4	<10	<10	<10
Total PFOS	<0.65 ng/l	TM434	3.26	1.67	2.93	1.63	<0.65	<0.65	<0.65
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		S1 B	S3 B	SWML3 A	SWML4 A	SWML5(A) A	SWML7(A) A	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.00 - 0.00 Surface Water (SW) 22/11/2023						
M	mCERTS accredited.										
aq	Aqueous / settled sample.										
diss.filt	Dissolved / filtered sample.										
tot.unfilt	Total / unfiltered sample.										
*	Subcontracted - refer to subcontractor report for accreditation status.										
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery										
(F)	Trigger breach confirmed										
1-4*	@Sample deviation (see appendix)										
Component	LOD/Units	Method									
PFBA (375-22-4)	<2 ng/l	TM434		9.86	5.24	20.6	16.2	20	2.95		
PFMOPrA (377-73-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
3:3 FTCA (356-02-5)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
PFPA (2706-90-3)	<1 ng/l	TM434		<1	4.35	35.5	37.4	34.3	3.74		
PFMOBA (863090-89-5)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
4:2 FTS (757124-72-4)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
NFDHA (151772-58-6)	<3 ng/l	TM434		<3	<3	<3	<3	<3	<3		
PFBS (375-73-5)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
PFHxA (307-24-4)	<1 ng/l	TM434		<1	2.31	15.5	18.6	15.7	2.19		
HFPO-DA (13252-13-6)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
PFEESA (113507-82-7)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
PFHpA (375-85-9)	<1 ng/l	TM434		1.05	1.42	3.68	9.04	7.21	<1		
PFPeS (2706-91-4)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
5:3 FTCA (914637-49-3)	<5 ng/l	TM434		<5	<5	<5	<5	<5	<5		
ADONA (919005-14-4)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
6:2 FTS (27619-97-2)	<1 ng/l	TM434		<1	1.15	<1	4.65	6.56	<1		
FBSA (30334-69-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
PFOA (335-67-1)	<0.65 ng/l	TM434		0.972	1.17	<0.65	4	3.72	<0.65		
PFHxS (355-46-4)	<1 ng/l	TM434		<1	<1	1.54	2.27	2.62	<1		
PFNA (375-95-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
PFecHS (133201-07-7)	<1 ng/l	TM434		<1	<1	<1	<1	1.93	<1		
PFHpS (375-92-8)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
8:2 FTS (39108-34-4)	<2 ng/l	TM434		<2	<2	<2	<2	2.03	<2		
HFPO-TA (13252-14-7)	<5 ng/l	TM434		<5	<5	<5	<5	<5	<5		
PFDA (335-76-2)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
MeFOSAA (2355-31-9)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
7:3 FTCA (812-70-4)	<5 ng/l	TM434		<5	<5	<5	<5	<5	<5		
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434		<0.65	<0.65	<0.65	1.24	3.25	<0.65		
Branched PFOS	<0.65 ng/l	TM434		<0.65	<0.65	<0.65	1.21	2.27	<0.65		
EtFOSAA (2991-50-6)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
PFUnA (2058-94-8)	<2 ng/l	TM434		<2	<2	<2	<2	<2	<2		
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		
PFNS (68259-12-1)	<1 ng/l	TM434		<1	<1	<1	<1	<1	<1		



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.		SWML5(A) B	SWML7(A) B	SWML3 B	SWML4 B	SWML7(B) A	SWML7(B) B		
#	ISO17025 accredited.		Depth (m)	Sample Type	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.				Surface Water (SW)							
aq	Aqueous / settled sample.		Date Sampled	Date Received	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023		
diss.filt	Dissolved / filtered sample.		Sample Time	SDG Ref	24/11/2023	231124-141	24/11/2023	231124-141	24/11/2023	231124-141		
tot.unfilt	Total / unfiltered sample.		Date Received	Lab Sample No.(s)	24/11/2023	231124-141	24/11/2023	231124-141	24/11/2023	231124-141		
	Subcontracted - refer to subcontractor report for accreditation status.		AGS Reference		28997898	28997777	28997768	28997999	28997798	28997850		
	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
	(F) Trigger breach confirmed											
	1-4*@\$@Sample deviation (see appendix)											
Component	LOD/Units	Method										
PFBA (375-22-4)	<2 ng/l	TM434	17.5	#	4.83	#	17.8	#	14.1	#	3.06	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFPA (2706-90-3)	<1 ng/l	TM434	36.6	#	3.96	#	31.5	#	37	#	2.62	#
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	<3	#	<3	#	<3	#	<3	#
PFBS (375-73-5)	<1 ng/l	TM434	1.25	#	<1	#	<1	#	<1	#	<1	#
PFHxA (307-24-4)	<1 ng/l	TM434	18.5	#	1.98	#	11.8	#	16.3	#	1.96	#
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFHpA (375-85-9)	<1 ng/l	TM434	8.61	#	<1	#	3.14	#	9.06	#	1.22	#
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
6:2 FTS (27619-97-2)	<1 ng/l	TM434	7.47	#	<1	#	<1	#	3.8	#	<1	#
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFOA (335-67-1)	<0.65 ng/l	TM434	4.27	#	<0.65	#	<0.65	#	3.91	#	1.19	#
PFHxS (355-46-4)	<1 ng/l	TM434	3.29	#	<1	#	1.15	#	2.18	#	<1	#
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFecHS (133201-07-7)	<1 ng/l	TM434	2.17	#	<1	#	<1	#	<1	#	<1	#
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	<5	#	<5	#	<5	#	<5	#
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	3.56	#	<0.65	#	<0.65	#	1.07	#	<0.65	#
Branched PFOS	<0.65 ng/l	TM434	2.1	#	<0.65	#	<0.65	#	1.33	#	<0.65	#
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	<2	#	<2	#	<2	#	<2	#
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	<1	#	<1	#	<1	#	<1	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	WAD Stream A	WAD Stream B			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00			
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)			
aq	Aqueous / settled sample.		22/11/2023	22/11/2023			
diss.filt	Dissolved / filtered sample.		24/11/2023	24/11/2023			
tot.unfilt	Total / unfiltered sample.		231124-141	231124-141			
*	Subcontracted - refer to subcontractor report for accreditation status.		28997842	28997846			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*	Sample deviation (see appendix)						
Component	LOD/Units	Method					
PFBA (375-22-4)	<2 ng/l	TM434	4.39	4.84	#	#	
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1	<1	#	#	
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	<2	#	#	
PFPA (2706-90-3)	<1 ng/l	TM434	10.3	10.9	#	#	
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	<1	#	#	
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	<1	#	#	
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	<3	#	#	
PFBS (375-73-5)	<1 ng/l	TM434	<1	<1	#	#	
PFHxA (307-24-4)	<1 ng/l	TM434	4.57	4.82	#	#	
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	<2	#	#	
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpA (375-85-9)	<1 ng/l	TM434	2.01	1.7	#	#	
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	<1	#	#	
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	<5	#	#	
ADONA (919005-14-4)	<1 ng/l	TM434	<1	<1	#	#	
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	<1	#	#	
FBSA (30334-69-1)	<1 ng/l	TM434	<1	<1	#	#	
PFOA (335-67-1)	<0.65 ng/l	TM434	1.13	1.3	#	#	
PFHxS (355-46-4)	<1 ng/l	TM434	1.52	1.57	#	#	
PFNA (375-95-1)	<1 ng/l	TM434	<1	<1	#	#	
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	<1	#	#	
PFHpS (375-92-8)	<1 ng/l	TM434	<1	<1	#	#	
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	<2	#	#	
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	<5	#	#	
PFDA (335-76-2)	<2 ng/l	TM434	<2	<2	#	#	
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	<2	#	#	
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	<5	#	#	
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	0.776	#	#	
Branched PFOS	<0.65 ng/l	TM434	0.795	0.783	#	#	
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	<2	#	#	
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	<2	#	#	
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	<1	#	#	
PFNS (68259-12-1)	<1 ng/l	TM434	<1	<1	#	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Results Legend			Customer Sample Ref.	WAD Stream A	WAD Stream B					
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00					
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)					
aq	Aqueous / settled sample.			22/11/2023	22/11/2023					
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.			24/11/2023	24/11/2023					
*	Subcontracted - refer to subcontractor report for accreditation status.			231124-141	231124-141					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			28997842	28997842					
(F)	Trigger breach confirmed									
1-4*	Sample deviation (see appendix)									
Component	LOD/Units	Method								
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	#	#				
PFD _o A (307-55-1)	<2 ng/l	TM434	<2	<2	#	#				
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	#	#				
PFT _r DA (72629-94-8)	<3 ng/l	TM434	<3	<3	#	#				
11Cl-PF3OU _d S (763051-92-9)	<2 ng/l	TM434	<2	<2	#	#				
PFUn _d S (749786-16-1)	<2 ng/l	TM434	<2	<2	#	#				
PFT _e A (376-06-7)	<1 ng/l	TM434	<1	<1	#	#				
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	#	#				
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	#	#				
PFT _r DS (174675-49-1)	<1 ng/l	TM434	<1	<1	#	#				
PFH _x DA (67905-19-5)	<1 ng/l	TM434	<1	<1	#	#				
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	#	#				
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	#	#				
EiFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	#	#				
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	#	#				
N-EiFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	#	#				
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10						
Total PFOS	<0.65 ng/l	TM434	0.795	1.56	#	#				



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231124-141
Client Ref.: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28997908	28997912	28997946	28997801	28997804	28997817	28997795	28997791	28997834	28997837
Customer Sample Ref.	C1 A	C1 B	C-2A (A)	C-2A (B)	C-2B (A)	C-2B (B)	GWMP5 A	GWMP5 B	K Stream A	K Stream B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	05-Dec-2023	05-Dec-2023	06-Dec-2023	05-Dec-2023	05-Dec-2023	06-Dec-2023	06-Dec-2023	06-Dec-2023	04-Dec-2023	05-Dec-2023

Lab Sample No(s)	28997960	28997916	28997919	28997968	28997786	28997765	28997901	28997870	28997977	28997782
Customer Sample Ref.	M1 (A)	M5 A	M5 B	M1(B)	P2 A	P3 A	P4 A	P7 A	P8 A	P2 B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	06-Dec-2023	05-Dec-2023	05-Dec-2023	05-Dec-2023	04-Dec-2023	04-Dec-2023	04-Dec-2023	04-Dec-2023	04-Dec-2023	04-Dec-2023

Lab Sample No(s)	28997811	28997904	28997923	28997984	28997857	28997878	28997864	28997885	28997930	28997821
Customer Sample Ref.	P3 B	P4 B	P7 B	P8 B	R1 A	R2 A	R1 B	R2 B	S1 A	S3 A
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	04-Dec-2023	04-Dec-2023	05-Dec-2023	05-Dec-2023	04-Dec-2023	04-Dec-2023	04-Dec-2023	05-Dec-2023	05-Dec-2023	05-Dec-2023

Lab Sample No(s)	28997935	28997830	28998005	28997992	28997768	28997999	28997891	28997773	28997898	28997777
Customer Sample Ref.	S1 B	S3 B	SWML3 A	SWML4 A	SWML3 B	SWML4 B	SWML5(A) A	SWML7(A) A	SWML5(A) B	SWML7(A) B
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	06-Dec-2023	04-Dec-2023	05-Dec-2023	04-Dec-2023	05-Dec-2023	04-Dec-2023	05-Dec-2023	05-Dec-2023	04-Dec-2023	05-Dec-2023

Lab Sample No(s)	28997798	28997850	28997842	28997846
Customer Sample Ref.	SWML7(B) A	SWML7(B) B	WAD Stream A	WAD Stream B
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water
PFAS Liquids (Full Suite)	05-Dec-2023	04-Dec-2023	05-Dec-2023	05-Dec-2023



CERTIFICATE OF ANALYSIS

SDG: 231124-141
Client Ref: P21-195

Report Number: 713475
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

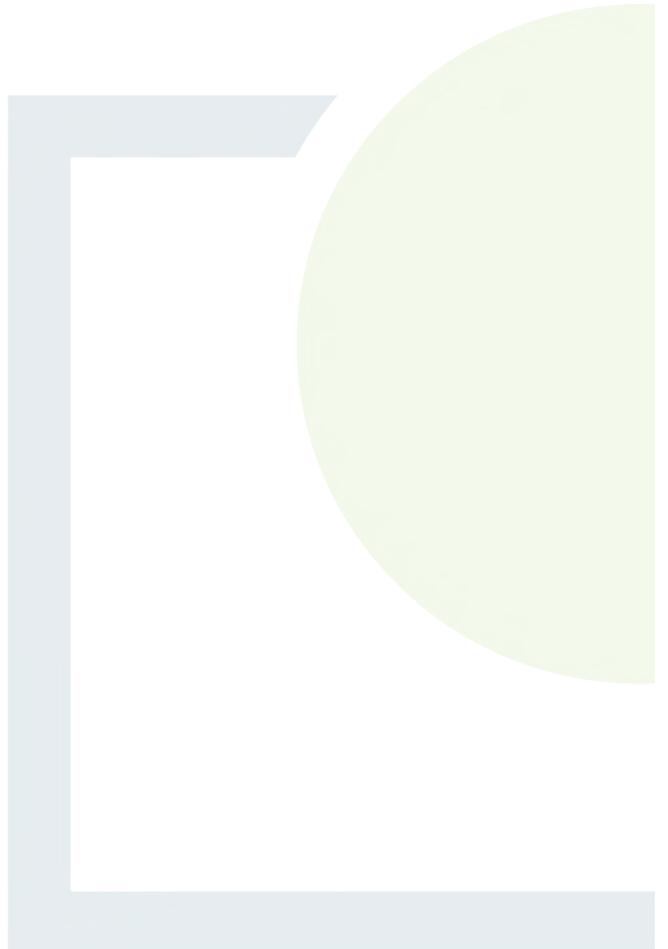
The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 7

Site Investigation Results



Departures

Dublin Airport Departures Road Project Monitoring Results (Soil)

Parameter	Unit	ST08			ST15		
		0.0-0.5m	0.5-1.0m	1.0-1.5m	0.0-0.5m	0.5-1.0m	1.0-1.5m
		31/03/22	31/03/22	31/03/22	11/05/22	11/05/22	11/05/22
4:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBA Perfluorobutanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBS Perfluorobutane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDA Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDoDA Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDoDS Perfluorododecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDS Perfluorodecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHpA Perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHpS Perfluoroheptane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHxA Perfluorohexanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHxDA Perfluorohexadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5
PFHxS Perfluorohexane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFNA Perfluorononanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFNS Perfluorononane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOA Perfluorooctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOcDA perfluorooctadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5
PFPeA Perfluoropentanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFPeS Perfluoropentane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTeDA Perfluorotetradecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTrDA Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFUnDA Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
HPFHpA 7H-perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EtFOSA N-Ethyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MeFOSA N-Methyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
P37DMOA Perfluoro-3,7-dimethyloctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FOSA Perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOS Perfluorooctane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS							
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00
Average Total PFAS	µg/kg	0.00			0.00		

Underpass



West Apron Underpass Monitoring Results (Soil)

Parameter	Unit	BH109			BH110			BH111		
		2.5m	3.5m	23.5m	0.5m	1.2m	20.1m	2.5m	4.5m	24.5m
		17/05/22	17/05/22	17/05/22	17/05/22	17/05/22	17/05/22	17/05/22	17/05/22	17/05/22
4:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBA Perfluorobutanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBS Perfluorobutane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDA Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDoDA Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDoDS Perfluorododecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDS Perfluorodecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHpA Perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHpS Perfluoroheptane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHxA Perfluorohexanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFHxDA Perfluorohexadecanoic acid	µg/kg	<23	<25	<24	<26	<27	<28	<29	<30	<31
PFHxS Perfluorohexane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFNA Perfluorononanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFNS Perfluorononane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOA Perfluorooctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOcDA perfluorooctadecanoic acid	µg/kg	<23	<25	<24	<26	<27	<28	<29	<30	<31
PFPeA Perfluoropentanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFPeS Perfluoropentane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTeDA Perfluorotetradecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTrDA Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFUnDA Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
HPFHpA 7H-perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EtFOSA N-Ethyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MeFOSA N-Methyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
P37DMOA Perfluoro-3 7-dimethyloctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FOSA Perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOS Perfluorooctane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Total PFAS	µg/kg	0.00			0.00			0.00		

Apron 5H



Proposed Apron 5H Development Area Monitoring Results (Soil)

Parameter	Unit	TP01				TP02				TP03				TP04			
		SUR	0.5-1.0m	1.0-1.5m	1.5-2.0m	SUR	0.5-1.0m	1.0-1.5m	1.5-2.0m	SUR	0.3-0.8m	0.8-1.3m	1.3-1.8m	SUR	0.5-1.0m	1.0-1.5m	1.5-2.0m
		13/04/22	13/04/22	13/04/22	13/4/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22
4:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBA Perfluorobutanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFBS Perfluorobutane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDA Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDaDA Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDaDS Perfluorododecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDS Perfluorodecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFFHpA Perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.695	<0.5	<0.5	<0.5	<0.5
PFFHpS Perfluoroheptane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFFHxA Perfluorohexanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFFHxDA Perfluorohexadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PFFHxS Perfluorohexane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.06	<0.5	0.83	3.37	<0.5	0.78	1.24	<0.5
PFNA Perfluorononanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.871	<0.5	<0.5	<0.5	<0.5
PFNS Perfluorononane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOA Perfluorooctanoic acid	µg/kg	<0.5	<0.5	0.51	<0.5	<0.5	<0.5	<0.5	0.77	<0.5	<0.5	<0.5	2.4	<0.5	<0.5	<0.5	<0.5
PFOcDA perfluorooctadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PFPeA Perfluoropentanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFPeS Perfluoropentane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTeDA Perfluorotetradecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTrDA Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFUnDA Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
HPFHpA 7H-perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EtFOSA N-Ethyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MeFOSA N-Methyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
P37DMOA Perfluoro-3 7-dimethyloctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FOSA Perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOS Perfluorooctane sulfonic acid	µg/kg	0.64	<0.5	0.60	<0.5	<0.5	<0.5	<0.5	0.76	6.51	<0.5	4.49	3.83	0.688	<0.5	<0.5	<0.5
Sum of PFAS																	
Sum of Total PFAS	µg/kg	0.64	0.00	1.11	0.00	0.00	0.00	0.00	1.53	7.57	0.00	5.32	11.17	0.69	0.78	1.24	0.00
Average Total PFAS	µg/kg	0.44				0.38				6.01				0.68			



Proposed Apron 5H Development Area Monitoring Results (Soil)

