



Sisk Lagan Joint Venture

SITE INVESTIGATION

Dublin Airport Apron 5H Works Area





Sisk Lagan Joint Venture

SITE INVESTIGATION

Dublin Airport Apron 5H Works Area

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 40000208

OUR REF. NO. 40000208

DATE: APRIL 2023

WSP

Town Centre House
Dublin Road
Naas
Co Kildare

WSP.com



QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	First Draft	Final		
Date	07/04/2023	18/04/2023		
Prepared by	Lukas Pajank	Lukas Pajank		
Signature				
Checked by	Trevor Montague	Trevor Montague		
Signature				
Authorised by	Trevor Montague	Trevor Montague		
Signature				
Project number	40000208	40000208		
Report number	40000208.R1.B0	40000208.R1.A0		
File reference	40000208.R1.B0	40000208.R1.A0		



CONTENTS

EXECUTIVE SUMMARY

1	INTRODUCTION AND BACKGROUND	1
1.1	GENERAL	1
1.2	BACKGROUND	1
1.3	PROJECT OBJECTIVE AND STRATEGY	1
2	SITE SETTING	3
2.1	SITE SETTING AND SURROUNDING LAND USE	3
2.2	PROPOSED DEVELOPMENT	4
2.3	SITE ENVIRONMENTAL SETTING	4
2.4	SITE HISTORY	7
2.5	PREVIOUS ENVIRONMENTAL SITE ASSESSMENTS	8
3	SCOPE OF WORKS	10
4	SITE INVESTIGATION METHODOLOGY	11
4.1	EX-SITU SAMPLING – STOCKPILE ASSESSMENT	11
4.2	IN-SITU SAMPLING – TRIAL PITTING	11
4.3	ANALYTICAL SUITE AND ASSESSMENT	12
4.3.1	WASTE MATERIAL ASSESSMENT	12
4.3.2	PFAS ASSESSMENT	13
5	SITE INVESTIGATION FINDINGS	14
5.1	GROUND CONDITIONS	14
5.2	LABORATORY ANALYTICAL RESULTS	14
6	EXCAVATED SOIL WASTE PROPERTIES	16



6.1	WASTE PROPERTY SAMPLING CLASSIFICATION METHODOLOGY	16
6.2	WASTE PROPERTY CLASSIFICATION	16
6.3	WASTE PROPERTY CLASSIFICATION RESULTS	17
7	LANDFILL WASTE ACCEPTANCE CRITERIA	18
7.1	WASTE ACCEPTANCE FOR LANDFILL UNDER 2003/33/EC	18
8	DISCUSSION	19
9	SUMMARY AND CONCLUSION	20
10	REFERENCES	21
	APPENDIX A	22
	APPENDIX B	23
	APPENDIX C	24
	APPENDIX D	25



EXECUTIVE SUMMARY

WSP Ireland Consulting Limited (WSP) were commissioned by Sisk Lagan Joint Venture (SLJV) to complete a site investigation at Dublin Airport at the Apron 5H Redevelopment Site. Previous site investigations completed at the Site had shown the presence of low concentrations of PFAS compounds. The source of these PFAS impacts in soil is understood to be emplacement of historical fill material from elsewhere within DAA during earlier phases of redevelopment at the Site.

A Site investigation was completed between October 2022 and March 2023 based on availability of access to complete the work. 197 trial pits were excavated across the Site and 130 samples were collected using composite sampling techniques. WSP standard operating procedures were used for the collection of all samples.

The work required sample collection from soil stockpiles that were excavated as part of the perimeter jet blast fence works and in-situ sampling of the main excavation area for Apron 5H. A grid system was used to subdivide the site and collect composite samples as per best practice.

In total 114 samples were analysed. All samples were analysed for PFAS compounds and a subset of these were also analysed for standard waste property and waste acceptance criteria as per Eu and Irish regulations.

One or more PFAS compounds were detected in 11 stockpiles including a crushed concrete stockpile.

One or more PFAS compounds were detected in 71 grid locations across the Site.

A subset of 26 composite samples assessed using HazWasteOnline™ have been all determined to be non-hazardous. 24 samples further meet the inert waste limits (Category B1) and are suitable for disposal at an inert landfill. WSP recommend that subsampling of the soils to delineate the presence of Zinc in soils is completed. Alternatively a nominated waste receiver can complete soil sampling of the material prior to acceptance at its facility (subject to meeting all acceptance criteria).