Parameter	Unit	TP05			TP06		TP07				TP08				TP09	
		0.5-1.0m	1.0-1.5m	1.5-2.0m	1.0-1.5m	1.5-2.0m	SUR	0.3-0.8m	0.8-1.3m	1.3-1.8m	SUR	0.3-0.8m	0.8-1.3m	1.3-1.8m	SUR	0.5-1.0m
		13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22	13/04/22
4:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.66	1.67	<0.5	<0.5	2.64	1.85
10:2 Fluorotelomer sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.51	0.57	<0.5	<0.5	0.836	<0.5
PFBA Perfluorobutanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	0.632	0.78	<0.5	<0.5	2.06	1.42	0.53	<0.5	1.39	0.675
PFBS Perfluorobutane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFDA Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.36	4.85	<0.5	<0.5	2.58	1.81
PFDaDA Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.604	<0.5	<0.5	<0.5	<0.5	<0.5
PFDaDS Perfluorododecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.38	0.63	<0.5	<0.5	1.88	1.2
PFDS Perfluorodecane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.32	1.28	<0.5	<0.5	2.11	0.792
PFFHpA Perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	2.28	3.23	0.63	<0.5	4.06	2.88	1.70	<0.5	2.32	1.35
PFFHpS Perfluoroheptane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.05	0.87	2.47	<0.5	2.3	4.42
PFFHxA Perfluorohexanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	1.49	2.26	<0.5	<0.5	2.81	2.24	1.25	<0.5	2.79	1.66
PFFHxDA Perfluorohexadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PFFHxS Perfluorohexane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	7.56	14.80	3.16	1.02	4.51	4.85	6.34	0.782	7.79	9.19
PFNA Perfluorononanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	3.51	0.58	<0.5	<0.5	10.1	7.86	31.50	<0.5	15.1	25.4
PFNS Perfluorononane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.58	0.61	<0.5	<0.5	0.576	<0.5
PFOA Perfluorooctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	7.67	12.00	1.67	<0.5	10.8	8.01	4.78	<0.5	5.98	5.44
PFOcDA perfluorooctadecanoic acid	µg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PFPeA Perfluoropentanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	1.18	1.57	<0.5	<0.5	5.42	4.13	1.24	<0.5	4.16	2.33
PFPeS Perfluoropentane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.55	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTeDA Perfluorotetradecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFTrDA Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.85	0.95	<0.5	<0.5	1.42	1.07
PFUnDA Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	19.4	9.08	1.46	<0.5	18.8	10.1
HPFHpA 7H-perfluoroheptanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EtFOSA N-Ethyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MeFOSA N-Methyl perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
P37DMOA Perfluoro-3 7-dimethyloctanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
FOSA Perfluorooctane sulfonamide	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PFOS Perfluorooctane sulfonic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	19.1	4.33	<0.5	0.65	93.7	141.00	112.00	4.12	79.6	74.3
Sum of PFAS																
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	43.42	40.10	5.46	1.67	180.17	192.90	163.27	4.90	152.27	141.59
Average Total PFAS	µg/kg	0.00			0.00		22.66				135.31				146.93	

NASAH

Parameter	Unit	BH01 CE18	BH02 CE18	BH03 CE18	CP204	CP207	CP204A		TP01	TP05
		0.00-0.00	0.00-0.00	0.00-0.00	1.0m	4.0m	1.2m	4.0m	0.5m	0.5m
		15/02/2023	15/02/2023	15/02/2023	25/07/2022	14/07/2022	27/07/2022	27/07/2022	23/02/2023	22/08/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<0.5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3-7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Total PFAS	µg/kg						0.00			

Parameter	Unit	TP08	TP101	TP09			TP111	TP113	
		0.5m	1.2m	0.5m	1.6m	3.0m	3.0m	0.5m	1.5m
		17/08/2022	22/07/2022	09/09/2022	14/07/2022	14/07/2022	19/07/2022	19/07/2022	19/07/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	0.966	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	1.86	2.89	<0.5	2.44	0.727
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	113	5.16	<0.5	11.9	5.68
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	1.49	0.602	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	1.78	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS									
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	119.10	8.65	0.00	14.34	6.41
Average Total PFAS	µg/kg			42.58				10.37	

Parameter	Unit	TP122		TP123			TP124		TP126	
		0.5m	3.4m	0.3m	2.0m	3.0m	1.7m	2.3m	0.5m	2.0m
		13/07/2022	13/07/2022	13/07/2022	30/06/2022	29/07/2022	15/07/2022	15/07/2022	27/07/2022	27/07/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.673
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	1.52	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.923	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	1.52	0.00	0.00	0.00	0.00	0.92	2.47
Average Total PFAS	µg/kg	0.00		0.51			0.00		1.70	

Parameter	Unit	TP129				TP13	TP131		TP133	
		0.5m	1.0m	1.5m	2.2m	0.5m	0.5m	2.5m	1.2m	2.5m
		20/07/2022	20/07/2022	20/07/2022	20/07/2022	24/02/2023	21/07/2022	21/07/2022	06/07/2022	06/07/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOCDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	0.831	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	0.656	<0.5	0.564	<0.5	0.651	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.66	0.00	1.40	0.00	0.65	0.00
Average Total PFAS	µg/kg	0.16					0.70		0.33	

Parameter	Unit	TP135		TP137		TP139		TP144		TP145
		1.0m	2.3m	1.4m	1.6m	0.5m	2.5m	0.5m	2.5m	3.3m
		05/07/2022	05/07/2022	14/07/2022	14/07/2022	02/08/2022	02/08/2022	15/07/2022	15/07/2022	30/06/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	2.69	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOCDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	1.71	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	1.28	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	2.99	2.69	0.00	0.00	0.00
Average Total PFAS	µg/kg	0.00		0.00		2.84		0.00		

Parameter	Unit	TP21	TP213		TP23	TP25	TP39	TP41	TP43	TP44
		0.5m	1.0m	2.0m	0.5m	0.5m	0.5 m	0.5 m	0.5m	0.5m
		30/08/2022	14/07/2022	14/07/2022	06/09/2022	19/08/2022	27/07/2022	27/07/2022	08/09/2022	31/08/2022
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOCDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS										
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Total PFAS	µg/kg		0.00							

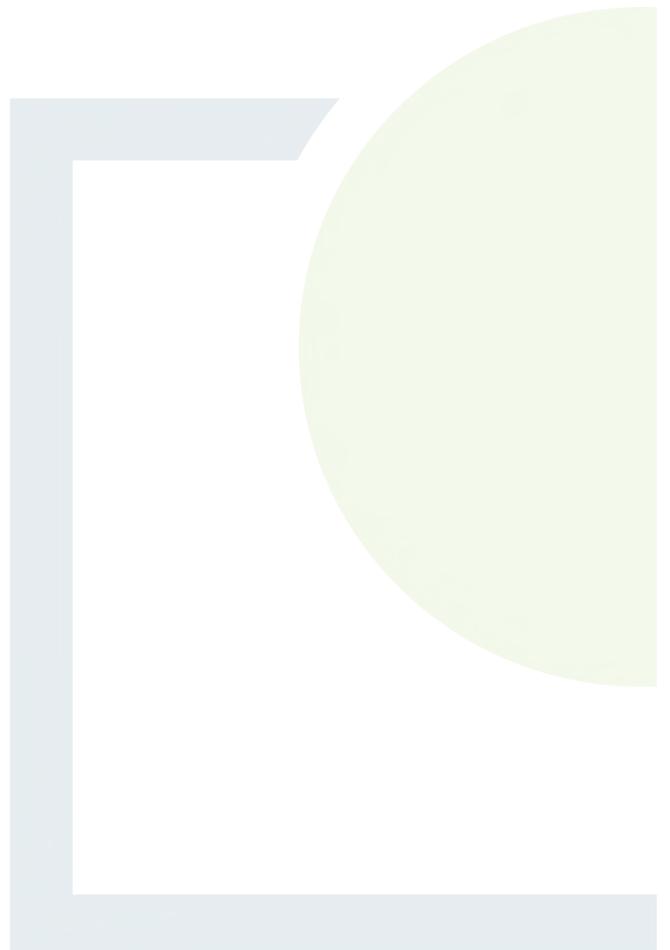
Parameter	Unit	TP47	TP48	TP50	TP59	TP144A		TP02 CE18	TP02 KILWEX
		0.5 m	0.5 m	0.5 m	0.5m	0.5m	2.5m	0.5m	0.5m
		05/08/2022	05/08/2022	05/08/2022	02/09/2022	22/07/2022	22/07/2022	18/01/2023	24/02/2023
Perfluorobutanoic acid (PFBA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOCDA)*	ug/kg	<5	<5	<5	<5	<5	<5	<0.5	<0.5
Perfluorobutane sulfonic acid (PFBS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoacetic acid*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3-7-dimethyloctanoic acid (P37DMOA)*	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PFAS									
Sum of Total PFAS	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Total PFAS	µg/kg					0.00			



CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 8

Site Investigation
Laboratory Certificates



Departures



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 April 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220405-88
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	643082
Order Number:	Z3234

We received 3 samples on Tuesday April 05, 2022 and 3 of these samples were scheduled for analysis which was completed on Thursday April 21, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26086280	ST08		0.50	31/03/2022
26086282	ST08		1.00	31/03/2022
26086284	ST08		1.50	31/03/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	26086280	26086282	26086284
Customer Sample Reference	ST08	ST08	ST08
AGS Reference			
Depth (m)	0.50	1.00	1.50
Container	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)
Sample Type	S	S	S

PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 3			
			X	X	X
Sample description	All	NDPs: 0 Tests: 3			
			X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26086280	ST08	0.50	Dark Brown	Loamy Sand	Stones	None
26086282	ST08	1.00	Dark Brown	Loamy Sand	Stones	None
26086284	ST08	1.50	Dark Brown	Loamy Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	ST08	ST08	ST08		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 31/03/2022	1.00 Soil/Solid (S) 31/03/2022	1.50 Soil/Solid (S) 31/03/2022		
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	4.2	4.5	5.2		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220405-88
Client Ref.: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	26086280	26086282	26086284
Customer Sample Ref.	ST08	ST08	ST08
AGS Ref.			
Depth	0.50	1.00	1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	21-Apr-2022	21-Apr-2022	21-Apr-2022
Sample description	06-Apr-2022	06-Apr-2022	06-Apr-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2233724	Issue Date	: 19-Apr-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220405-88	Page	: 1 of 3
Order number	: ----	Date Samples Received	: 11-Apr-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 11-Apr-2022 - 19-Apr-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL				Client sample ID		26090240 ST08		26090273 ST08		26090288 ST08	
Laboratory sample ID				PR2233724001		PR2233724002		PR2233724003			
Client sampling date / time				06-Apr-2022 09:47		06-Apr-2022 09:48		06-Apr-2022 09:49			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26090240 ST08		26090273 ST08		26090288 ST08	
				Laboratory sample ID		PR2233724001		PR2233724002		PR2233724003	
				Client sampling date / time		06-Apr-2022 09:47		06-Apr-2022 09:48		06-Apr-2022 09:49	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	94.5	± 6.0%	95.2	± 6.0%	95.1	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220405-88
Client Ref: P21-195

Report Number: 643082
Location: Dublin Airport

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g. volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Astos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 June 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220512-181
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	649392
Order Number:	Z3164

This report has been revised and directly supersedes 648247 in its entirety.

We received 3 samples on Thursday May 12, 2022 and 3 of these samples were scheduled for analysis which was completed on Thursday May 26, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220512-181
Client Ref.: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26270277	ST15-A		0.50	11/05/2022
26270278	ST15-B		1.00	11/05/2022
26270279	ST15-C		1.50	11/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

 SDG: 220512-181
 Client Ref.: P21-195

 Report Number: 649392
 Location: Dublin Airport

Superseded Report: 648247

Results Legend	Lab Sample No(s)	26270277	26270278	26270279	
X Test N No Determination Possible	Customer Sample Reference	ST15-A	ST15-B	ST15-C	
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	AGS Reference				
	Depth (m)	0.50	1.00	1.50	
	Container	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	
	Sample Type	S	S	S	
	PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 3	X	X	X
Sample description	All	NDPs: 0 Tests: 3	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220512-181
Client Ref.: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26270277	ST15-A	0.50	Dark Brown	Clay	None	None
26270278	ST15-B	1.00	Dark Brown	Clay Loam	Stones	None
26270279	ST15-C	1.50	Dark Brown	Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220512-181
Client Ref.: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Results Legend		Customer Sample Ref.		ST15-A	ST15-B	ST15-C		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.50 Soil/Solid (S) 11/05/2022	1.00 Soil/Solid (S) 11/05/2022	1.50 Soil/Solid (S) 11/05/2022		
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	16	9.6	10			
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5			
perfluorooctadecanoic acid (PFoCDA)*	<5 µg/kg	SUB	<5	<5	<5			
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			



CERTIFICATE OF ANALYSIS

Validated

SDG: 220512-181
Client Ref.: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220512-181
Client Ref.: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Test Completion Dates

Lab Sample No(s)	26270277	26270278	26270279
Customer Sample Ref.	ST15-A	ST15-B	ST15-C
AGS Ref.			
Depth	0.50	1.00	1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	26-May-2022	26-May-2022	26-May-2022
Sample description	13-May-2022	13-May-2022	13-May-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2248798	Issue Date	: 26-May-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220512-181	Page	: 1 of 4
Order number	: ----	Date Samples Received	: 19-May-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 19-May-2022 - 26-May-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL				Client sample ID		26285361 STO9-A		26285355 STO9-B		26285359 STO9-C	
				Laboratory sample ID		PR2248798001		PR2248798002		PR2248798003	
				Client sampling date / time		16-May-2022 09:26		16-May-2022 09:25		16-May-2022 09:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26285361 STO9-A		26285355 STO9-B		26285359 STO9-C	
				Laboratory sample ID		PR2248798001		PR2248798002		PR2248798003	
				Client sampling date / time		16-May-2022 09:26		16-May-2022 09:25		16-May-2022 09:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26285361 STO9-A		26285355 STO9-B		26285359 STO9-C	
				Laboratory sample ID		PR2248798001		PR2248798002		PR2248798003	
				Client sampling date / time		16-May-2022 09:26		16-May-2022 09:25		16-May-2022 09:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	80.9	± 6.0%	87.4	± 6.0%	88.8	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
220512-181	26270277	ST09-A	07/06/2022	Sample ID Change	ST09-A	ST15-A	648247
220512-181	26270278	ST09-B	07/06/2022	Sample ID Change	ST09-B	ST15-B	648247
220512-181	26270279	ST09-C	07/06/2022	Sample ID Change	ST09-C	ST15-C	648247



CERTIFICATE OF ANALYSIS

SDG: 220512-181
Client Ref: P21-195

Report Number: 649392
Location: Dublin Airport

Superseded Report: 648247

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subject to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Underpass



Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Shane Dolan

CERTIFICATE OF ANALYSIS

Date of report Generation: 13 June 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220520-33
Your Reference: P21-195
Location: Dublin Airport
Report No: 650350
Order Number: Z3234

This report has been revised and directly supersedes 648955 in its entirety.

We received 27 samples on Thursday May 19, 2022 and 27 of these samples were scheduled for analysis which was completed on Monday June 13, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26312640	BH 101		0.50	17/05/2022
26312641	BH 101		1.20	17/05/2022
26312642	BH 101		20.60	17/05/2022
26312639	BH 104		22.50	17/05/2022
26312637	BH 104		4.50	17/05/2022
26312638	BH 104		5.50	17/05/2022
26312636	BH 105		18.50	17/05/2022
26312634	BH 105		4.65	17/05/2022
26312635	BH 105		5.90	17/05/2022
26312631	BH 106		0.20	17/05/2022
26312632	BH 106		1.20	17/05/2022
26312633	BH 106		18.50	17/05/2022
26312628	BH 107		2.50	17/05/2022
26312630	BH 107		21.50	17/05/2022
26312629	BH 107		3.50	17/05/2022
26312627	BH 108		21.50	17/05/2022
26312625	BH 108		4.50	17/05/2022
26312626	BH 108		5.50	17/05/2022
26312622	BH 109		2.50	17/05/2022
26312624	BH 109		23.50	17/05/2022
26312623	BH 109		3.50	17/05/2022
26312619	BH 110		0.50	17/05/2022
26312620	BH 110		1.20	17/05/2022
26312621	BH 110		20.10	17/05/2022
26312616	BH 111		2.50	17/05/2022
26312618	BH 111		24.50	17/05/2022
26312617	BH 111		4.50	17/05/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	26312622	BH 109		2.50	500gTUB	S
	26312626	BH 108		5.50	500gTUB	S
	26312625	BH 108		4.50	500gTUB	S
	26312627	BH 108		21.50	500gTUB	S
	26312629	BH 107		3.50	500gTUB	S
	26312630	BH 107		21.50	500gTUB	S
	26312628	BH 107		2.50	500gTUB	S
	26312633	BH 106		18.50	500gTUB	S
	26312632	BH 106		1.20	1kg TUB with Handle (ALE260)	S
	26312631	BH 106		0.20	1kg TUB with Handle (ALE260)	S
	26312635	BH 105		5.90	500gTUB	S
	26312634	BH 105		4.65	500gTUB	S
	26312636	BH 105		18.50	500gTUB	S
	26312638	BH 104		5.50	500gTUB	S
	26312637	BH 104		4.50	500gTUB	S
	26312639	BH 104		22.50	500gTUB	S
	26312642	BH 101		20.60	1kg TUB with Handle (ALE260)	S
	26312641	BH 101		1.20	1kg TUB with Handle (ALE260)	S
	26312640	BH 101		0.50	1kg TUB with Handle (ALE260)	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2				
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 27				
Sample description	All	NDPs: 0 Tests: 25				

26312617	BH 111		4.50	1kg TUB with Handle (ALE260)	S			X	X
26312618	BH 111		24.50	1kg TUB with Handle (ALE260)	S			X	X
26312616	BH 111		2.50	1kg TUB with Handle (ALE260)	S			X	X
26312621	BH 110		20.10	1kg TUB with Handle (ALE260)	S			X	X
26312620	BH 110		1.20	1kg TUB with Handle (ALE260)	S			X	X
26312619	BH 110		0.50	1kg TUB with Handle (ALE260)	S			X	X
26312623	BH 109		3.50	500gTUB	S			X	X
26312624	BH 109		23.50	500gTUB	S			X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26312640	BH 101	0.50	Dark Brown	Sandy Loam	Vegetation	Brick
26312641	BH 101	1.20	Dark Brown	Sandy Clay Loam	Brick	Vegetation
26312642	BH 101	20.60	Dark Brown	Sandy Clay	None	None
26312637	BH 104	4.50	Dark Brown	Sandy Clay Loam	Stones	None
26312638	BH 104	5.50	Dark Brown	Sandy Clay Loam	Stones	None
26312639	BH 104	22.50	Black	Sand	None	None
26312634	BH 105	4.65	Dark Brown	Sandy Clay Loam	Stones	None
26312635	BH 105	5.90	Grey	Stone/Soil	Stones	None
26312636	BH 105	18.50	Dark Brown	Loamy Sand	Stones	None
26312631	BH 106	0.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26312632	BH 106	1.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26312633	BH 106	18.50	Dark Brown	Sandy Clay	Stones	None
26312628	BH 107	2.50	Light Brown	Sandy Clay Loam	Stones	None
26312629	BH 107	3.50	Light Brown	Sandy Clay Loam	Stones	None
26312630	BH 107	21.50	Dark Brown	Sandy Clay Loam	None	None
26312625	BH 108	4.50	Dark Brown	Sandy Clay Loam	Stones	None
26312626	BH 108	5.50	Light Brown	Sandy Clay Loam	Stones	None
26312627	BH 108	21.50	Light Brown	Sandy Clay	Stones	None
26312622	BH 109	2.50	Light Brown	Sandy Clay Loam	None	None
26312623	BH 109	3.50	Light Brown	Sandy Clay Loam	Stones	None
26312624	BH 109	23.50	Dark Brown	Sandy Clay Loam	Stones	None
26312619	BH 110	0.50	Dark Brown	Sand	Stones	None
26312620	BH 110	1.20	Light Brown	Sandy Clay	Stones	None
26312621	BH 110	20.10	Dark Brown	Sandy Clay	Stones	None
26312616	BH 111	2.50	Dark Brown	Sandy Clay	Stones	None
26312617	BH 111	4.50	Dark Brown	Sandy Clay	Stones	None
26312618	BH 111	24.50	Dark Brown	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend		Customer Sample Ref.	BH 101	BH 101	BH 101	BH 104	BH 104	BH 104
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH 101	BH 101	BH 101	BH 104	BH 104	BH 104
M	mCERTS accredited.		0.50	1.20	20.60	22.50	4.50	5.50
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt	Dissolved / filtered sample.		17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022
tot.unfilt	Total / unfiltered sample.		19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022
*	Subcontracted - refer to subcontractor report for accreditation status.		220520-33	220520-33	220520-33	220520-33	220520-33	220520-33
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		26312640	26312641	26312642	26312639	26312637	26312638
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	9.5	13	11	14	10	9.8
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend		Customer Sample Ref.	BH 105	BH 105	BH 105	BH 106	BH 106	BH 106
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	18.50	4.65	5.90	0.20	1.20	18.50
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022
diss.filt	Dissolved / filtered sample.		19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022
tot.unfilt	Total / unfiltered sample.		220520-33	220520-33	220520-33	220520-33	220520-33	220520-33
*	Subcontracted - refer to subcontractor report for accreditation status.		26312636	26312634	26312635	26312631	26312632	26312633
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	18	11	2	17	15	5.6
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend		Customer Sample Ref.	BH 107	BH 107	BH 107	BH 108	BH 108	BH 108		
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
Moisture Content Ratio (% of as received sample)	%	PM024	2.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312628	
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	21.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312630	
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	3.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312629	
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	21.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312625	
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	4.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312625	
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	5.50	Soil/Solid (S)	17/05/2022		19/05/2022	220520-33	26312626	
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB								
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB								
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB								
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB								
Perfluorotridecanoic acid (PFTTrDA)*	<0.5 µg/kg	SUB								
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB								
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB								
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB								
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB								
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB								
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB								
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB								
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB								
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB								
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB								
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB								
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB								



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend		Customer Sample Ref.	BH 109	BH 109	BH 109	BH 110	BH 110	BH 110
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH 109	BH 109	BH 109	BH 110	BH 110	BH 110
M	mCERTS accredited.		2.50	23.50	3.50	0.50	1.20	20.10
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt	Dissolved / filtered sample.		17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022	17/05/2022
tot.unfilt	Total / unfiltered sample.		19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022	19/05/2022
*	Subcontracted - refer to subcontractor report for accreditation status.		220520-33	220520-33	220520-33	220520-33	220520-33	220520-33
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		26312622	26312624	26312623	26312619	26312620	26312621
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	20	14	13	8.2	7.9	8.3
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Results Legend		Customer Sample Ref.	BH 111	BH 111	BH 111		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	2.50	24.50	4.50		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	17/05/2022	17/05/2022	17/05/2022		
		Sample Time					
		Date Received	19/05/2022	19/05/2022	19/05/2022		
		SDG Ref	220520-33	220520-33	220520-33		
		Lab Sample No.(s)	26312616	26312618	26312617		
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	8.7	6.9	8.4		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH 101 0.50 SOLID 17/05/2022 00:00:00 19/05/2022 11:30:00 220520-33 26312640 TM048	01/06/2022	Joanne Furnivall	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH 101 1.20 SOLID 17/05/2022 00:00:00 19/05/2022 11:30:00 220520-33 26312641 TM048	01/06/2022	Joanne Furnivall	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220520-33
Client Ref.: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Test Completion Dates

Lab Sample No(s)	26312640	26312641	26312642	26312637	26312638	26312639	26312634	26312635	26312636	26312631
Customer Sample Ref.	BH 101	BH 101	BH 101	BH 104	BH 104	BH 104	BH 105	BH 105	BH 105	BH 106
AGS Ref.										
Depth	0.50	1.20	20.60	4.50	5.50	22.50	4.65	5.90	18.50	0.20
Type	Soil/Solid (S)									
Asbestos ID in Solid Samples	01-Jun-2022	01-Jun-2022								
PFAS by LCMS (S-PFCLMS02-C)	08-Jun-2022									
Sample description	24-May-2022									

Lab Sample No(s)	26312632	26312633	26312628	26312629	26312630	26312625	26312626	26312627	26312622	26312623
Customer Sample Ref.	BH 106	BH 106	BH 107	BH 107	BH 107	BH 108	BH 108	BH 108	BH 109	BH 109
AGS Ref.										
Depth	1.20	18.50	2.50	3.50	21.50	4.50	5.50	21.50	2.50	3.50
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	08-Jun-2022									
Sample description	24-May-2022	24-May-2022	23-May-2022							

Lab Sample No(s)	26312624	26312619	26312620	26312621	26312616	26312617	26312618
Customer Sample Ref.	BH 109	BH 110	BH 110	BH 110	BH 111	BH 111	BH 111
AGS Ref.							
Depth	23.50	0.50	1.20	20.10	2.50	4.50	24.50
Type	Soil/Solid (S)						
PFAS by LCMS (S-PFCLMS02-C)	08-Jun-2022						
Sample description	23-May-2022	24-May-2022	23-May-2022	24-May-2022	24-May-2022	24-May-2022	24-May-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2253510	Issue Date	: 08-Jun-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220520-33	Page	: 1 of 24
Order number	: ----	Date Samples Received	: 31-May-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 31-May-2022 - 08-Jun-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	26331295		26331303		26331323	
				BH 101		BH 101		BH 101	
				PR2253510001	PR2253510002	PR2253510003			
				24-May-2022 07:50	24-May-2022 07:53	24-May-2022 07:55			
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOLID				Client sample ID		26331295 BH 101		26331303 BH 101		26331323 BH 101	
				Laboratory sample ID		PR2253510001		PR2253510002		PR2253510003	
				Client sampling date / time		24-May-2022 07:50		24-May-2022 07:53		24-May-2022 07:55	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.4	± 6.0%	89.2	± 6.0%	88.8	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331535 BH 104		26331555 BH 104		26331577 BH 104	
				Laboratory sample ID		PR2253510004		PR2253510005		PR2253510006	
				Client sampling date / time		24-May-2022 08:12		24-May-2022 08:15		24-May-2022 08:19	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331535 BH 104		26331555 BH 104		26331577 BH 104	
				Laboratory sample ID		PR2253510004		PR2253510005		PR2253510006	
				Client sampling date / time		24-May-2022 08:12		24-May-2022 08:15		24-May-2022 08:19	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFODa)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFODa)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331535 BH 104		26331555 BH 104		26331577 BH 104	
				Laboratory sample ID		PR2253510004		PR2253510005		PR2253510006	
				Client sampling date / time		24-May-2022 08:12		24-May-2022 08:15		24-May-2022 08:19	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	85.5	± 6.0%	88.5	± 6.0%	87.0	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331392 BH 105		26331483 BH 105		26331510 BH 105	
				Laboratory sample ID		PR2253510007		PR2253510008		PR2253510009	
				Client sampling date / time		24-May-2022 08:05		24-May-2022 08:07		24-May-2022 08:10	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331392 BH 105		26331483 BH 105		26331510 BH 105	
				Laboratory sample ID		PR2253510007		PR2253510008		PR2253510009	
				Client sampling date / time		24-May-2022 08:05		24-May-2022 08:07		24-May-2022 08:10	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331392 BH 105		26331483 BH 105		26331510 BH 105	
				Laboratory sample ID		PR2253510007		PR2253510008		PR2253510009	
				Client sampling date / time		24-May-2022 08:05		24-May-2022 08:07		24-May-2022 08:10	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		



Sub-Matrix: SOLID				Client sample ID		26331392 BH 105		26331483 BH 105		26331510 BH 105	
				Laboratory sample ID		PR2253510007		PR2253510008		PR2253510009	
				Client sampling date / time		24-May-2022 08:05		24-May-2022 08:07		24-May-2022 08:10	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.7	± 6.0%	98.9	± 6.0%	80.0	± 6.0%		



Sub-Matrix: SOLID				Client sample ID		26331283 BH 106		26331290 BH 106		26331359 BH 106	
				Laboratory sample ID		PR2253510010		PR2253510011		PR2253510012	
				Client sampling date / time		24-May-2022 07:45		24-May-2022 07:48		24-May-2022 08:02	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		



Sub-Matrix: SOLID				Client sample ID		26331283 BH 106		26331290 BH 106		26331359 BH 106	
				Laboratory sample ID		PR2253510010		PR2253510011		PR2253510012	
				Client sampling date / time		24-May-2022 07:45		24-May-2022 07:48		24-May-2022 08:02	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331283 BH 106		26331290 BH 106		26331359 BH 106	
				Laboratory sample ID		PR2253510010		PR2253510011		PR2253510012	
				Client sampling date / time		24-May-2022 07:45		24-May-2022 07:48		24-May-2022 08:02	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOLID				Client sample ID		26331283 BH 106		26331290 BH 106		26331359 BH 106	
				Laboratory sample ID		PR2253510010		PR2253510011		PR2253510012	
				Client sampling date / time		24-May-2022 07:45		24-May-2022 07:48		24-May-2022 08:02	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.5	± 6.0%	83.2	± 6.0%	92.0	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331602 BH 107		26331609 BH 107		26331614 BH 107	
				Laboratory sample ID		PR2253510013		PR2253510014		PR2253510015	
				Client sampling date / time		24-May-2022 08:21		24-May-2022 08:21		24-May-2022 08:22	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		



Sub-Matrix: SOLID				Client sample ID		26331602 BH 107		26331609 BH 107		26331614 BH 107	
				Laboratory sample ID		PR2253510013		PR2253510014		PR2253510015	
				Client sampling date / time		24-May-2022 08:21		24-May-2022 08:21		24-May-2022 08:22	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331602 BH 107		26331609 BH 107		26331614 BH 107	
				Laboratory sample ID		PR2253510013		PR2253510014		PR2253510015	
				Client sampling date / time		24-May-2022 08:21		24-May-2022 08:21		24-May-2022 08:22	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331602 BH 107		26331609 BH 107		26331614 BH 107	
				Laboratory sample ID		PR2253510013		PR2253510014		PR2253510015	
				Client sampling date / time		24-May-2022 08:21		24-May-2022 08:21		24-May-2022 08:22	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	89.4	± 6.0%	81.0	± 6.0%	77.0	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331616 BH 108		26331632 BH 108		26331648 BH 108	
				Laboratory sample ID		PR2253510016		PR2253510017		PR2253510018	
				Client sampling date / time		24-May-2022 08:23		24-May-2022 08:24		24-May-2022 08:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331616 BH 108		26331632 BH 108		26331648 BH 108	
				Laboratory sample ID		PR2253510016		PR2253510017		PR2253510018	
				Client sampling date / time		24-May-2022 08:23		24-May-2022 08:24		24-May-2022 08:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.000	µg/kg DW	<5.000	---	<5.000	---	<5.000	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.000	µg/kg DW	<5.000	---	<5.000	---	<5.000	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.5	± 6.0%	87.2	± 6.0%	89.6	± 6.0%		



Sub-Matrix: SOLID				Client sample ID		26331653 BH 109		26331657 BH 109		26331667 BH 109	
				Laboratory sample ID		PR2253510019		PR2253510020		PR2253510021	
				Client sampling date / time		24-May-2022 08:26		24-May-2022 08:26		24-May-2022 08:27	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331653 BH 109		26331657 BH 109		26331667 BH 109	
Laboratory sample ID				PR2253510019		PR2253510020		PR2253510021			
Client sampling date / time				24-May-2022 08:26		24-May-2022 08:26		24-May-2022 08:27			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---



Sub-Matrix: SOLID				Client sample ID		26331653 BH 109		26331657 BH 109		26331667 BH 109	
				Laboratory sample ID		PR2253510019		PR2253510020		PR2253510021	
				Client sampling date / time		24-May-2022 08:26		24-May-2022 08:26		24-May-2022 08:27	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331653 BH 109		26331657 BH 109		26331667 BH 109	
				Laboratory sample ID		PR2253510019		PR2253510020		PR2253510021	
				Client sampling date / time		24-May-2022 08:26		24-May-2022 08:26		24-May-2022 08:27	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	80.9	± 6.0%	85.0	± 6.0%	87.5	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331347 BH 110		26331680 BH 110		26331721 BH 110	
				Laboratory sample ID		PR2253510022		PR2253510023		PR2253510024	
				Client sampling date / time		24-May-2022 07:59		24-May-2022 08:32		24-May-2022 08:34	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331347 BH 110		26331680 BH 110		26331721 BH 110	
				Laboratory sample ID		PR2253510022		PR2253510023		PR2253510024	
				Client sampling date / time		24-May-2022 07:59		24-May-2022 08:32		24-May-2022 08:34	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	91.2	± 6.0%	90.1	± 6.0%	89.3	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26331773 BH 111		26331794 BH 111		26331833 BH 111	
				Laboratory sample ID		PR2253510025		PR2253510026		PR2253510027	
				Client sampling date / time		24-May-2022 08:37		24-May-2022 08:40		24-May-2022 08:44	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331773 BH 111		26331794 BH 111		26331833 BH 111	
				Laboratory sample ID		PR2253510025		PR2253510026		PR2253510027	
				Client sampling date / time		24-May-2022 08:37		24-May-2022 08:40		24-May-2022 08:44	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26331773 BH 111		26331794 BH 111		26331833 BH 111	
				Laboratory sample ID		PR2253510025		PR2253510026		PR2253510027	
				Client sampling date / time		24-May-2022 08:37		24-May-2022 08:40		24-May-2022 08:44	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
perfluorooctadecanoic acid (PFOCDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
perfluorooctadecanoic acid (PFOCDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26331773 BH 111		26331794 BH 111		26331833 BH 111	
				Laboratory sample ID		PR2253510025		PR2253510026		PR2253510027	
				Client sampling date / time		24-May-2022 08:37		24-May-2022 08:40		24-May-2022 08:44	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.3	± 6.0%	92.5	± 6.0%	92.4	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
<i>Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00</i>	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “**” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220520-33
Client Ref: P21-195

Report Number: 650350
Location: Dublin Airport

Superseded Report: 648955

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Apron 5H



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 May 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220420-34
Your Reference: P21-195
Location: Dublin Airport
Report No: 644681
Order Number: Z3234

This report has been revised and directly supersedes 644602 in its entirety.

We received 27 samples on Tuesday April 19, 2022 and 27 of these samples were scheduled for analysis which was completed on Wednesday May 04, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26152404	TP12		0.00 - 0.00	14/04/2022
26152390	TP01 1.5m		1.50 - 2.00	13/04/2022
26152408	TP02 1.5m		1.50 - 2.00	13/04/2022
26152412	TP03 1.3m		1.30 - 1.80	13/04/2022
26152416	TP04 1.5m		1.50 - 2.00	13/04/2022
26152418	TP05 0.5m		0.50 - 1.00	13/04/2022
26152370	TP05 1.5m		1.50 - 2.00	13/04/2022
26152372	TP06 1.0m		1.00 - 1.50	13/04/2022
26152420	TP06 1.5m		1.50 - 1.50	13/04/2022
26152378	TP07 1.3m		1.30 - 1.80	13/04/2022
26152382	TP08 1.3m		1.30 - 1.80	13/04/2022
26152386	TP09 0.5m		0.50 - 1.00	13/04/2022
26152388	TP10 0.5m		0.50 - 1.00	14/04/2022
26152392	TP10 1.5m		1.50 - 2.00	14/04/2022
26152396	TP11 1.3m		1.30 - 1.80	14/04/2022
26152400	TP12 1.5m		1.50 - 2.00	14/04/2022
26152402	TP13 1.5m		1.50 - 2.00	14/04/2022
26152368	TP01 SUR		0.00 - 0.50	13/04/2022
26152406	TP02 SUR		0.00 - 0.50	13/04/2022
26152410	TP03 SUR		0.00 - 0.50	13/04/2022
26152414	TP04 SUR		0.00 - 0.50	13/04/2022
26152374	TP07 SUR		0.00 - 0.50	13/04/2022
26152380	TP08 SUR		0.00 - 0.50	13/04/2022
26152384	TP09 SUR		0.00 - 0.50	13/04/2022
26152394	TP11 SUR		0.00 - 0.50	14/04/2022
26152398	TP12 SUR		0.00 - 0.50	14/04/2022
26158891	TP13 SUR			14/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	26152406	TP02 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	26152368	TP01 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	26152402	TP13 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152400	TP12 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152396	TP11 1.3m		1.30 - 1.80	1kg TUB with Handle (ALE260)	S
	26152392	TP10 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152388	TP10 0.5m		0.50 - 1.00	1kg TUB with Handle (ALE260)	S
	26152386	TP09 0.5m		0.50 - 1.00	1kg TUB with Handle (ALE260)	S
	26152382	TP08 1.3m		1.30 - 1.80	1kg TUB with Handle (ALE260)	S
	26152378	TP07 1.3m		1.30 - 1.80	1kg TUB with Handle (ALE260)	S
	26152420	TP06 1.5m		1.50 - 1.50	1kg TUB with Handle (ALE260)	S
	26152372	TP06 1.0m		1.00 - 1.50	1kg TUB with Handle (ALE260)	S
	26152370	TP05 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152418	TP05 0.5m		0.50 - 1.00	1kg TUB with Handle (ALE260)	S
	26152416	TP04 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152412	TP03 1.3m		1.30 - 1.80	1kg TUB with Handle (ALE260)	S
	26152408	TP02 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152390	TP01 1.5m		1.50 - 2.00	1kg TUB with Handle (ALE260)	S
	26152404	TP12		0.00 - 0.00	500ml Plastic (ALE208)	GW
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1				
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 26				
PFAS Liquids	All	NDPs: 0 Tests: 1				
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 1				
Sample description	All	NDPs: 0 Tests: 26				