The above classification is based on the assumption that no PFAS was detected. In the absence of regulation/guidance in Ireland with respect to PFAS impacted soil/stone, any sample where PFAS was detected cannot be disposed of to landfill in Ireland regardless of the HazWasteOnline™ and WAC assessment. The hierarchy is summarised as follows.

1. Any grid samples that have detected PFAS are not suitable for disposal at landfill in Ireland



2. Grid samples that have not detected PFAS may be suitable for disposal at landfill in Ireland subject to the hazardous/non hazardous properties of the material and the waste acceptance criteria of the receiving facility
3. The receiving facility should satisfy itself as per normal practice that the material is suitable for acceptance at its facility.

A Summary table and approximate volumes of soil that detected one or more PFAS compound is given below.

Depth Profile	PFAS non detect	Approximate Volume (m ³)	PFAS detection	Approximate Volume (m ³)
0 - 1 m bgl	17	27,200	40	64,000
1 – 2 m bgl	26	41,600	31	49,600

Contact name Trevor Montague

Contact details 045 810 200 | trevor.montague@wsp.com

1 INTRODUCTION AND BACKGROUND

1.1 GENERAL

John Sisk and Son (Holdings) Ltd SISK/LAGAN JV (SLJV) has commissioned WSP Ireland Consulting Limited (WSP) to complete an Environmental Site Assessment for their enabling works Phase1-3, main works Phase 1A, Phase 1B and GSE at Apron 5, Dublin Airport, Cloghran, Co. Dublin. WSP has completed this work in accordance with the scope outlined in the proposals, and sampling and analysis plans to SLJV c/o John Sisk and Son (Holding Ltd) as follows:

- Site Investigation and Site Attendance, North Apron 5H Main Extension Works, 70102138.P2.V0 dated 10 October 2022,
- Stockpile Sampling and Site Attendance, Jet Blast Fence and Perimeter Access Road Works, 40000208.P3.V2 dated 14 March 2023
- Sampling and Analysis Plan, Apron 5H Enabling Works R01.B1 dated September 2022; and
- Sampling and Analysis Plan, North Apron 5H Main Extension Works R01.A1 dated 10 October 2022.

1.2 BACKGROUND

Dublin Airport Authority (DAA) have appointed SLJV to complete development works at Apron 5H which include the excavation and management of waste material. It is understood that PFAS compounds have been detected at the Site by a third-party consultancy as part of previous site investigation works commissioned by DAA.

There is no guidance published by the Environmental Protection Agency (EPA) in Ireland for the management of PFAS impacted soils or groundwater.

There is limited information regarding the extent of PFAS contamination of soils at the Site to inform robust decision making by SLJV. As PFAS are an emerging contaminant of concern in Ireland, there is little precedence for offsite management of these soils and further assessment and investigation is required to fully understand the nature and extent of PFAS contamination at Apron 5 to allow SLJV to make informed decisions regarding soil management of these impacted soils. WSP has prepared a Materials Management & Remedial Strategy Plan (MMRP) for the management of excavated soil and stone during the preliminary construction stage of the development. The MMRP sets out the steps needed to ensure effective management of soil material on site including potential disposal options. The scope of works presented below is designed to achieve the objectives of the MMRP in a step wise fashion.

1.3 PROJECT OBJECTIVE AND STRATEGY

The main bulk excavation works project scope requires approximately 92,600 m³ of soils to be excavated and removed offsite for appropriate reuse, recovery or disposal if required and as per waste management and circular economy legislation. The prior construction of the jet blast fence and perimeter road (Phase 1-3) is expected to generate approximately 6,000m³ of soil material. It is



understood that the soils within the main works project area are impacted with varying levels of PFAS compounds. The objective of this plan is to obtain additional information primarily on the chemical characteristics of the soils underlying the footprint of the main works for the North 5H Apron Extension. The information compiled during the prior enabling works were used to inform and refine the soil management strategy for the main enabling works package.

2 SITE SETTING

2.1 SITE SETTING AND SURROUNDING LAND USE

The Site (Figure 1) is located at Apron 5, Dublin Airport, Cloghran, Co. Dublin. The Site is located immediately north of North Apron and Light Aircraft Park B. The Site is bound by Taxiway N1 from west and north and by service road from north-east and east. The Site is located at national grid reference 717109 743916 and with a gross floor area of circa 62,100 m² planned to be excavated. The Site boundary is contained within the larger Dublin Airport Property boundary. For the purposes of this report when we refer to Site it is the project Site as shown in the hatched line on Figure 1 below.