26158891	TP13 SUR			1kg TUB with Handle (ALE260)	S			X										X
26152398	TP12 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152394	TP11 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152384	TP09 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152380	TP08 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152374	TP07 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152414	TP04 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X
26152410	TP03 SUR		0.00 - 0.50	1kg TUB with Handle (ALE260)	S			X										X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26152390	TP01 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	None
26152408	TP02 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Vegetation	None
26152412	TP03 1.3m	1.30 - 1.80	Dark Brown	Sandy Clay Loam	None	Stones
26152416	TP04 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	None
26152418	TP05 0.5m	0.50 - 1.00	Dark Brown	Sandy Silt Loam	None	Stones
26152370	TP05 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	None
26152372	TP06 1.0m	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152420	TP06 1.5m	1.50 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152378	TP07 1.3m	1.30 - 1.80	Dark Brown	Sandy Clay Loam	Stones	None
26152382	TP08 1.3m	1.30 - 1.80	Dark Brown	Sandy Clay Loam	Stones	None
26152386	TP09 0.5m	0.50 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152388	TP10 0.5m	0.50 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152392	TP10 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152396	TP11 1.3m	1.30 - 1.80	Dark Brown	Sandy Clay Loam	Stones	None
26152400	TP12 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	None
26152402	TP13 1.5m	1.50 - 2.00	Dark Brown	Sandy Clay Loam	Stones	None
26152368	TP01 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	Fibres
26152406	TP02 SUR	0.00 - 0.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26152410	TP03 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
26152414	TP04 SUR	0.00 - 0.50	Dark Brown	Sandy Clay Loam	Vegetation	Stones
26152374	TP07 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Vegetation	Stones
26152380	TP08 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
26152384	TP09 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
26152394	TP11 SUR	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
26152398	TP12 SUR	0.00 - 0.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26158891	TP13 SUR		Dark Brown	Clay Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.	TP12	TP01 1.5m	TP02 1.5m	TP03 1.3m	TP04 1.5m	TP05 0.5m
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filter Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m)	0.00 - 0.00	1.50 - 2.00	1.50 - 2.00	1.30 - 1.80	1.50 - 2.00	0.50 - 1.00
* Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4# Sample deviation (see appendix)		Sample Type	Ground Water (GW)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
		Date Sampled	14/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
		Date Received	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022
		SDG Ref	220420-34	220420-34	220420-34	220420-34	220420-34	220420-34
		Lab Sample No.(s)	26152404	26152390	26152408	26152412	26152416	26152418
		AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<2 ng/l	TM337	<20					
8:2 FTS (39108-34-4)	<2 ng/l	TM337	<20					
5:3 FTCA (914637-49-3)	<20 ng/l	TM337	<200					
PFBA (375-22-4)	<2 ng/l	TM337	66	#				
PFPA (2706-90-3)	<1 ng/l	TM337	31.1	#				
PFHxA (307-24-4)	<1 ng/l	TM337	18.8	#				
PFBS (375-73-5)	<1 ng/l	TM337	<10	#				
PFHpA (375-85-9)	<1 ng/l	TM337	19	#				
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<10	#				
PFOA (335-67-1)	<0.65 ng/l	TM337	33.1	#				
PFHxS (355-46-4)	<1 ng/l	TM337	12.7	#				
PFNA (375-95-1)	<1 ng/l	TM337	<10	#				
PFHpS (375-92-8)	<1 ng/l	TM337	<10	#				
PFDA (335-76-2)	<1 ng/l	TM337	<10	#				
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	20.5	#				
Branched PFOS	<0.65 ng/l	TM337	14	#				
PFUnA (2058-94-8)	<1 ng/l	TM337	<10	#				
PFDoA (307-55-1)	<1 ng/l	TM337	<10	#				
PFOSA (754-91-6)	<2 ng/l	TM337	<20	#				
PFDS (335-77-3)	<1 ng/l	TM337	<10	#				
PFPeS (2706-91-4)	<1 ng/l	TM337	<10	#				
Total PFOS	<0.65 ng/l	TM337	34.5	#				
PFTTrDA (72629-94-8)	<1 ng/l	TM433	<10					
PFNS (68259-12-1)	<1 ng/l	TM433	<10					
PFUnDS (749786-16-1)	<1 ng/l	TM433	<10					
PFDoS (79780-39-5)	<1 ng/l	TM433	<10					
PFTTrDS (174675-49-1)	<1 ng/l	TM433	<10					
Moisture Content Ratio (% of as received sample)	%	PM024		16	20	10	11	14
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB		<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB		<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB		<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB		<0.5	<0.5	0.695	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB		<0.5	0.77	2.4	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.	TP12	TP01 1.5m	TP02 1.5m	TP03 1.3m	TP04 1.5m	TP05 0.5m		
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4#	@ Sample deviation (see appendix)									
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	0.00 - 0.00	Ground Water (GW)	14/04/2022				26152404	
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	1.50 - 2.00	Soil/Solid (S)	13/04/2022				26152390	
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	1.50 - 2.00	Soil/Solid (S)	13/04/2022				26152408	
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	1.30 - 1.80	Soil/Solid (S)	13/04/2022				26152412	
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	1.50 - 2.00	Soil/Solid (S)	13/04/2022				26152416	
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	0.50 - 1.00	Soil/Solid (S)	13/04/2022				26152418	
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB								
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB								
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB								
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB								
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB								
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB								
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB								
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB								
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB								
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB								
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB								
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB								
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB								
N-Ethyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB								
7H-perfluoroheptanoic acid (HPFHpA)*	<0.5 µg/kg	SUB								
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)*	<0.5 µg/kg	SUB								



CERTIFICATE OF ANALYSIS

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SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.	TP05 1.5m	TP06 1.0m	TP06 1.5m	TP07 1.3m	TP08 1.3m	TP09 0.5m
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.00 Soil/Solid (S) 13/04/2022	1.00 - 1.50 Soil/Solid (S) 13/04/2022	1.50 - 1.50 Soil/Solid (S) 13/04/2022	1.30 - 1.80 Soil/Solid (S) 13/04/2022	1.30 - 1.80 Soil/Solid (S) 13/04/2022	0.50 - 1.00 Soil/Solid (S) 13/04/2022
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	12	7.8	9.7	11	24	16
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.675
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	2.33
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.66
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.35
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	5.44
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	25.4
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.81
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	10.1
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.07
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	1.02	0.782	9.19
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	4.42
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	0.649	4.12	74.3
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.792
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.85
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend			Customer Sample Ref.	TP05 1.5m	TP06 1.0m	TP06 1.5m	TP07 1.3m	TP08 1.3m	TP09 0.5m
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*§@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	1.50 - 2.00	1.00 - 1.50	1.50 - 1.50	1.30 - 1.80	1.30 - 1.80	0.50 - 1.00
N-Ethyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	Soil/Solid (S)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	<0.5 µg/kg	SUB	Soil/Solid (S)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	<0.5 µg/kg	SUB	Soil/Solid (S)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			Date Sampled	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
			Sample Time	.	.	.	.	.	.
			Date Received	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022
			SDG Ref	220420-34	220420-34	220420-34	220420-34	220420-34	220420-34
			Lab Sample No.(s)	26152370	26152372	26152420	26152378	26152382	26152386
			AGS Reference						



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.		TP10 0.5m	TP10 1.5m	TP11 1.3m	TP12 1.5m	TP13 1.5m	TP01 SUR
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.50 - 1.00 Soil/Solid (S) 14/04/2022	1.50 - 2.00 Soil/Solid (S) 14/04/2022	1.30 - 1.80 Soil/Solid (S) 14/04/2022	1.50 - 2.00 Soil/Solid (S) 14/04/2022	1.50 - 2.00 Soil/Solid (S) 14/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	20	12	16	17	11	11	12
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.643
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.	TP02 SUR	TP03 SUR	TP04 SUR	TP07 SUR	TP08 SUR	TP09 SUR
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.50 Soil/Solid (S) 13/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022	0.00 - 0.50 Soil/Solid (S) 13/04/2022
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	12	20	17	33	15	13
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	0.632	2.06	1.39
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	1.18	5.42	4.16
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	1.49	2.81	2.79
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	2.28	4.06	2.32
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	7.67	10.8	5.98
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	3.51	10.1	15.1
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	8.36	2.58
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	19.4	18.8
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	0.604	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.85	1.42
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	1.06	<0.5	7.56	4.51	7.79
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.05	2.3
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	6.51	0.688	19.1	93.7	79.6
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	4.32	2.11
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.58	0.576
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	2.38	1.88
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	5.66	2.64
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.51	0.836
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Results Legend		Customer Sample Ref.	TP11 SUR	TP12 SUR	TP13 SUR		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unflit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.50 Soil/Solid (S) 14/04/2022 19/04/2022 220420-34 26152394	0.00 - 0.50 Soil/Solid (S) 14/04/2022 19/04/2022 220420-34 26152398	Soil/Solid (S) 14/04/2022 19/04/2022 220420-34 26158891		
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	8.7	14	25		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	0.536	1.47	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

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SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	TP01 SUR	29/04/2022	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.00 - 0.50										
Sample Type	SOLID										
Date Sampled	13/04/2022 00:00:00										
Date Received	19/04/2022 09:00:00										
SDG	220420-34										
Original Sample	26152368										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM433	EU Directive (2020/2184) PFAS in water matrices.	Analysis of the EU 20 suite of perfluorinated alkyl substances in water matrices.

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220420-34
Client Ref.: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Test Completion Dates

Lab Sample No(s)	26152404	26152390	26152408	26152412	26152416	26152418	26152370	26152372	26152420	26152378
Customer Sample Ref.	TP12	TP01 1.5m	TP02 1.5m	TP03 1.3m	TP04 1.5m	TP05 0.5m	TP05 1.5m	TP06 1.0m	TP06 1.5m	TP07 1.3m
AGS Ref.										
Depth	0.00 - 0.00	1.50 - 2.00	1.50 - 2.00	1.30 - 1.80	1.50 - 2.00	0.50 - 1.00	1.50 - 2.00	1.00 - 1.50	1.50 - 1.50	1.30 - 1.80
Type	Ground Water	Soil/Solid (S)								
PFAS by LCMS (S-PFCLMS02-C)		04-May-2022	03-May-2022	04-May-2022						
PFAS Liquids	28-Apr-2022									
PFAS Liquids (EU specified)	28-Apr-2022									
Sample description		20-Apr-2022	21-Apr-2022	20-Apr-2022						

Lab Sample No(s)	26152382	26152386	26152388	26152392	26152396	26152400	26152402	26152368	26152406	26152410
Customer Sample Ref.	TP08 1.3m	TP09 0.5m	TP10 0.5m	TP10 1.5m	TP11 1.3m	TP12 1.5m	TP13 1.5m	TP01 SUR	TP02 SUR	TP03 SUR
AGS Ref.										
Depth	1.30 - 1.80	0.50 - 1.00	0.50 - 1.00	1.50 - 2.00	1.30 - 1.80	1.50 - 2.00	1.50 - 2.00	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
Type	Soil/Solid (S)									
Asbestos ID in Solid Samples								29-Apr-2022		
PFAS by LCMS (S-PFCLMS02-C)	04-May-2022									
Sample description	20-Apr-2022									

Lab Sample No(s)	26152414	26152374	26152380	26152384	26152394	26152398	26158891
Customer Sample Ref.	TP04 SUR	TP07 SUR	TP08 SUR	TP09 SUR	TP11 SUR	TP12 SUR	TP13 SUR
AGS Ref.							
Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	04-May-2022	04-May-2022	04-May-2022	04-May-2022	04-May-2022	04-May-2022	03-May-2022
Sample description	20-Apr-2022	20-Apr-2022	20-Apr-2022	20-Apr-2022	20-Apr-2022	20-Apr-2022	21-Apr-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2238652	Issue Date	: 03-May-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220420-34	Page	: 1 of 3
Order number	: ----	Date Samples Received	: 26-Apr-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 26-Apr-2022 - 03-May-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL				Client sample ID		26166592 TP06 1.5m		26166547 TP13 SUR		----	
				Laboratory sample ID		PR2238652001		PR2238652002		----	
				Client sampling date / time		22-Apr-2022 08:47		22-Apr-2022 08:45		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		



Sub-Matrix: SOIL				Client sample ID		26166592 TP06 1.5m		26166547 TP13 SUR		----	
				Laboratory sample ID		PR2238652001		PR2238652002		----	
				Client sampling date / time		22-Apr-2022 08:47		22-Apr-2022 08:45		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	91.6	± 6.0%	73.2	± 6.0%	----	----		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

Work Order	: PR2238492	Issue Date	: 04-May-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220420-34	Page	: 1 of 12
Order number	: ----	Date Samples Received	: 26-Apr-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 26-Apr-2022 - 04-May-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL				Client sample ID		26160586 TP01 1.5m		26160571 TP01 SUR		26160513 TP02 1.5m	
Laboratory sample ID				PR2238492001		PR2238492002		PR2238492003			
Client sampling date / time				21-Apr-2022 09:37		21-Apr-2022 09:36		21-Apr-2022 09:31			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	0.770	± 30.0%		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.643	± 30.0%	0.764	± 30.0%		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160586 TP01 1.5m		26160571 TP01 SUR		26160513 TP02 1.5m	
				Laboratory sample ID		PR2238492001		PR2238492002		PR2238492003	
				Client sampling date / time		21-Apr-2022 09:37		21-Apr-2022 09:36		21-Apr-2022 09:31	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.8	± 6.0%	78.2	± 6.0%	77.1	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160660 TP02 SUR		26160528 TP03 1.3m		26160618 TP03 SUR	
				Laboratory sample ID		PR2238492004		PR2238492005		PR2238492006	
				Client sampling date / time		21-Apr-2022 09:42		21-Apr-2022 09:32		21-Apr-2022 09:38	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.695	± 30.0%	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	2.40	± 30.0%	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.871	± 30.0%	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	3.37	± 30.0%	1.06	± 30.0%		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	3.83	± 30.0%	6.51	± 30.0%		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160660 TP02 SUR		26160528 TP03 1.3m		26160618 TP03 SUR	
				Laboratory sample ID		PR2238492004		PR2238492005		PR2238492006	
				Client sampling date / time		21-Apr-2022 09:42		21-Apr-2022 09:32		21-Apr-2022 09:38	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.1	± 6.0%	87.6	± 6.0%	72.4	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160768 TP04 1.5m		26160497 TP04 SUR		26160549 TP05 0.5m	
				Laboratory sample ID		PR2238492007		PR2238492008		PR2238492009	
				Client sampling date / time		21-Apr-2022 09:52		21-Apr-2022 09:28		21-Apr-2022 09:34	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160768 TP04 1.5m		26160497 TP04 SUR		26160549 TP05 0.5m	
				Laboratory sample ID		PR2238492007		PR2238492008		PR2238492009	
				Client sampling date / time		21-Apr-2022 09:52		21-Apr-2022 09:28		21-Apr-2022 09:34	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.688	± 30.0%	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.4	± 6.0%	82.0	± 6.0%	84.8	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160780 TP05 1.5m		26160500 TP06 1.0m		26160726 TP07 1.3m	
				Laboratory sample ID		PR2238492010		PR2238492011		PR2238492012	
				Client sampling date / time		21-Apr-2022 09:53		21-Apr-2022 09:29		21-Apr-2022 09:48	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160780 TP05 1.5m		26160500 TP06 1.0m		26160726 TP07 1.3m	
Laboratory sample ID				PR2238492010		PR2238492011		PR2238492012			
Client sampling date / time				21-Apr-2022 09:53		21-Apr-2022 09:29		21-Apr-2022 09:48			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.02	± 30.0%		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	0.649	± 30.0%		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFODa)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160780 TP05 1.5m		26160500 TP06 1.0m		26160726 TP07 1.3m	
				Laboratory sample ID		PR2238492010		PR2238492011		PR2238492012	
				Client sampling date / time		21-Apr-2022 09:53		21-Apr-2022 09:29		21-Apr-2022 09:48	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.6	± 6.0%	88.6	± 6.0%	88.2	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160670 TP07 SUR		26160718 TP08 1.3m		26160733 TP08 SUR	
				Laboratory sample ID		PR2238492013		PR2238492014		PR2238492015	
				Client sampling date / time		21-Apr-2022 09:43		21-Apr-2022 09:48		21-Apr-2022 09:49	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	0.632	± 30.0%	<0.500	---	2.06	± 30.0%		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	1.18	± 30.0%	<0.500	---	5.42	± 30.0%		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	1.49	± 30.0%	<0.500	---	2.81	± 30.0%		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	2.28	± 30.0%	<0.500	---	4.06	± 30.0%		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	7.67	± 30.0%	<0.500	---	10.8	± 30.0%		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	3.51	± 30.0%	<0.500	---	10.1	± 30.0%		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	8.36	± 30.0%		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	19.4	± 30.0%		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	0.604	± 30.0%		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.85	± 30.0%		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	7.56	± 30.0%	0.782	± 30.0%	4.51	± 30.0%		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.05	± 30.0%		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	19.1	± 30.0%	4.12	± 30.0%	93.7	± 30.0%		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	4.32	± 30.0%		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	5.66	± 30.0%		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160670 TP07 SUR		26160718 TP08 1.3m		26160733 TP08 SUR	
				Laboratory sample ID		PR2238492013		PR2238492014		PR2238492015	
				Client sampling date / time		21-Apr-2022 09:43		21-Apr-2022 09:48		21-Apr-2022 09:49	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.58	± 30.0%		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	2.38	± 40.0%		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.51	± 40.0%		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	80.3	± 6.0%	71.8	± 6.0%	81.8	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160712 TP09 0.5m		26160648 TP09 SUR		26160825 TP10 0.5m	
				Laboratory sample ID		PR2238492016		PR2238492017		PR2238492018	
				Client sampling date / time		21-Apr-2022 09:47		21-Apr-2022 09:40		21-Apr-2022 09:59	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	0.675	± 30.0%	1.39	± 30.0%	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	2.33	± 30.0%	4.16	± 30.0%	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	1.66	± 30.0%	2.79	± 30.0%	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	1.35	± 30.0%	2.32	± 30.0%	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	5.44	± 30.0%	5.98	± 30.0%	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	25.4	± 30.0%	15.1	± 30.0%	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	1.81	± 30.0%	2.58	± 30.0%	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	10.1	± 30.0%	18.8	± 30.0%	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	1.07	± 30.0%	1.42	± 30.0%	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	9.19	± 30.0%	7.79	± 30.0%	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	4.42	± 30.0%	2.30	± 30.0%	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	74.3	± 30.0%	79.6	± 30.0%	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160712 TP09 0.5m		26160648 TP09 SUR		26160825 TP10 0.5m	
				Laboratory sample ID		PR2238492016		PR2238492017		PR2238492018	
				Client sampling date / time		21-Apr-2022 09:47		21-Apr-2022 09:40		21-Apr-2022 09:59	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	0.792	± 30.0%	2.11	± 30.0%	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	1.85	± 30.0%	2.64	± 30.0%	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.576	± 30.0%	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	1.20	± 40.0%	1.88	± 40.0%	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.836	± 40.0%	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCl	0.10	%	82.4	± 6.0%	84.0	± 6.0%	77.5	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160807 TP10 1.5m		26160800 TP11 1.3m		26160791 TP11 SUR	
				Laboratory sample ID		PR2238492019		PR2238492020		PR2238492021	
				Client sampling date / time		21-Apr-2022 09:56		21-Apr-2022 09:55		21-Apr-2022 09:54	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160807 TP10 1.5m		26160800 TP11 1.3m		26160791 TP11 SUR	
Laboratory sample ID				PR2238492019		PR2238492020		PR2238492021			
Client sampling date / time				21-Apr-2022 09:56		21-Apr-2022 09:55		21-Apr-2022 09:54			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	0.536	± 30.0%		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26160807 TP10 1.5m		26160800 TP11 1.3m		26160791 TP11 SUR	
				Laboratory sample ID		PR2238492019		PR2238492020		PR2238492021	
				Client sampling date / time		21-Apr-2022 09:56		21-Apr-2022 09:55		21-Apr-2022 09:54	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	84.2	± 6.0%	86.1	± 6.0%	89.5	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26160753 TP12 1.5m		26160811 TP12 SUR		26160742 TP13 1.5m	
				Laboratory sample ID		PR2238492022		PR2238492023		PR2238492024	
				Client sampling date / time		21-Apr-2022 09:51		21-Apr-2022 09:57		21-Apr-2022 09:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	1.47	± 30.0%	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		



Sub-Matrix: SOIL				Client sample ID		26160753 TP12 1.5m		26160811 TP12 SUR		26160742 TP13 1.5m	
				Laboratory sample ID		PR2238492022		PR2238492023		PR2238492024	
				Client sampling date / time		21-Apr-2022 09:51		21-Apr-2022 09:57		21-Apr-2022 09:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.3	± 6.0%	83.2	± 6.0%	86.6	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220420-34
Client Ref: P21-195

Report Number: 644681
Location: Dublin Airport

Superseded Report: 644602

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERES Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERES Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	10 June 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220527-65
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	650112
Order Number:	Z3234

This report has been revised and directly supersedes 649440 in its entirety.