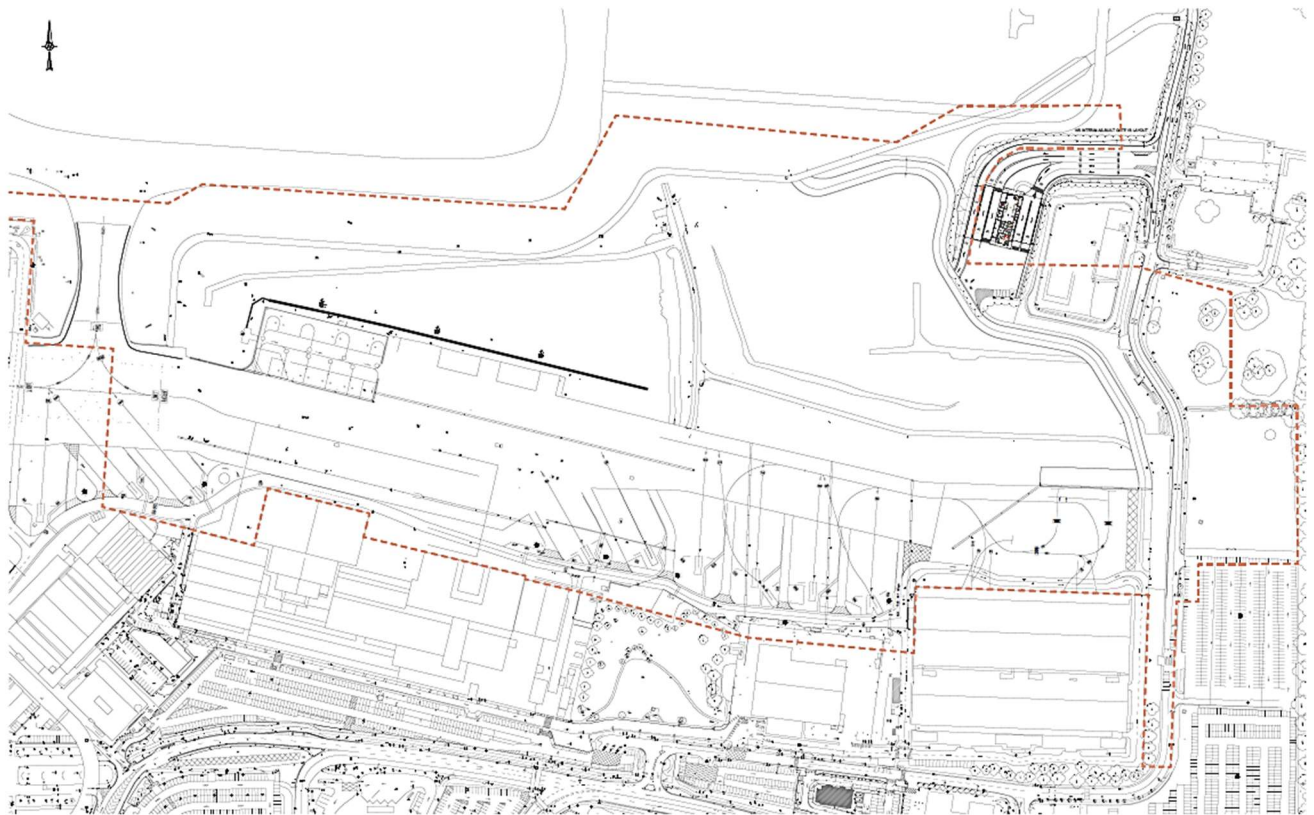


Figure 1 – Boundary of the civil works undertaken by SLJV at the Dublin Airport (the Site).

Table 2-1 Summary Table of Adjacent Landuse

Adjacent Land Use	
North	The site is bound to the north by airport infrastructure (N1 taxiway) and surrounding grassed areas. Off Site Across the Naul Road is a Forrest Little Golf club located 0.55 km north-west of the Site. Agricultural land is to the east adjacent to the golf Club.. A concrete supplier facility is located 0.9 km north of the site. The nearest residential Site is 1.13 km north of the Site.
East	The site is bound to the east by airport infrastructure (service roads) and a gatepost. Farther east is a DIATA training centre (0.26 km) and across the R132 road is a commercial/retail park (0.34 km) and agricultural land.
South	The site is bound by airport infrastructure (North Apron and Light Aircraft Park B) and the airport terminals.
West	The site is bound by airport infrastructure (N1 taxiway). Farther east is the Central Apron, 16/34 runway, Dublin Air Traffic Control Centre (1.3 km), commercial premisses (1.4 km) and agricultural land.

2.2 PROPOSED DEVELOPMENT

The proposed development consists of the construction of a jet blast fence and perimeter access road during the preliminary phase of works and the North Apron 5 extension as the main phase of works. The enabling works involve the excavation of soil within the footprint of the proposed development to 1.5 m bgl to accommodate a specially designed airport pavement, and localised deeper excavations for services and plant.

2.3 SITE ENVIRONMENTAL SETTING

Table 2-2 Ste Environmental Setting

Site Environment Setting	
Surface of Site	The Site is predominantly unsealed ground covered with grass and small shrubs. Ongoing construction transformed some parts of the site's surface into compacted gravel roads and laydown areas. The south-western portion of the site is covered by concrete. There are several small stockpiles of soil across the site. At the time of writing, a large stockpile (estimated at 100 m x 500 m x 2.5 m) consisting of crushed concrete is located in the centre of the Site.
Topography	The Site's topography is generally flat gently sloping towards the southeast. The existing topography levels range from 69 m AOD and 66 m AOD.
Regional Geology	The GSI Bedrock Geology 100k ITM 2018 map shows the Site to be situated on massive, unbedded lime-mudstone of the Waulsortian limestone in the south-east; and Argillaceous bioclastic limestone and shale of the Malahide Formation in the north-west. The formations are separated by a south-west to north-east trending structural fault.

	The nearest karst formation classified as spring was identified 4.2 km south-east of the Site.
Site Geology	Site specific information was derived from a site investigation undertaken by Ground Investigation Ireland (GII) in November and December 2016 (Report Reference GI Report Dublin Airport 5H Apron 28-2-17 Rev C). Topsoil was present across the site to a maximum depth of 0.3 m bgl. Made ground was fairly heterogeneous in composition and variable in depth across the site consisting of sandy slightly gravelly clay with frequent cobbles and boulders to a maximum depth of 1.4 m bgl in the western portion of the site, deepening to a maximum depth of 2.0 m bgl in the eastern portion of the Site. No made ground was encountered in the middle of the site along the north to south running road. Natural ground generally consists of sandy gravelly clay with occasional cobbles, boulders and granular lenses in glacial till matrix¹
Hydrogeology and Aquifer Classification	The bedrock aquifer underlying the Site is classified by the GSI as a 'Locally Important Aquifer' that is "moderately productive only in local zones". The groundwater vulnerability underneath the Site is classified as 'moderate', meaning no karst features or near surface water table within sand or gravel aquifer is expected on Site. However, the vulnerability increases to 'high' towards south (100 m), east (200 m) and north (300 m); to 'extreme' (300 m); and to 'extreme – rock at or near surface/karst' (400 m) towards the east. No Group Water Schemes (GWS) affiliated with the National Federation of Group Water Schemes was identified within 500 m radius of the Site. According to the GSI website the nearest GWS point is located approximately 26 km south-west of the Site. No Groundwater Drinking Water Protection Area was identified within 500 m radius of the Site. The nearest known Inner Protection Area and Outer Protection Area is located approximately 15 km west of the Site. The regional groundwater flow direction is expected to be towards north-east and is expected to discharge to streams 400 m to the north-east of the Site² The GSI database indicates one groundwater well listed for 'industrial use' located approximately 500 m to the south-east of the Site with 500 m location accuracy. The borehole was installed to 13.7 m bgl. Groundwater well has a daily yield of 300 m³ and was drilled in 1991.

¹ Dublin Airport 5H Apron, Ground Investigation Report, Ground Investigation Ireland (Reference 6291-10-16), dated December 2016

² Dublin Aerospace Groundwater Monitoring Report 2021, AECOM (Reference 60681082_ACM_RP_ENV_001, dated 31 March 2022)