We received 21 samples on Friday May 27, 2022 and 21 of these samples were scheduled for analysis which was completed on Friday June 10, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26353427	TP01 0.5m		0.50 - 1.00	13/04/2022
26353423	TP01 1.0m		1.00 - 1.50	13/04/2022
26353418	TP02 0.5m		0.50 - 1.00	13/04/2022
26353416	TP02 1.0m		1.00 - 1.50	13/04/2022
26353413	TP03 0.3m		0.30 - 0.80	13/04/2022
26353409	TP03 0.8m		0.80 - 1.30	13/04/2022
26353407	TP04 0.5m		0.50 - 1.00	13/04/2022
26353402	TP04 1.0m		1.00 - 1.50	13/04/2022
26353400	TP05 1.0m		1.00 - 1.50	13/04/2022
26353395	TP07 0.3m		0.30 - 0.80	13/04/2022
26353390	TP07 0.8m		0.80 - 1.30	13/04/2022
26353384	TP08 0.3m		0.30 - 0.80	13/04/2022
26353448	TP08 0.8m		0.80 - 1.30	13/04/2022
26353445	TP10 0.5m		0.50 - 1.00	13/04/2022
26353440	TP10 1.0m		1.00 - 1.50	13/04/2022
26353438	TP11 0.3m		0.30 - 0.80	13/04/2022
26353436	TP11 0.8m		0.80 - 1.30	13/04/2022
26353430	TP12 0.5m		0.50 - 1.00	13/04/2022
26353433	TP12 1.0m		1.00 - 1.50	13/04/2022
26353372	TP13 0.5m		0.50 - 1.00	13/04/2022
26353421	TP13 1.0m		1.00 - 1.50	13/04/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26353421	TP13 1.0m		1.00 - 1.50	1kg TUB with Handle (ALE260)	S	X	
26353372	TP13 0.5m		0.50 - 1.00	1kg TUB with Handle (ALE260)	S	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26353427	TP01 0.5m	0.50 - 1.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
26353423	TP01 1.0m	1.00 - 1.50	Dark Brown	Loamy Sand	Vegetation	Stones
26353418	TP02 0.5m	0.50 - 1.00	Dark Brown	Sandy Silt Loam	None	Stones
26353416	TP02 1.0m	1.00 - 1.50	Dark Brown	Silty Clay Loam	Vegetation	Stones
26353413	TP03 0.3m	0.30 - 0.80	Dark Brown	Sandy Clay	Vegetation	Stones
26353409	TP03 0.8m	0.80 - 1.30	Dark Brown	Sandy Clay Loam	None	Stones
26353407	TP04 0.5m	0.50 - 1.00	Dark Brown	Silty Clay Loam	None	Stones
26353402	TP04 1.0m	1.00 - 1.50	Light Brown	Sandy Clay Loam	Vegetation	Stones
26353400	TP05 1.0m	1.00 - 1.50	Dark Brown	Clay Loam	None	Stones
26353395	TP07 0.3m	0.30 - 0.80	Dark Brown	Sandy Silt Loam	None	Stones
26353390	TP07 0.8m	0.80 - 1.30	Dark Brown	Silty Clay Loam	None	Stones
26353384	TP08 0.3m	0.30 - 0.80	Dark Brown	Loamy Sand	Vegetation	Stones
26353448	TP08 0.8m	0.80 - 1.30	Dark Brown	Clay Loam	Vegetation	Stones
26353445	TP10 0.5m	0.50 - 1.00	Dark Brown	Sandy Clay	None	Stones
26353440	TP10 1.0m	1.00 - 1.50	Dark Brown	Sandy Silt Loam	Vegetation	Stones
26353438	TP11 0.3m	0.30 - 0.80	Dark Brown	Sandy Loam	Vegetation	Stones
26353436	TP11 0.8m	0.80 - 1.30	Dark Brown	Sandy Clay Loam	Vegetation	Stones
26353430	TP12 0.5m	0.50 - 1.00	Dark Brown	Loamy Sand	Vegetation	Stones
26353433	TP12 1.0m	1.00 - 1.50	Dark Brown	Silt Loam	Vegetation	Stones
26353372	TP13 0.5m	0.50 - 1.00	Dark Brown	Loamy Sand	Vegetation	Stones
26353421	TP13 1.0m	1.00 - 1.50	Dark Brown	Sandy Silt Loam	None	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Results Legend		Customer Sample Ref.		TP01 0.5m	TP01 1.0m	TP02 0.5m	TP02 1.0m	TP03 0.3m	TP03 0.8m
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference							
M mCERTS accredited.			0.50 - 1.00	1.00 - 1.50	0.50 - 1.00	1.00 - 1.50	0.30 - 0.80	0.80 - 1.30	
aq Aqueous / settled sample.			Soil/Solid (S)						
diss.filt Dissolved / filtered sample.			13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	
tot.unfilt Total / unfiltered sample.			27/05/2022	27/05/2022	27/05/2022	27/05/2022	27/05/2022	27/05/2022	
* Subcontracted - refer to subcontractor report for accreditation status.			220527-65	220527-65	220527-65	220527-65	220527-65	220527-65	
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			26353427	26353423	26353418	26353416	26353413	26353409	
(F) Trigger breach confirmed									
1-4*\$@ Sample deviation (see appendix)									
Component	LOD/Units		Method						
Moisture Content Ratio (% of as received sample)	%	PM024	8.3	14	11	13	18	23	
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	0.509	<0.5	<0.5	<0.5	<0.5	
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.825	
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	0.596	<0.5	<0.5	<0.5	4.49	
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Results Legend		Customer Sample Ref.	TP04 0.5m	TP04 1.0m	TP05 1.0m	TP07 0.3m	TP07 0.8m	TP08 0.3m
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
	* Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.50 - 1.00	1.00 - 1.50	1.00 - 1.50	0.30 - 0.80	0.80 - 1.30	0.30 - 0.80
		Sample Type	Soil/Solid (S)					
		Date Sampled	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
		Sample Time						
		Date Received	27/05/2022	27/05/2022	27/05/2022	27/05/2022	27/05/2022	27/05/2022
		SDG Ref	220527-65	220527-65	220527-65	220527-65	220527-65	220527-65
		Lab Sample No.(s)	26353407	26353402	26353400	26353395	26353390	26353384
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	18	17	12	13	12	16
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	0.781	<0.5	1.42
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	1.57	<0.5	4.13
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	2.26	<0.5	2.24
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	3.23	0.63	2.88
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	12	1.67	8.01
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	0.58	<0.5	7.86
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	4.85
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	9.08
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.95
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	0.547	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	0.777	1.24	<0.5	14.8	3.16	4.85
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.868
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	4.33	<0.5	141
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.28
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.613
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.629
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.67
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.57
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Results Legend		Customer Sample Ref.	TP08 0.8m	TP10 0.5m	TP10 1.0m	TP11 0.3m	TP11 0.8m	TP12 0.5m
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.flit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 1.30 Soil/Solid (S) 13/04/2022	0.50 - 1.00 Soil/Solid (S) 13/04/2022	1.00 - 1.50 Soil/Solid (S) 13/04/2022	0.30 - 0.80 Soil/Solid (S) 13/04/2022	0.80 - 1.30 Soil/Solid (S) 13/04/2022	0.50 - 1.00 Soil/Solid (S) 13/04/2022
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	16	9.9	15	20	11	15
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	0.533	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	1.24	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	1.25	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	1.7	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	4.78	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	31.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	1.46	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	6.34	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	2.47	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	112	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Results Legend		Customer Sample Ref.		TP12 1.0m	TP13 0.5m	TP13 1.0m		
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M mCERTS accredited.			1.00 - 1.50	0.50 - 1.00	1.00 - 1.50			
aq Aqueous / settled sample.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
diss.filt Dissolved / filtered sample.			13/04/2022	13/04/2022	13/04/2022			
tot.unfilt Total / unfiltered sample.			27/05/2022	27/05/2022	27/05/2022			
* Subcontracted - refer to subcontractor report for accreditation status.			220527-65	220527-65	220527-65			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			26353433	26353372	26353421			
(F) Trigger breach confirmed								
1-4*\$@ Sample deviation (see appendix)								
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	17	14	12			
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5			
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5			
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5			



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220527-65
Client Ref.: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Test Completion Dates

Lab Sample No(s)	26353427	26353423	26353418	26353416	26353413	26353409	26353407	26353402	26353400	26353395
Customer Sample Ref.	TP01 0.5m	TP01 1.0m	TP02 0.5m	TP02 1.0m	TP03 0.3m	TP03 0.8m	TP04 0.5m	TP04 1.0m	TP05 1.0m	TP07 0.3m
AGS Ref.										
Depth	0.50 - 1.00	1.00 - 1.50	0.50 - 1.00	1.00 - 1.50	0.30 - 0.80	0.80 - 1.30	0.50 - 1.00	1.00 - 1.50	1.00 - 1.50	0.30 - 0.80
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	10-Jun-2022									
Sample description	28-May-2022	28-May-2022	28-May-2022	27-May-2022	27-May-2022	28-May-2022	28-May-2022	28-May-2022	28-May-2022	28-May-2022

Lab Sample No(s)	26353390	26353384	26353448	26353445	26353440	26353438	26353436	26353430	26353433	26353372
Customer Sample Ref.	TP07 0.8m	TP08 0.3m	TP08 0.8m	TP10 0.5m	TP10 1.0m	TP11 0.3m	TP11 0.8m	TP12 0.5m	TP12 1.0m	TP13 0.5m
AGS Ref.										
Depth	0.80 - 1.30	0.30 - 0.80	0.80 - 1.30	0.50 - 1.00	1.00 - 1.50	0.30 - 0.80	0.80 - 1.30	0.50 - 1.00	1.00 - 1.50	0.50 - 1.00
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	10-Jun-2022									
Sample description	28-May-2022									

Lab Sample No(s)	26353421
Customer Sample Ref.	TP13 1.0m
AGS Ref.	
Depth	1.00 - 1.50
Type	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	10-Jun-2022
Sample description	28-May-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2254340	Issue Date	: 10-Jun-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdnsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220527-65	Page	: 1 of 4
Order number	: ----	Date Samples Received	: 02-Jun-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 02-Jun-2022 - 10-Jun-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL

Client sample ID

26358042	26358099	----
TP02 1.0m	TP03 0.3m	----
PR2254340001	PR2254340002	----
27-May-2022 15:52	27-May-2022 15:55	----

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----



Sub-Matrix: SOIL				Client sample ID		26358042 TP02 1.0m		26358099 TP03 0.3m		----	
				Laboratory sample ID		PR2254340001		PR2254340002		----	
				Client sampling date / time		27-May-2022 15:52		27-May-2022 15:55		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Parameter	Method	LOR	Unit	Client sample ID		Laboratory sample ID		Client sampling date / time			
				26358042 TP02 1.0m	26358099 TP03 0.3m	PR2254340001	PR2254340002	27-May-2022 15:52	27-May-2022 15:55	Result	MU
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	81.3	± 6.0%	84.4	± 6.0%	----	----		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

Work Order	: PR2254599	Issue Date	: 10-Jun-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220527-65	Page	: 1 of 20
Order number	: ----	Date Samples Received	: 02-Jun-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 02-Jun-2022 - 10-Jun-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

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The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Zdeněk Jiráček

Position

Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Parameter	Method	LOR	Unit	Client sample ID		26359509		26359515		26359519	
				Laboratory sample ID		TP01 0.5m		TP01 1.0m		TP02 0.5m	
				Client sampling date / time		Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	0.509	± 30.0%	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	0.596	± 30.0%	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOIL				Client sample ID		26359509 TP01 0.5m		26359515 TP01 1.0m		26359519 TP02 0.5m	
				Laboratory sample ID		PR2254599001		PR2254599002		PR2254599003	
				Client sampling date / time		28-May-2022 09:59		28-May-2022 10:01		28-May-2022 10:03	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26359509 TP01 0.5m		26359515 TP01 1.0m		26359519 TP02 0.5m	
				Laboratory sample ID		PR2254599001		PR2254599002		PR2254599003	
				Client sampling date / time		28-May-2022 09:59		28-May-2022 10:01		28-May-2022 10:03	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.4	± 6.0%	83.0	± 6.0%	85.4	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26359735 TP03 0.8m		26358797 TP04 0.5m		26359744 TP04 1.0m	
				Laboratory sample ID		PR2254599004		PR2254599005		PR2254599006	
				Client sampling date / time		28-May-2022 10:23		28-May-2022 08:43		28-May-2022 10:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26359735 TP03 0.8m		26358797 TP04 0.5m		26359744 TP04 1.0m	
Laboratory sample ID				PR2254599004		PR2254599005		PR2254599006			
Client sampling date / time				28-May-2022 10:23		28-May-2022 08:43		28-May-2022 10:25			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	1.24	± 30.0%		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	0.777	± 30.0%	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	0.825	± 30.0%	----	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	4.49	± 30.0%	----	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26359735 TP03 0.8m		26358797 TP04 0.5m		26359744 TP04 1.0m	
				Laboratory sample ID		PR2254599004		PR2254599005		PR2254599006	
				Client sampling date / time		28-May-2022 10:23		28-May-2022 08:43		28-May-2022 10:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26359735 TP03 0.8m		26358797 TP04 0.5m		26359744 TP04 1.0m	
				Laboratory sample ID		PR2254599004		PR2254599005		PR2254599006	
				Client sampling date / time		28-May-2022 10:23		28-May-2022 08:43		28-May-2022 10:25	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	74.8	± 6.0%	81.4	± 6.0%	86.4	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26358867 TP05 1.0m		26358857 TP07 0.3m		26358846 TP07 0.8m	
				Laboratory sample ID		PR2254599007		PR2254599008		PR2254599009	
				Client sampling date / time		28-May-2022 08:54		28-May-2022 08:52		28-May-2022 08:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	0.781	± 30.0%	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	1.57	± 30.0%	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	2.26	± 30.0%	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	0.630	± 30.0%		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	3.23	± 30.0%	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	1.67	± 30.0%		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	12.0	± 30.0%	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	0.580	± 30.0%	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26358867 TP05 1.0m		26358857 TP07 0.3m		26358846 TP07 0.8m	
				Laboratory sample ID		PR2254599007		PR2254599008		PR2254599009	
				Client sampling date / time		28-May-2022 08:54		28-May-2022 08:52		28-May-2022 08:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	3.16	± 30.0%		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	14.8	± 30.0%	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	4.33	± 30.0%	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26358867 TP05 1.0m		26358857 TP07 0.3m		26358846 TP07 0.8m	
				Laboratory sample ID		PR2254599007		PR2254599008		PR2254599009	
				Client sampling date / time		28-May-2022 08:54		28-May-2022 08:52		28-May-2022 08:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	0.547	± 30.0%	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.9	± 6.0%	80.9	± 6.0%	88.2	± 6.0%		



Sub-Matrix: SOIL				Client sample ID		26358897 TP08 0.3m		26358878 TP08 0.8m		26359787 TP10 0.5m	
Laboratory sample ID				PR2254599010		PR2254599011		PR2254599012			
Client sampling date / time				28-May-2022 08:57		28-May-2022 08:56		28-May-2022 10:30			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	1.42	± 30.0%	0.533	± 30.0%	----	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	4.13	± 30.0%	1.24	± 30.0%	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	2.24	± 30.0%	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	1.25	± 30.0%	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	2.88	± 30.0%	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	1.70	± 30.0%	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	8.01	± 30.0%	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	4.78	± 30.0%	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	7.86	± 30.0%	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	31.5	± 30.0%	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	4.85	± 30.0%	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	9.08	± 30.0%	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	1.46	± 30.0%	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	0.950	± 30.0%	----	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	4.85	± 30.0%	----	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	6.34	± 30.0%	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		



Sub-Matrix: SOIL				Client sample ID		26358897 TP08 0.3m		26358878 TP08 0.8m		26359787 TP10 0.5m	
				Laboratory sample ID		PR2254599010		PR2254599011		PR2254599012	
				Client sampling date / time		28-May-2022 08:57		28-May-2022 08:56		28-May-2022 10:30	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	0.868	± 30.0%	----	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	2.47	± 30.0%	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	141	± 30.0%	----	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	112	± 30.0%	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	1.28	± 30.0%	----	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	1.67	± 30.0%	----	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26358897 TP08 0.3m		26358878 TP08 0.8m		26359787 TP10 0.5m	
Laboratory sample ID				PR2254599010		PR2254599011		PR2254599012			
Client sampling date / time				28-May-2022 08:57		28-May-2022 08:56		28-May-2022 10:30			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	0.613	± 30.0%	----	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	0.629	± 40.0%	----	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26358897 TP08 0.3m		26358878 TP08 0.8m		26359787 TP10 0.5m	
				Laboratory sample ID		PR2254599010		PR2254599011		PR2254599012	
				Client sampling date / time		28-May-2022 08:57		28-May-2022 08:56		28-May-2022 10:30	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	0.570	± 40.0%	<0.500	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	84.6	± 6.0%	82.1	± 6.0%	91.3	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26359696 TP10 1.0m		26359646 TP11 0.3m		26359608 TP11 0.8m	
				Laboratory sample ID		PR2254599013		PR2254599014		PR2254599015	
				Client sampling date / time		28-May-2022 10:20		28-May-2022 10:17		28-May-2022 10:13	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		



Sub-Matrix: SOIL				Client sample ID		26359696 TP10 1.0m		26359646 TP11 0.3m		26359608 TP11 0.8m	
				Laboratory sample ID		PR2254599013		PR2254599014		PR2254599015	
				Client sampling date / time		28-May-2022 10:20		28-May-2022 10:17		28-May-2022 10:13	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Parameter	Method	LOR	Unit	Client sample ID						
				26359696 TP10 1.0m		26359646 TP11 0.3m		26359608 TP11 0.8m		
				PR2254599013		PR2254599014		PR2254599015		
				28-May-2022 10:20		28-May-2022 10:17		28-May-2022 10:13		
Laboratory sample ID				Result	MU	Result	MU	Result	MU	
Client sampling date / time				Result	MU	Result	MU	Result	MU	
Perfluorinated Compounds - Continued										
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---	
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---	
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---	
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---	
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	



Sub-Matrix: SOIL				Client sample ID		26359696 TP10 1.0m		26359646 TP11 0.3m		26359608 TP11 0.8m	
				Laboratory sample ID		PR2254599013		PR2254599014		PR2254599015	
				Client sampling date / time		28-May-2022 10:20		28-May-2022 10:17		28-May-2022 10:13	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.1	± 6.0%	81.3	± 6.0%	87.6	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26359599 TP12 0.5m		26359540 TP12 1.0m		26359572 TP13 0.5m	
				Laboratory sample ID		PR2254599016		PR2254599017		PR2254599018	
				Client sampling date / time		28-May-2022 10:12		28-May-2022 10:07		28-May-2022 10:08	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26359599 TP12 0.5m		26359540 TP12 1.0m		26359572 TP13 0.5m	
				Laboratory sample ID		PR2254599016		PR2254599017		PR2254599018	
				Client sampling date / time		28-May-2022 10:12		28-May-2022 10:07		28-May-2022 10:08	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26359599 TP12 0.5m		26359540 TP12 1.0m		26359572 TP13 0.5m	
Laboratory sample ID				PR2254599016		PR2254599017		PR2254599018			
Client sampling date / time				28-May-2022 10:12		28-May-2022 10:07		28-May-2022 10:08			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	84.2	± 6.0%	81.6	± 6.0%	85.6	± 6.0%		



Sub-Matrix: SOIL

Client sample ID

26359594

TP13 1.0m

Laboratory sample ID
Client sampling date / time

PR2254599019

28-May-2022 10:10

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	----	----	----
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----



Sub-Matrix: SOIL				Client sample ID		26359594		----		----	
				Laboratory sample ID		TP13 1.0m		----		----	
				Client sampling date / time		PR2254599019		----		----	
						28-May-2022 10:10		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.5	± 6.0%	----	----	----	----		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220527-65
Client Ref: P21-195

Report Number: 650112
Location: Dublin Airport

Superseded Report: 649440

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

NASAH



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Hawarden
Deeside
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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 22 September 2022
Customer: Fehily Timoney
Sample Delivery Group (SDG): 220826-73
Your Reference: P21-195
Location: Dublin Airport
Report No: 662127
Order Number: Z3234

This report has been revised and directly supersedes 659243 in its entirety.

We received 27 samples on Friday August 26, 2022 and 27 of these samples were scheduled for analysis which was completed on Thursday September 22, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26793266	TP144A 0.5m		0.00 - 0.00	22/07/2022
26793268	TP144A 2.5m		0.00 - 0.00	22/07/2022
26793224	TP109 1.6m		0.00 - 0.00	14/07/2022
26793255	TP109 3.0m		0.00 - 0.00	14/07/2022
26793277	TP111 3.0m		0.00 - 0.00	19/07/2022
26793280	TP113 0.5m		0.00 - 0.00	19/07/2022
26793282	TP113 1.5m		0.00 - 0.00	19/07/2022
26793285	TP123 3.0m		0.00 - 0.00	29/07/2022
26793287	TP124 1.7m		0.00 - 0.00	15/07/2022
26793289	TP124 2.3m		0.00 - 0.00	15/07/2022
26793271	TP126 0.5m		0.00 - 0.00	27/07/2022
26793273	TP126 2.0m		0.00 - 0.00	27/07/2022
26793291	TP129 0.5m		0.00 - 0.00	20/07/2022
26793226	TP129 2.2m		0.00 - 0.00	20/07/2022
26793229	TP131 0.5m		0.00 - 0.00	21/07/2022
26793232	TP131 2.5m		0.00 - 0.00	21/07/2022
26793234	TP133 1.2m		0.00 - 0.00	06/07/2022
26793238	TP133 2.5m		0.00 - 0.00	06/07/2022
26793240	TP135 1.0m		0.00 - 0.00	05/07/2022
26793243	TP135 2.3m		0.00 - 0.00	05/07/2022
26793245	TP137 1.4m		0.00 - 0.00	14/07/2022
26793247	TP137 1.6m		0.00 - 0.00	14/07/2022
26793275	TP139 0.5m		0.00 - 0.00	02/08/2022
26793251	TP144 0.5m		0.00 - 0.00	15/07/2022
26793258	TP144 2.5m		0.00 - 0.00	15/07/2022
26793261	TP213 1.0m		0.00 - 0.00	14/07/2022
26793264	TP213 2.0m		0.00 - 0.00	14/07/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

26793264	TP213 2.0m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793261	TP213 1.0m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793258	TP144 2.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793251	TP144 0.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793275	TP139 0.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793247	TP137 1.6m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793245	TP137 1.4m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X
26793243	TP136 2.3m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26793224	TP109 1.6m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793255	TP109 3.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793277	TP111 3.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793280	TP113 0.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793282	TP113 1.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793285	TP123 3.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793287	TP124 1.7m	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation
26793289	TP124 2.3m	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
26793271	TP126 0.5m	0.00 - 0.00	Dark Brown	Stone/Soil	Stones	Stones
26793273	TP126 2.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793291	TP129 0.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793226	TP129 2.2m	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
26793229	TP131 0.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793232	TP131 2.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793234	TP133 1.2m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793238	TP133 2.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793240	TP135 1.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793243	TP135 2.3m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793245	TP137 1.4m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793247	TP137 1.6m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793275	TP139 0.5m	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
26793251	TP144 0.5m	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
26793258	TP144 2.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793261	TP213 1.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793264	TP213 2.0m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26793266	TP144A 0.5m	0.00 - 0.00	Dark Brown	Sand	Stones	Vegetation
26793268	TP144A 2.5m	0.00 - 0.00	Dark Brown	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Results Legend		Customer Sample Ref.	TP144A 0.5m	TP144A 2.5m	TP109 1.6m	TP109 3.0m	TP111 3.0m	TP113 0.5m	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference							
M	mCERTS accredited.		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
aq	Aqueous / settled sample.		Soil/Solid (S)						
diss.filt	Dissolved / filtered sample.		22/07/2022	22/07/2022	14/07/2022	14/07/2022	19/07/2022	19/07/2022	19/07/2022
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
(F)	Trigger breach confirmed		220826-73	220826-73	220826-73	220826-73	220826-73	220826-73	220826-73
1-4*\$@	Sample deviation (see appendix)		26793266	26793268	26793224	26793255	26793277	26793280	26793280
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	10	8.2	18	11	7.2	22	
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	0.966	<0.5	<0.5	<0.5	
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5	
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	1.86	2.89	<0.5	2.44	
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	113	5.16	<0.5	11.9	
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	1.49	0.602	<0.5	<0.5	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	1.78	<0.5	<0.5	<0.5	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Results Legend		Customer Sample Ref.	TP113 1.5m	TP123 3.0m	TP124 1.7m	TP124 2.3m	TP126 0.5m	TP126 2.0m
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.		0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt	Dissolved / filtered sample.		19/07/2022	29/07/2022	15/07/2022	15/07/2022	27/07/2022	27/07/2022
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
(F)	Trigger breach confirmed		220826-73	220826-73	220826-73	220826-73	220826-73	220826-73
1-4*§	Sample deviation (see appendix)		26793282	26793285	26793287	26793289	26793271	26793273
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	20	13	14	19	8.1	20
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	1.8
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	0.673
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	0.727	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	5.68	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	0.923	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Results Legend		Customer Sample Ref.	TP129 0.5m	TP129 2.2m	TP131 0.5m	TP131 2.5m	TP133 1.2m	TP133 2.5m
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
		Sample Type	Soil/Solid (S)					
		Date Sampled	20/07/2022	20/07/2022	21/07/2022	21/07/2022	06/07/2022	06/07/2022
		Sample Time						
		Date Received	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
		SDG Ref	220826-73	220826-73	220826-73	220826-73	220826-73	220826-73
		Lab Sample No.(s)	26793291	26793226	26793229	26793232	26793234	26793238
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	12	11	14	20	12	12
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	0.831	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	0.656	0.564	<0.5	0.651	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Results Legend		Customer Sample Ref.	TP135 1.0m	TP135 2.3m	TP137 1.4m	TP137 1.6m	TP139 0.5m	TP144 0.5m
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		05/07/2022	05/07/2022	14/07/2022	14/07/2022	02/08/2022	15/07/2022
diss.filt	Dissolved / filtered sample.		26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
tot.unfilt	Total / unfiltered sample.		220826-73	220826-73	220826-73	220826-73	220826-73	220826-73
*	Subcontracted - refer to subcontractor report for accreditation status.		26793240	26793243	26793245	26793247	26793275	26793251
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	18	7.8	14	16	9.6	7.9
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.71	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	1.28	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Results Legend		Customer Sample Ref.	TP144 2.5m	TP213 1.0m	TP213 2.0m		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	15/07/2022	14/07/2022	14/07/2022		
		Sample Time					
		Date Received	26/08/2022	26/08/2022	26/08/2022		
		SDG Ref	220826-73	220826-73	220826-73		
		Lab Sample No.(s)	26793258	26793261	26793264		
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	9.1	11	11		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-73
Client Ref.: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Test Completion Dates

Lab Sample No(s)	26793224	26793255	26793277	26793280	26793282	26793285	26793287	26793289	26793266	26793268
Customer Sample Ref.	TP109 1.6m	TP109 3.0m	TP111 3.0m	TP113 0.5m	TP113 1.5m	TP123 3.0m	TP124 1.7m	TP124 2.3m	TP144A 0.5m	TP144A 2.5m
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	22-Sep-2022									
Sample description	28-Aug-2022									

Lab Sample No(s)	26793271	26793273	26793291	26793226	26793229	26793232	26793234	26793238	26793240	26793243
Customer Sample Ref.	TP126 0.5m	TP126 2.0m	TP129 0.5m	TP129 2.2m	TP131 0.5m	TP131 2.5m	TP133 1.2m	TP133 2.5m	TP135 1.0m	TP135 2.3m
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	22-Sep-2022									
Sample description	28-Aug-2022									

Lab Sample No(s)	26793245	26793247	26793275	26793251	26793258	26793261	26793264
Customer Sample Ref.	TP137 1.4m	TP137 1.6m	TP139 0.5m	TP144 0.5m	TP144 2.5m	TP213 1.0m	TP213 2.0m
AGS Ref.							
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)						
PFAS by LCMS (S-PFCLMS02-C)	22-Sep-2022						
Sample description	28-Aug-2022						



CERTIFICATE OF ANALYSIS

Work Order	: PR2287970	Issue Date	: 22-Sep-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220826-73	Page	: 1 of 26
Order number	: ----	Date Samples Received	: 01-Sep-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 01-Sep-2022 - 22-Sep-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Parameter	Method	LOR	Unit	Client sample ID		26800241		26800239		26800223	
				Laboratory sample ID		TP109 1.6m		TP109 3.0m		TP111 3.0m	
				Client sampling date / time		Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	0.966	± 30.0%	----	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	----	----	<0.500	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	2.89	± 30.0%	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	1.86	± 30.0%	----	----	----	----	----	----



Sub-Matrix: SOIL				Client sample ID		26800241 TP109 1.6m		26800239 TP109 3.0m		26800223 TP111 3.0m	
Laboratory sample ID				PR2287970001		PR2287970002		PR2287970003			
Client sampling date / time				28-Aug-2022 10:19		28-Aug-2022 10:12		28-Aug-2022 09:38			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	5.16	± 30.0%	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	113	± 30.0%	----	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	0.602	± 30.0%	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	1.49	± 30.0%	----	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	1.78	± 30.0%	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26800241 TP109 1.6m		26800239 TP109 3.0m		26800223 TP111 3.0m	
				Laboratory sample ID		PR2287970001		PR2287970002		PR2287970003	
				Client sampling date / time		28-Aug-2022 10:19		28-Aug-2022 10:12		28-Aug-2022 09:38	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26800241 TP109 1.6m		26800239 TP109 3.0m		26800223 TP111 3.0m	
				Laboratory sample ID		PR2287970001		PR2287970002		PR2287970003	
				Client sampling date / time		28-Aug-2022 10:19		28-Aug-2022 10:12		28-Aug-2022 09:38	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	80.3	± 6.0%	88.6	± 6.0%	91.4	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800185 TP113 0.5m		26800187 TP113 1.5m		26800237 TP123 3.0m	
				Laboratory sample ID		PR2287970004		PR2287970005		PR2287970006	
				Client sampling date / time		28-Aug-2022 07:36		28-Aug-2022 07:39		28-Aug-2022 10:09	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26800185 TP113 0.5m		26800187 TP113 1.5m		26800237 TP123 3.0m	
Laboratory sample ID				PR2287970004		PR2287970005		PR2287970006			
Client sampling date / time				28-Aug-2022 07:36		28-Aug-2022 07:39		28-Aug-2022 10:09			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	0.727	± 30.0%	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	2.44	± 30.0%	----	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	5.68	± 30.0%	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	11.9	± 30.0%	----	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---



Sub-Matrix: SOIL				Client sample ID		26800185 TP113 0.5m		26800187 TP113 1.5m		26800237 TP123 3.0m	
				Laboratory sample ID		PR2287970004		PR2287970005		PR2287970006	
				Client sampling date / time		28-Aug-2022 07:36		28-Aug-2022 07:39		28-Aug-2022 10:09	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	----	----	<5.00	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26800185 TP113 0.5m		26800187 TP113 1.5m		26800237 TP123 3.0m	
				Laboratory sample ID		PR2287970004		PR2287970005		PR2287970006	
				Client sampling date / time		28-Aug-2022 07:36		28-Aug-2022 07:39		28-Aug-2022 10:09	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	72.7	± 6.0%	81.8	± 6.0%	86.8	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800211 TP124 1.7m		26800233 TP124 2.3m		26800227 TP126 0.5m	
				Laboratory sample ID		PR2287970007		PR2287970008		PR2287970009	
				Client sampling date / time		28-Aug-2022 09:25		28-Aug-2022 10:03		28-Aug-2022 09:47	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		



Sub-Matrix: SOIL				Client sample ID		26800211 TP124 1.7m		26800233 TP124 2.3m		26800227 TP126 0.5m	
Laboratory sample ID				PR2287970007		PR2287970008		PR2287970009			
Client sampling date / time				28-Aug-2022 09:25		28-Aug-2022 10:03		28-Aug-2022 09:47			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---



Sub-Matrix: SOIL				Client sample ID		26800211 TP124 1.7m		26800233 TP124 2.3m		26800227 TP126 0.5m	
				Laboratory sample ID		PR2287970007		PR2287970008		PR2287970009	
				Client sampling date / time		28-Aug-2022 09:25		28-Aug-2022 10:03		28-Aug-2022 09:47	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	0.923	± 30.0%		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26800211 TP124 1.7m		26800233 TP124 2.3m		26800227 TP126 0.5m	
				Laboratory sample ID		PR2287970007		PR2287970008		PR2287970009	
				Client sampling date / time		28-Aug-2022 09:25		28-Aug-2022 10:03		28-Aug-2022 09:47	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26800211 TP124 1.7m		26800233 TP124 2.3m		26800227 TP126 0.5m	
				Laboratory sample ID		PR2287970007		PR2287970008		PR2287970009	
				Client sampling date / time		28-Aug-2022 09:25		28-Aug-2022 10:03		28-Aug-2022 09:47	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	83.5	± 6.0%	89.6	± 6.0%	93.8	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800219 TP126 2.0m		26800257 TP129 0.5m		26800229 TP129 2.2m	
				Laboratory sample ID		PR2287970010		PR2287970011		PR2287970012	
				Client sampling date / time		28-Aug-2022 09:31		28-Aug-2022 10:53		28-Aug-2022 09:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	1.80	± 30.0%	<0.500	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	0.673	± 30.0%	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26800219 TP126 2.0m		26800257 TP129 0.5m		26800229 TP129 2.2m	
				Laboratory sample ID		PR2287970010		PR2287970011		PR2287970012	
				Client sampling date / time		28-Aug-2022 09:31		28-Aug-2022 10:53		28-Aug-2022 09:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	0.656	± 30.0%		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Parameter	Method	LOR	Unit	Client sample ID					
				26800219		26800257		26800229	
				TP126 2.0m		TP129 0.5m		TP129 2.2m	
				PR2287970010		PR2287970011		PR2287970012	
Laboratory sample ID				28-Aug-2022 09:31		28-Aug-2022 10:53		28-Aug-2022 09:50	
Client sampling date / time				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---



Sub-Matrix: SOIL				Client sample ID		26800219 TP126 2.0m		26800257 TP129 0.5m		26800229 TP129 2.2m	
				Laboratory sample ID		PR2287970010		PR2287970011		PR2287970012	
				Client sampling date / time		28-Aug-2022 09:31		28-Aug-2022 10:53		28-Aug-2022 09:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	79.1	± 6.0%	88.4	± 6.0%	86.5	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800225 TP131 0.5m		26800235 TP131 2.5m		26800261 TP133 1.2m	
				Laboratory sample ID		PR2287970013		PR2287970014		PR2287970015	
				Client sampling date / time		28-Aug-2022 09:40		28-Aug-2022 10:06		28-Aug-2022 10:58	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOIL				Client sample ID		26800225 TP131 0.5m		26800235 TP131 2.5m		26800261 TP133 1.2m	
				Laboratory sample ID		PR2287970013		PR2287970014		PR2287970015	
				Client sampling date / time		28-Aug-2022 09:40		28-Aug-2022 10:06		28-Aug-2022 10:58	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	0.831	± 30.0%	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	0.651	± 30.0%		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	0.564	± 30.0%	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26800225 TP131 0.5m		26800235 TP131 2.5m		26800261 TP133 1.2m	
Laboratory sample ID				PR2287970013		PR2287970014		PR2287970015			
Client sampling date / time				28-Aug-2022 09:40		28-Aug-2022 10:06		28-Aug-2022 10:58			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.2	± 6.0%	88.6	± 6.0%	87.4	± 6.0%		



Sub-Matrix: SOIL				Client sample ID		26800255		26800245		26800231	
				Laboratory sample ID		TP133 2.5m		TP135 1.0m		TP135 2.3m	
				Client sampling date / time		PR2287970016		PR2287970017		PR2287970018	
						28-Aug-2022 10:50		28-Aug-2022 10:36		28-Aug-2022 09:58	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	<0.500	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	----	----		



Sub-Matrix: SOIL				Client sample ID		26800255 TP133 2.5m		26800245 TP135 1.0m		26800231 TP135 2.3m	
				Laboratory sample ID		PR2287970016		PR2287970017		PR2287970018	
				Client sampling date / time		28-Aug-2022 10:50		28-Aug-2022 10:36		28-Aug-2022 09:58	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---



Sub-Matrix: SOIL				Client sample ID		26800255 TP133 2.5m		26800245 TP135 1.0m		26800231 TP135 2.3m	
				Laboratory sample ID		PR2287970016		PR2287970017		PR2287970018	
				Client sampling date / time		28-Aug-2022 10:50		28-Aug-2022 10:36		28-Aug-2022 09:58	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.7	± 6.0%	81.9	± 6.0%	91.0	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800253 TP137 1.4m		26800221 TP137 1.6m		26800259 TP139 0.5m	
				Laboratory sample ID		PR2287970019		PR2287970020		PR2287970021	
				Client sampling date / time		28-Aug-2022 10:47		28-Aug-2022 09:34		28-Aug-2022 10:56	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID		26800253 TP137 1.4m		26800221 TP137 1.6m		26800259 TP139 0.5m	
Laboratory sample ID				PR2287970019		PR2287970020		PR2287970021			
Client sampling date / time				28-Aug-2022 10:47		28-Aug-2022 09:34		28-Aug-2022 10:56			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	1.71	± 30.0%		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	1.28	± 30.0%		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOIL				Client sample ID		26800253 TP137 1.4m		26800221 TP137 1.6m		26800259 TP139 0.5m	
				Laboratory sample ID		PR2287970019		PR2287970020		PR2287970021	
				Client sampling date / time		28-Aug-2022 10:47		28-Aug-2022 09:34		28-Aug-2022 10:56	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.6	± 6.0%	88.2	± 6.0%	88.0	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		26800243 TP144 0.5m		26800249 TP144 2.5m		26800217 TP144A 0.5m	
				Laboratory sample ID		PR2287970022		PR2287970023		PR2287970024	
				Client sampling date / time		28-Aug-2022 10:33		28-Aug-2022 10:41		28-Aug-2022 09:29	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		



Sub-Matrix: SOIL				Client sample ID			26800243 TP144 0.5m		26800249 TP144 2.5m		26800217 TP144A 0.5m	
				Laboratory sample ID			PR2287970022		PR2287970023		PR2287970024	
				Client sampling date / time			28-Aug-2022 10:33		28-Aug-2022 10:41		28-Aug-2022 09:29	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU			
Perfluorinated Compounds - Continued												
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---			
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---			
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---			
Physical Parameters												
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.1	± 6.0%	89.8	± 6.0%	89.2	± 6.0%			

Sub-Matrix: SOIL				Client sample ID			26800209 TP144A 2.5m		26800247 TP213 1.0m		26800251 TP213 2.0m	
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Sub-Matrix: SOIL				Client sample ID		26800209		26800247		26800251	
				Laboratory sample ID		TP144A 2.5m		TP213 1.0m		TP213 2.0m	
				Client sampling date / time		PR2287970025		PR2287970026		PR2287970027	
						28-Aug-2022 09:23		28-Aug-2022 10:39		28-Aug-2022 10:44	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Parameter	Method	LOR	Unit	Client sample ID					
				26800209		26800247		26800251	
				TP144A 2.5m		TP213 1.0m		TP213 2.0m	
				PR2287970025		PR2287970026		PR2287970027	
Laboratory sample ID				28-Aug-2022 09:23		28-Aug-2022 10:39		28-Aug-2022 10:44	
Client sampling date / time				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued									
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---



Parameter	Method	LOR	Unit	Client sample ID		Laboratory sample ID		Client sampling date / time	
				26800209	26800247	26800251	26800209	26800247	26800251
				TP144A 2.5m	TP213 1.0m	TP213 2.0m	PR2287970025	PR2287970026	PR2287970027
				28-Aug-2022 09:23	28-Aug-2022 10:39	28-Aug-2022 10:44			
Perfluorinated Compounds - Continued									
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.0	± 6.0%	89.6	± 6.0%	89.0	± 6.0%

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220826-73
Client Ref: P21-195

Report Number: 662127
Location: Dublin Airport

Superseded Report: 659243

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	27 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220830-44
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	662578
Order Number:	Z3234

This report has been revised and directly supersedes 659379 in its entirety.

We received 10 samples on Tuesday August 30, 2022 and 10 of these samples were scheduled for analysis which was completed on Tuesday September 27, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26803376	CP204A 1.2m		0.00 - 0.00	27/07/2022
26803382	CP204A 4.0m		0.00 - 0.00	27/07/2022
26803391	CP204 1.0m		0.00 - 0.00	25/07/2022
26803397	CP207 4.0m		0.00 - 0.00	14/07/2022
26803399	TP101 1.2m		0.00 - 0.00	22/07/2022
26803384	TP122 0.5m		0.00 - 0.00	13/07/2022
26803386	TP122 3.4m		0.00 - 0.00	13/07/2022
26803389	TP123 0.3m		0.00 - 0.00	13/07/2022
26803379	TP139 2.5m		0.00 - 0.00	02/08/2022
26803394	TP145 3.3m		0.00 - 0.00	30/06/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type													
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	26803376	CP204A 1.2m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803382	CP204A 4.0m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803391	CP204 1.0m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803397	CP207 4.0m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803399	TP101 1.2m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803384	TP122 0.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803386	TP122 3.4m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803389	TP123 0.3m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803379	TP139 2.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
	26803394	TP145 3.3m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S													
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 10					X	X	X	X	X	X	X	X	X	X	X	X	
Sample description	All	NDPs: 0 Tests: 10					X	X	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26803391	CP204 1.0m	0.00 - 0.00	Dark Brown	Sandy Clay	Stones	None
26803397	CP207 4.0m	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Stones	None
26803376	CP204A 1.2m	0.00 - 0.00	Dark Brown	Sandy Clay	Stones	None
26803382	CP204A 4.0m	0.00 - 0.00	Dark Brown	Sandy Clay	Stones	None
26803399	TP101 1.2m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	None
26803384	TP122 0.5m	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	Vegetation
26803386	TP122 3.4m	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Stones	None
26803389	TP123 0.3m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	None
26803379	TP139 2.5m	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Stones	None
26803394	TP145 3.3m	0.00 - 0.00	Dark Brown	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Results Legend		Customer Sample Ref.	CP204A 1.2m	CP204A 4.0m	CP204 1.0m	CP207 4.0m	TP101 1.2m	TP122 0.5m
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Soil/Solid (S) 27/07/2022	0.00 - 0.00 Soil/Solid (S) 27/07/2022	0.00 - 0.00 Soil/Solid (S) 25/07/2022	0.00 - 0.00 Soil/Solid (S) 14/07/2022	0.00 - 0.00 Soil/Solid (S) 22/07/2022	0.00 - 0.00 Soil/Solid (S) 13/07/2022
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units							
Moisture Content Ratio (% of as received sample)	%	PM024	10	8.6	9.5	8.6	8	16
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Results Legend		Customer Sample Ref.	TP122 3.4m	TP123 0.3m	TP139 2.5m	TP145 3.3m		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	13/07/2022	13/07/2022	02/08/2022	30/06/2022		
		Sample Time						
		Date Received	30/08/2022	30/08/2022	30/08/2022	30/08/2022		
		SDG Ref	220830-44	220830-44	220830-44	220830-44		
		Lab Sample No.(s)	26803386	26803389	26803379	26803394		
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	11	19	8.4	7.5		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	2.69	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	1.52	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220830-44
Client Ref.: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Test Completion Dates

Lab Sample No(s)	26803391	26803397	26803376	26803382	26803399	26803384	26803386	26803389	26803379	26803394
Customer Sample Ref.	CP204 1.0m	CP207 4.0m	CP204A 1.2m	CP204A 4.0m	TP101 1.2m	TP122 0.5m	TP122 3.4m	TP123 0.3m	TP139 2.5m	TP145 3.3m
AGS Ref.										
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)									
PFAS by LCMS (S-PFCLMS02-C)	27-Sep-2022									
Sample description	30-Aug-2022									



CERTIFICATE OF ANALYSIS

Work Order	: PR2288195	Issue Date	: 26-Sep-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220830-44	Page	: 1 of 9
Order number	: ----	Date Samples Received	: 02-Sep-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 02-Sep-2022 - 26-Sep-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	26804764 CP204 1.0m		26804905 CP204A 1.2m		26804859 CP204A 4.0m	
				Result	MU	Result	MU	Result	MU
				PR2288195001		PR2288195002		PR2288195003	
				30-Aug-2022 13:52		30-Aug-2022 14:01		30-Aug-2022 13:57	
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOLID				Client sample ID		26804764 CP204 1.0m		26804905 CP204A 1.2m		26804859 CP204A 4.0m	
				Laboratory sample ID		PR2288195001		PR2288195002		PR2288195003	
				Client sampling date / time		30-Aug-2022 13:52		30-Aug-2022 14:01		30-Aug-2022 13:57	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.9	± 6.0%	90.4	± 6.0%	90.0	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26804197 CP207 4.0m		26804278 TP101 1.2m		26804788 TP122 0.5m	
				Laboratory sample ID		PR2288195004		PR2288195005		PR2288195006	
				Client sampling date / time		30-Aug-2022 13:00		30-Aug-2022 13:10		30-Aug-2022 13:54	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOLID				Client sample ID		26804197 CP207 4.0m		26804278 TP101 1.2m		26804788 TP122 0.5m	
				Laboratory sample ID		PR2288195004		PR2288195005		PR2288195006	
				Client sampling date / time		30-Aug-2022 13:00		30-Aug-2022 13:10		30-Aug-2022 13:54	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	91.2	± 6.0%	89.8	± 6.0%	89.6	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26804219 TP122 3.4m		26804236 TP123 0.3m		26804294 TP139 2.5m	
				Laboratory sample ID		PR2288195007		PR2288195008		PR2288195009	
				Client sampling date / time		30-Aug-2022 13:03		30-Aug-2022 13:06		30-Aug-2022 13:12	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	2.69	± 30.0%		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26804219 TP122 3.4m		26804236 TP123 0.3m		26804294 TP139 2.5m	
Laboratory sample ID				PR2288195007		PR2288195008		PR2288195009			
Client sampling date / time				30-Aug-2022 13:03		30-Aug-2022 13:06		30-Aug-2022 13:12			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	1.52	± 30.0%	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26804219 TP122 3.4m		26804236 TP123 0.3m		26804294 TP139 2.5m	
Laboratory sample ID				PR2288195007		PR2288195008		PR2288195009			
Client sampling date / time				30-Aug-2022 13:03		30-Aug-2022 13:06		30-Aug-2022 13:12			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		



Sub-Matrix: SOLID				Client sample ID		26804219 TP122 3.4m		26804236 TP123 0.3m		26804294 TP139 2.5m	
Laboratory sample ID				PR2288195007		PR2288195008		PR2288195009			
Client sampling date / time				30-Aug-2022 13:03		30-Aug-2022 13:06		30-Aug-2022 13:12			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.1	± 6.0%	78.7	± 6.0%	90.2	± 6.0%		



Sub-Matrix: SOLID				Client sample ID		26804877		----		----	
				Laboratory sample ID		TP145 3.3m		----		----	
				Client sampling date / time		PR2288195010		----		----	
						30-Aug-2022 13:59		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		



Sub-Matrix: SOLID				Client sample ID		26804877		----		----	
				Laboratory sample ID		TP145 3.3m					
				Client sampling date / time		PR2288195010		----		----	
						30-Aug-2022 13:59		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	----	----	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.3	± 6.0%	----	----	----	----		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220830-44
Client Ref: P21-195

Report Number: 662578
Location: Dublin Airport

Superseded Report: 659379

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

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Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 November 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	221114-4
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	670060
Order Number:	Z3234

This report has been revised and directly supersedes 668456 in its entirety.

We received 3 samples on Wednesday November 09, 2022 and 3 of these samples were scheduled for analysis which was completed on Monday November 28, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27156008	TP123 2.0m		0.00 - 0.00	30/06/2022
27156010	TP129 1.0m		0.00 - 0.00	20/07/2022
27156012	TP129 1.5m		0.00 - 0.00	20/07/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Results Legend					
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <ul style="list-style-type: none"> S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other 	Lab Sample No(s)	27156008	27156010	27156012	
	Customer Sample Reference	TP123 2.0m	TP129 1.0m	TP129 1.5m	
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
	Container	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	
	Sample Type	S	S	S	
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 3	X	X	X
Sample description	All	NDPs: 0 Tests: 3	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27156008	TP123 2.0m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	None
27156010	TP129 1.0m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	None
27156012	TP129 1.5m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Results Legend		Customer Sample Ref.	TP123 2.0m	TP129 1.0m	TP129 1.5m		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*§@	Sample deviation (see appendix)						
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	30/06/2022	20/07/2022	20/07/2022		
		Sample Time					
		Date Received	09/11/2022	09/11/2022	09/11/2022		
		SDG Ref	221114-4	221114-4	221114-4		
		Lab Sample No.(s)	27156008	27156010	27156012		
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	10	11	11		
Perfluorobutanoic acid (PFBA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTTrDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFOCDA)*	µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 221114-4
Client Ref.: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Test Completion Dates

Lab Sample No(s)	27156008	27156010	27156012
Customer Sample Ref.	TP123 2.0m	TP129 1.0m	TP129 1.5m
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	28-Nov-2022	28-Nov-2022	28-Nov-2022
Sample description	14-Nov-2022	14-Nov-2022	14-Nov-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR22B9310	Issue Date	: 28-Nov-2022
Customer	: ALS Laboratories (UK) Limited	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221114-4	Page	: 1 of 3
Order number	: ----	Date Samples Received	: 21-Nov-2022
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 21-Nov-2022 - 28-Nov-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	27156301		27156273		27156311	
				TP123 2.0m		TP129 1.0m		TP129 1.5m	
				PR22B9310001	PR22B9310002	PR22B9310003	PR22B9310003	PR22B9310003	
				14-Nov-2022 09:44	14-Nov-2022 09:41	14-Nov-2022 09:45			
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
perfluorooctadecanoic acid (PFOCDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	<5.00	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOIL				Client sample ID		27156301		27156273		27156311	
				Laboratory sample ID		TP123 2.0m		TP129 1.0m		TP129 1.5m	
				Client sampling date / time		PR22B9310001		PR22B9310002		PR22B9310003	
						14-Nov-2022 09:44		14-Nov-2022 09:41		14-Nov-2022 09:45	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.7	± 6.0%	86.7	± 6.0%	88.6	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

The symbol "*" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.

The method for calculating of the summation parameters is available on request in the customer service.



CERTIFICATE OF ANALYSIS

SDG: 221114-4
Client Ref: P21-195

Report Number: 670060
Location: Dublin Airport

Superseded Report: 668456

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	22 September 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	220826-74
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	662115
Order Number:	Z3234

This report has been revised and directly supersedes 659236 in its entirety.

We received 5 samples on Friday August 26, 2022 and 5 of these samples were scheduled for analysis which was completed on Thursday September 22, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26793335	TP39 0.5 m		0.00 - 0.00	27/07/2022
26793337	TP41 0.5 m		0.00 - 0.00	27/07/2022
26793339	TP47 0.5 m		0.00 - 0.00	05/08/2022
26793342	TP48 0.5 m		0.00 - 0.00	05/08/2022
26793344	TP50 0.5 m		0.00 - 0.00	05/08/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	26793344 26793342 26793339 26793337 26793335	TP50 0.5 m TP48 0.5 m TP47 0.5 m TP41 0.5 m TP39 0.5 m		0.00 - 0.00 0.00 - 0.00 0.00 - 0.00 0.00 - 0.00 0.00 - 0.00	1kg TUB with Handle (ALE260) 1kg TUB with Handle (ALE260) 1kg TUB with Handle (ALE260) 1kg TUB with Handle (ALE260) 1kg TUB with Handle (ALE260)	S S S S S
PFAS by LCMS (S-PFCLMS02-C)	All				NDPs: 0 Tests: 5	X X X X X
Sample description	All				NDPs: 0 Tests: 5	X X X X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26793335	TP39 0.5 m	0.00 - 0.00	Light Brown	Sandy Loam	Stones	None
26793337	TP41 0.5 m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
26793339	TP47 0.5 m	0.00 - 0.00	Light Brown	Silty Clay Loam	Stones	Vegetation
26793342	TP48 0.5 m	0.00 - 0.00	Light Brown	Clay Loam	Stones	Vegetation
26793344	TP50 0.5 m	0.00 - 0.00	Light Brown	Sandy Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Results Legend		Customer Sample Ref.	TP39 0.5 m	TP41 0.5 m	TP47 0.5 m	TP48 0.5 m	TP50 0.5 m
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
		Sample Type	Soil/Solid (S)				
		Date Sampled	27/07/2022	27/07/2022	05/08/2022	05/08/2022	05/08/2022
		Sample Time					
		Date Received	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
		SDG Ref	220826-74	220826-74	220826-74	220826-74	220826-74
		Lab Sample No.(s)	26793335	26793337	26793339	26793342	26793344
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	6.1	10	8.1	26	9
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 220826-74
Client Ref.: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Test Completion Dates

Lab Sample No(s)	26793335	26793337	26793339	26793342	26793344
Customer Sample Ref.	TP39 0.5 m	TP41 0.5 m	TP47 0.5 m	TP48 0.5 m	TP50 0.5 m
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	22-Sep-2022	22-Sep-2022	22-Sep-2022	22-Sep-2022	22-Sep-2022
Sample description	27-Aug-2022	27-Aug-2022	27-Aug-2022	27-Aug-2022	27-Aug-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR2287203	Issue Date	: 22-Sep-2022
Customer	: ALS Life Sciences Ltd	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 220826-74	Page	: 1 of 6
Order number	: ----	Date Samples Received	: 01-Sep-2022
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 01-Sep-2022 - 22-Sep-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	26799543		26799569		26799521	
				TP39 0.5 m		TP41 0.5 m		TP47 0.5 m	
				PR2287203001	PR2287203002	PR2287203003	PR2287203003	PR2287203003	
				27-Aug-2022 14:11	27-Aug-2022 14:13	27-Aug-2022 14:13	27-Aug-2022 14:08	27-Aug-2022 14:08	
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	---	---



Sub-Matrix: SOLID				Client sample ID		26799543 TP39 0.5 m		26799569 TP41 0.5 m		26799521 TP47 0.5 m	
				Laboratory sample ID		PR2287203001		PR2287203002		PR2287203003	
				Client sampling date / time		27-Aug-2022 14:11		27-Aug-2022 14:13		27-Aug-2022 14:08	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	<5.00	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	----	----	----	----	----		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	----	<5.00	----	<5.00	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----		



Sub-Matrix: SOLID				Client sample ID		26799543 TP39 0.5 m		26799569 TP41 0.5 m		26799521 TP47 0.5 m	
				Laboratory sample ID		PR2287203001		PR2287203002		PR2287203003	
				Client sampling date / time		27-Aug-2022 14:11		27-Aug-2022 14:13		27-Aug-2022 14:08	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	93.1	± 6.0%	88.0	± 6.0%	89.6	± 6.0%		

Sub-Matrix: SOLID				Client sample ID		26799515 TP48 0.5 m		26799581 TP50 0.5 m		----	
				Laboratory sample ID		PR2287203004		PR2287203005		----	
				Client sampling date / time		27-Aug-2022 14:05		27-Aug-2022 14:17		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		



Parameter	Method	LOR	Unit	26799515 TP48 0.5 m		26799581 TP50 0.5 m		----	
				Laboratory sample ID		Laboratory sample ID		----	
				Client sampling date / time		Client sampling date / time		----	
Perfluorinated Compounds - Continued									
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	----
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	----
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	89.8	± 6.0%	91.1	± 6.0%	----	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	

Issue Date : 22-Sep-2022
Page : 6 of 6
Work Order : PR2287203
Customer : ALS Life Sciences Ltd



<i>Analytical Methods</i>	<i>Method Descriptions</i>
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

A “*” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.



CERTIFICATE OF ANALYSIS

SDG: 220826-74
Client Ref: P21-195

Report Number: 662115
Location: Dublin Airport

Superseded Report: 659236

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 November 2022
Customer:	Fehily Timoney
Sample Delivery Group (SDG):	221018-145
Your Reference:	P21-195
Location:	Dublin Airport
Report No:	667098
Order Number:	Z3234

This report has been revised and directly supersedes 665329 in its entirety.

We received 9 samples on Tuesday October 18, 2022 and 9 of these samples were scheduled for analysis which was completed on Thursday November 03, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27037992	TP05 0.5m		0.00 - 0.50	22/08/2022
27037995	TP08 0.5m		0.00 - 0.50	17/08/2022
27037998	TP09 0.5m		0.00 - 0.50	09/09/2022
27038000	TP21 0.5m		0.00 - 0.50	30/08/2022
27038005	TP23 0.5m		0.00 - 0.50	06/09/2022
27038007	TP25 0.5m		0.00 - 0.50	19/08/2022
27038010	TP43 0.5m		0.00 - 0.50	08/09/2022
27038013	TP44 0.5m		0.00 - 0.50	31/08/2022
27038015	TP59 0.5m		0.00 - 0.50	02/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	27037992	TP05 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27037995	TP08 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27037998	TP09 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038000	TP21 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038005	TP23 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038007	TP25 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038010	TP43 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038013	TP44 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	27038015	TP59 0.5m		0.00 - 0.50	1kg TUB with Handle (ALE260)	S
	PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 9			
Sample description	All	NDPs: 0 Tests: 9				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27037992	TP05 0.5m	0.00 - 0.50	Dark Brown	Sand	Stones	None
27037995	TP08 0.5m	0.00 - 0.50	Dark Brown	Sandy Loam	Stones	None
27037998	TP09 0.5m	0.00 - 0.50	Dark Brown	Sand	Stones	None
27038000	TP21 0.5m	0.00 - 0.50	Dark Brown	Sand	Stones	None
27038005	TP23 0.5m	0.00 - 0.50	Dark Brown	Sand	Stones	None
27038007	TP25 0.5m	0.00 - 0.50	Dark Brown	Loamy Sand	Vegetation	None
27038010	TP43 0.5m	0.00 - 0.50	Dark Brown	Loamy Sand	Stones	Vegetation
27038013	TP44 0.5m	0.00 - 0.50	Dark Brown	Sand	Stones	Vegetation
27038015	TP59 0.5m	0.00 - 0.50	Grey	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Results Legend		Customer Sample Ref.	TP05 0.5m	TP08 0.5m	TP09 0.5m	TP21 0.5m	TP23 0.5m	TP25 0.5m
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
		Depth (m)	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
		Sample Type	Soil/Solid (S)					
		Date Sampled	22/08/2022	17/08/2022	09/09/2022	30/08/2022	06/09/2022	19/08/2022
		Sample Time						
		Date Received	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022	18/10/2022
		SDG Ref	221018-145	221018-145	221018-145	221018-145	221018-145	221018-145
		Lab Sample No.(s)	27037992	27037995	27037998	27038000	27038005	27038007
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	9.2	8.5	6.4	9	7.6	11
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
perfluorooctadecanoic acid (PFOcDA)*	<5 µg/kg	SUB	<5	<5	<5	<5	<5	<5
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Results Legend		Customer Sample Ref.	TP43 0.5m	TP44 0.5m	TP59 0.5m		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	08/09/2022	31/08/2022	02/09/2022		
		Sample Time					
		Date Received	18/10/2022	18/10/2022	18/10/2022		
		SDG Ref	221018-145	221018-145	221018-145		
		Lab Sample No.(s)	27038010	27038013	27038015		
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	8.8	2.7	4.3		
Perfluorobutanoic acid (PFBA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTrDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	<5 µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	<5 µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.5 µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 221018-145
Client Ref.: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Test Completion Dates

Lab Sample No(s)	27037992	27037995	27037998	27038000	27038005	27038007	27038010	27038013	27038015
Customer Sample Ref.	TP05 0.5m	TP08 0.5m	TP09 0.5m	TP21 0.5m	TP23 0.5m	TP25 0.5m	TP43 0.5m	TP44 0.5m	TP59 0.5m
AGS Ref.									
Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
Type	Soil/Solid (S)								
PFAS by LCMS (S-PFCLMS02-C)	03-Nov-2022								
Sample description	19-Oct-2022								



CERTIFICATE OF ANALYSIS

Work Order	: PR22A8042	Issue Date	: 03-Nov-2022
Customer	: ALS Laboratories (UK) Limited	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221018-145	Page	: 1 of 9
Order number	: ----	Date Samples Received	: 22-Oct-2022
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 22-Oct-2022 - 03-Nov-2022
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Parameter	Method	LOR	Unit	Client sample ID		27039496		27039445		27039710	
				Laboratory sample ID		TP05 0.5m		TP08 0.5m		TP09 0.5m	
				Client sampling date / time		Result	MU	Result	MU	Result	MU
				PR22A8042001	PR22A8042002	PR22A8042003	19-Oct-2022 08:11	19-Oct-2022 08:03	19-Oct-2022 08:37		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	---	---	<0.500	---	---	---	---	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	---	---	<0.500	---	<0.500	---



Parameter	Method	LOR	Unit	Client sample ID									
				27039496 TP05 0.5m		27039445 TP08 0.5m		27039710 TP09 0.5m					
				PR22A8042001		PR22A8042002		PR22A8042003					
				19-Oct-2022 08:11		19-Oct-2022 08:03		19-Oct-2022 08:37					
Sub-Matrix: SOIL				Laboratory sample ID		Client sampling date / time		Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued													
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---	<5.00	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	<5.00	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	<5.00	---	----	---	<5.00	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	----	---	<5.00	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	<0.500	---	----	---



Sub-Matrix: SOIL				Client sample ID		27039496 TP05 0.5m		27039445 TP08 0.5m		27039710 TP09 0.5m	
				Laboratory sample ID		PR22A8042001		PR22A8042002		PR22A8042003	
				Client sampling date / time		19-Oct-2022 08:11		19-Oct-2022 08:03		19-Oct-2022 08:37	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	<0.500	---	----	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	----	---	----	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	92.2	± 6.0%	89.6	± 6.0%	92.6	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		27039489 TP21 0.5m		27039550 TP23 0.5m		27039534 TP25 0.5m	
				Laboratory sample ID		PR22A8042004		PR22A8042005		PR22A8042006	
				Client sampling date / time		19-Oct-2022 08:08		19-Oct-2022 08:17		19-Oct-2022 08:15	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---	----	---



Parameter	Method	LOR	Unit	Client sample ID		Laboratory sample ID		Client sampling date / time	
				27039489	27039550	27039534	PR22A8042004	PR22A8042005	PR22A8042006
				TP21 0.5m	TP23 0.5m	TP25 0.5m	19-Oct-2022 08:08	19-Oct-2022 08:17	19-Oct-2022 08:15
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued									
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	<0.500	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	----	----	----	<0.500	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	----	----	----	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	----	<0.500	----	<0.500	----



Sub-Matrix: SOIL				Client sample ID		27039489 TP21 0.5m		27039550 TP23 0.5m		27039534 TP25 0.5m	
				Laboratory sample ID		PR22A8042004		PR22A8042005		PR22A8042006	
				Client sampling date / time		19-Oct-2022 08:08		19-Oct-2022 08:17		19-Oct-2022 08:15	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	---		
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	<5.00	---	----	---		
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	----	---	<5.00	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	----	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	91.3	± 6.0%	90.4	± 6.0%	81.7	± 6.0%		

Sub-Matrix: SOIL				Client sample ID		27039689 TP43 0.5m		27039735 TP44 0.5m		27039637 TP59 0.5m	
				Laboratory sample ID		PR22A8042007		PR22A8042008		PR22A8042009	
				Client sampling date / time		19-Oct-2022 08:35		19-Oct-2022 08:39		19-Oct-2022 08:31	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		



Parameter	Method	LOR	Unit	Client sample ID									
				27039689 TP43 0.5m		27039735 TP44 0.5m		27039637 TP59 0.5m					
				PR22A8042007		PR22A8042008		PR22A8042009					
				19-Oct-2022 08:35		19-Oct-2022 08:39		19-Oct-2022 08:31					
Sub-Matrix: SOIL				Laboratory sample ID		Client sampling date / time		Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued													
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---	----	---	<0.500	---



Parameter	Method	LOR	Unit	Client sample ID					
				27039689 TP43 0.5m		27039735 TP44 0.5m		27039637 TP59 0.5m	
				PR22A8042007		PR22A8042008		PR22A8042009	
				19-Oct-2022 08:35		19-Oct-2022 08:39		19-Oct-2022 08:31	
Sub-Matrix: SOIL				Laboratory sample ID		Client sampling date / time			
Perfluorinated Compounds - Continued									
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---
perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	----	---	<5.00	---	<5.00	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.00	µg/kg DW	<5.00	---	----	---	----	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---



Sub-Matrix: SOIL				Client sample ID		27039689 TP43 0.5m		27039735 TP44 0.5m		27039637 TP59 0.5m	
				Laboratory sample ID		PR22A8042007		PR22A8042008		PR22A8042009	
				Client sampling date / time		19-Oct-2022 08:35		19-Oct-2022 08:39		19-Oct-2022 08:31	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	----	---	<0.500	---	<0.500	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	----	---	----	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.3	± 6.0%	96.9	± 6.0%	95.5	± 6.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

The symbol "***" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.

The method for calculating of the summation parameters is available on request in the customer service.



CERTIFICATE OF ANALYSIS

SDG: 221018-145
Client Ref: P21-195

Report Number: 667098
Location: Dublin Airport

Superseded Report: 665329

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 May 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230509-36
Your Reference: P21-195
Location: Dublin Airport
Report No: 690302
Order Number: Z3234

This report has been revised and directly supersedes 688368 in its entirety.

We received 4 samples on Tuesday May 09, 2023 and 4 of these samples were scheduled for analysis which was completed on Friday May 26, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27962467	TP01 0.5m		0.00 - 0.00	23/02/2023
27962477	TP13 0.5m		0.00 - 0.00	24/02/2023
27962471	TP02 0.5m CE18		0.00 - 0.00	18/01/2023
27962474	TP02 0.5m KILWEX		0.00 - 0.00	24/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid</p> <p>UNS - Unspecified Solid</p> <p>GW - Ground Water</p> <p>SW - Surface Water</p> <p>LE - Land Leachate</p> <p>PL - Prepared Leachate</p> <p>PR - Process Water</p> <p>SA - Saline Water</p> <p>TE - Trade Effluent</p> <p>TS - Treated Sewage</p> <p>US - Untreated Sewage</p> <p>RE - Recreational Water</p> <p>DW - Drinking Water Non-regulatory</p> <p>UNL - Unspecified Liquid</p> <p>SL - Sludge</p> <p>G - Gas</p> <p>OTH - Other</p>	27962467	TP01 0.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S
	27962477	TP13 0.5m		0.00 - 0.00	1kg TUB with Handle (ALE260)	S
	27962471	TP02 0.5m CE18		0.00 - 0.00	1kg TUB with Handle (ALE260)	S
	27962474	TP02 0.5m KILWEX		0.00 - 0.00	1kg TUB with Handle (ALE260)	S
PFAS by LCMS (S-PFCLMS02-C)	All	All	All	All	All	All
		NDPs: 0 Tests: 4	X	X	X	X
Sample description	All	All	All	All	All	All
		NDPs: 0 Tests: 4	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27962467	TP01 0.5m	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27962477	TP13 0.5m	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Vegetation	None
27962471	TP02 0.5m CE18	0.00 - 0.00	Dark Brown	Clay Loam	Vegetation	None
27962474	TP02 0.5m KILWEX	0.00 - 0.00	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Results Legend		Customer Sample Ref.	TP01 0.5m	TP13 0.5m	TP02 0.5m CE18	TP02 0.5m KILWEX		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	23/02/2023	24/02/2023	18/01/2023	24/02/2023		
		Sample Time						
		Date Received	09/05/2023	09/05/2023	09/05/2023	09/05/2023		
		SDG Ref	230509-36	230509-36	230509-36	230509-36		
		Lab Sample No.(s)	27962467	27962477	27962471	27962474		
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	13	18	20	11		
Perfluorobutanoic acid (PFBA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTriDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	µg/kg	SUB	<5	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorobutane sulfonic acid (PFBS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB	Subcontracted Test

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230509-36
Client Ref.: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Test Completion Dates

Lab Sample No(s)	27962467	27962477	27962471	27962474
Customer Sample Ref.	TP01 0.5m	TP13 0.5m	TP02 0.5m CE18	TP02 0.5m KILWE X
AGS Ref.				
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Sample description	10-May-2023	10-May-2023	10-May-2023	10-May-2023



CERTIFICATE OF ANALYSIS

Work Order	: PR2350516	Issue Date	: 25-May-2023
Customer	: ALS Laboratories (UK) Limited	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230509-36	Page	: 1 of 4
Order number	: ----	Date Samples Received	: 15-May-2023
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 16-May-2023 - 25-May-2023
Sampled by	: customer	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	27967689		27967794		27967834	
				TP01 0.5m		TP02 0.5m CE18		TP02 0.5m KILWEX	
				PR2350516001	PR2350516002	PR2350516003			
				10-May-2023 08:47	10-May-2023 08:54	10-May-2023 08:56			
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	<5.0	---	<5.0	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	<5.0	---	<5.0	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---



Sub-Matrix: SOIL				Client sample ID		27967689		27967794		27967834	
				TP01 0.5m		TP02 0.5m CE18		TP02 0.5m KILWEX			
				Laboratory sample ID		PR2350516001		PR2350516002		PR2350516003	
				Client sampling date / time		10-May-2023 08:47		10-May-2023 08:54		10-May-2023 08:56	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	84.0	± 5.0%	82.9	± 5.0%	87.2	± 5.0%		

Sub-Matrix: SOIL				Client sample ID		27967741		----		----	
				TP13 0.5m							
				Laboratory sample ID		PR2350516004		----		----	
				Client sampling date / time		10-May-2023 08:51		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorotridecanoic acid (PFTrDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorotetradecanoic acid (PFTeDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----		



Sub-Matrix: SOIL				Client sample ID		27967741		----		----	
				Laboratory sample ID		TP13 0.5m		PR2350516004		----	
				Client sampling date / time		10-May-2023 08:51		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Perfluorooctadecanoic acid (PFOCDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	----	----	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	----	----	----	----	----	----
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	----	----	----	----	----	----
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.4	± 5.0%	----	----	----	----	----	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection. The method has been modified within the flexible scope of accreditation set out in the Annex to the Certificate of Accreditation No. 73/2022 issued on February 14, 2022. Parameters not mentioned in Certificate of Accreditation under index 73 have been added.

The symbol "*" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.

The method for calculating of the summation parameters is available on request in the customer service.



CERTIFICATE OF ANALYSIS

SDG: 230509-36
Client Ref: P21-195

Report Number: 690302
Location: Dublin Airport

Superseded Report: 688368

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Sean Foley

CERTIFICATE OF ANALYSIS

Date of report Generation: 19 July 2023
Customer: Fehily Timoney
Sample Delivery Group (SDG): 230703-11
Your Reference: P21-195
Location: Dublin Airport
Report No: 696964
Order Number: Z3234

This report has been revised and directly supersedes 694981 in its entirety.

We received 3 samples on Monday July 03, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday July 19, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28261830	BH01 CE18		0.00 - 0.00	15/02/2023
28261839	BH02 CE18		0.00 - 0.00	15/02/2023
28261841	BH03 CE18		0.00 - 0.00	15/02/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Results Legend	Lab Sample No(s)	28261 830	28261 839	28261 841	
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Customer Sample Reference	BH01 CE18	BH02 CE18	BH03 CE18	
	AGS Reference				
	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
	Container	1kg TUB	1kg TUB with Handle (ALE250)	1kg TUB with Handle (ALE250)	
	Sample Type	S	S	S	
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 3	X	X	X
Sample description	All	NDPs: 0 Tests: 3	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28261830	BH01 CE18	0.00 - 0.00	Dark Brown	Sandy Loam	Stones	None
28261839	BH02 CE18	0.00 - 0.00	Dark Brown	Sandy Clay Loam	Stones	None
28261841	BH03 CE18	0.00 - 0.00	Dark Brown	Sandy Clay	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Results Legend		Customer Sample Ref.	BH01 CE18	BH02 CE18	BH03 CE18		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.		15/02/2023	15/02/2023	15/02/2023		
diss.filt	Dissolved / filtered sample.		03/07/2023	03/07/2023	03/07/2023		
tot.unfilt	Total / unfiltered sample.		230703-11	230703-11	230703-11		
*	Subcontracted - refer to subcontractor report for accreditation status.		28261830	28261839	28261841		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4**@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	3.9	9.4	4		
Perfluorobutanoic acid (PFBA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentanoic acid (PFPeA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexanoic acid (PFHxA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptanoic acid (PFHpA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctanoic acid (PFOA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononanoic acid (PFNA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecanoic acid (PFDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroundecanoic acid (PFUnDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecanoic acid (PFDoDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotridecanoic acid (PFTrDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorotetradecanoic acid (PFTeDA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexadecanoic acid (PFHxDA)*	µg/kg	SUB	<5	<5	<5		
perfluorooctadecanoic acid (PFocDA)*	µg/kg	SUB	<5	<5	<5		
Perfluorobutane sulfonic acid (PFBS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoropentane sulfonic acid (PFPeS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorohexane sulfonic acid (PFHxS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluoroheptane sulfonic acid (PFHpS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonic acid (PFOS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorodecane sulfonic acid (PFDS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorononane sulfonic acid (PFNS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorododecane sulfonic acid (PFDoDS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamide (FOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Ethyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5		
Perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5		
N-Methyl perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Table of Results - Appendix

Method No	Description
SUB	Subcontracted Test
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230703-11
Client Ref.: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Test Completion Dates

Lab Sample No(s)	28261830	28261839	28261841
Customer Sample Ref.	BH01 CE18	BH02 CE18	BH03 CE18
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS (S-PFCLMS02-C)	19-Jul-2023	19-Jul-2023	19-Jul-2023
Sample description	04-Jul-2023	04-Jul-2023	04-Jul-2023



CERTIFICATE OF ANALYSIS

Work Order	: PR2375293	Issue Date	: 19-Jul-2023
Customer	: ALS Laboratories (UK) Limited	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230703-11	Page	: 1 of 3
Order number	: ----	Date Samples Received	: 11-Jul-2023
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 11-Jul-2023 - 19-Jul-2023
Sampled by	: customer	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID
Client sampling date / time

Parameter	Method	LOR	Unit	28266018		28266008		28266028	
				BH01 CE18		BH02 CE18		BH03 CE18	
				PR2375293001	PR2375293002	PR2375293003			
				04-Jul-2023 07:46	04-Jul-2023 07:44	04-Jul-2023 07:48			
				Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorotridecanoic acid (PFTTrDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorotetradecanoic acid (PFTTeDA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoropentane sulfonic acid (PFPeS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorooctadecanoic acid (PFOcDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	<5.0	---	<5.0	---
Perfluorononane sulfonic acid (PFNS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluorohexadecanoic acid (PFHxDA)	S-PFCLMS02	5.0	µg/kg DW	<5.0	---	<5.0	---	<5.0	---
Perfluorododecane sulfonic acid (PFDoDS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---



Sub-Matrix: SOLID				Client sample ID		28266018 BH01 CE18		28266008 BH02 CE18		28266028 BH03 CE18	
				Laboratory sample ID		PR2375293001		PR2375293002		PR2375293003	
				Client sampling date / time		04-Jul-2023 07:46		04-Jul-2023 07:44		04-Jul-2023 07:48	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	S-PFCLMS02	0.50	µg/kg DW	<0.50	---	<0.50	---	<0.50	---		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.9	± 5.0%	86.9	± 5.0%	89.2	± 5.0%		

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PFCLMS02	CZ_SOP_D06_03_197.B (DIN 38414-14) Determination of perfluorinated and brominated compounds by liquid chromatography with MS/MS detection.

The symbol "*" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.

The method for calculating of the summation parameters is available on request in the customer service.



CERTIFICATE OF ANALYSIS

SDG: 230703-11
Client Ref: P21-195

Report Number: 696964
Location: Dublin Airport

Superseded Report: 694981

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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