	Previous site investigations indicate the likely occurrence of two aquifers within the shallow subsoil and bedrock beneath the Site. These two aquifers are separated by an approximately 10 to 14 m thick low permeability clay layer.³ This site specific data indicates that the aquifer vulnerability is lower beneath the Site than the GSI online mapping information.
Surface Water and Flood Risk	The nearest surface water body is the Sluice River located approximately 400 m north of the site. The river flows in an easterly direction entering the sea at the Baldoyle Estuary. The EPA lists four National Water Monitoring Stations located along the Sluice river in the vicinity of the Site, two of which have ongoing biological river quality surveys. Both locations report the 'Q Value' in range between 2 and 3 assigning them a 'moderately polluted' status and 'unsatisfactory' condition. According to Flood Maps managed by Office of Public Works (OPW), the Site is not subject to flooding and is outside the extent of Sluice river flooding. The nearest reported reoccurring road flooding event was reported on Stockhole Lane approximately 1.8 km south-east of the site.
Other	One facility listed as EPA Integrated Pollution Control (IPC)-licenced was identified within 500 m radius of the Site. International Aerospace Coatings Limited (IPC Reg No. P0921) with Integrated Pollution Prevention Control (IPPC) licences for Hangar 3, immediately south of the Site. Two facilities listed as EPA Industrial Emissions (IEL)-licenced was identified within 500 m radius of the Site. Dublin Aerospace Limited (IEL Reg No. P0480) with IPPC licences for Hangar 1, Hangar 4 and Hangar 5, immediately south of the Site; and Team Aer Lingus Limited (IEL Reg No. P0421). There are no ecological protected areas identified within 1 km radius of the site. The nearest protected area specified by the National Parks and Wildlife Service is the Proposed Natural Heritage Area, a former quarry Feltrim Hill, (Reg No. 001208) located approximately 2.7 km east of the Site. Radon maps available on the EPA web viewer indicate that the site is in an area where 5% of buildings in the 10-kilometre grid in which the site lies are estimated to be above the reference level, indicating a 'Medium' risk associated with radon gas. Under current building regulations, any building constructed on or after 1 July 1998 should incorporate radon protection measures.

³ Dublin Aerospace Groundwater Monitoring Report 2021, AECOM (Reference 60681082_ACM_RP_ENV_001, dated 31 March 2022)

2.4 SITE HISTORY

A summary of the site's history, and the potential for significant historic contamination associated with on-site and off-site activities, is outlined in Table 2-3 below.

Table 2-3 Site History Summary

History of Site	Historical maps available from the OSI website were reviewed in order to identify potential historical contamination sources on or near the site. Historic OSI mapping from 1837-1842 shows that the site is vacant and undeveloped, potentially used for farming. The general area is populated with several farming homesteads with associated infrastructure and roads. A small settlement (Cloghran) with two disused quarries is located east of the Site. Historic OSI mapping from 1888-1913 shows that the site remains unchanged. Dublin Airport was originally developed as a military airfield in 1917 and was transformed into a Civil Airport in 1941. Associated hangars were constructed progressively, commencing with Hangar 1 in 1940's and proceeding with Hangars 2,4 and 5 through the 1950's and 1960's; and Hangar 3 and 6 in 1990's. The Garage was constructed in 1972. SR Technics Limited (SRT) operated in leased hangars between 2005 and 2009. Its activities included aircraft maintenance, painting, washing, electroplating, servicing of auxiliary power units, sheet metal fabrications and repair. SRT retained responsibility of the IPPC Licence for this site, including decommissioning, cleaning and environmental restoration. Amended IPPC excluded Hangar 3 with associated office and workshops from the IPPC licenced site boundary. Hangars 1 and 5 continued to be utilised by DAL for similar activities listed above but on a smaller scale. The IPPC was amended to an IEL in December 2013⁴ Review of information provided by the client and imagery from Google Earth Street View indicated that part of Hangar 1 is currently being used as the Airport Fire Station.
Potential Onsite Sources of Contamination	Based on the known site history there is a potential for soil and groundwater contamination beneath the Site. Given the vicinity to the airport fire station, it is possible that the site is impacted by run off from firefighting training activities or the site being directly used as the training grounds. There are several sources of potential aviation fuel loss and to a lesser extent de-icing activities at the airport.

⁴ Dublin Aerospace Groundwater Monitoring Report 2021, AECOM (Reference 60681082_ACM_RP_ENV_001, dated 31 March 2022)

Potential Off-Site Sources of Contamination	The immediate surroundings have been used for aircraft maintenance activities including painting, washing, electroplating, servicing of auxiliary power units, sheet metal fabrications and repair.

2.5 PREVIOUS ENVIRONMENTAL SITE ASSESSMENTS

The below section summarizes information provided by SLJV regarding works undertaken by a third party consultants at the Site or within its immediate vicinity.

Assessment of Potential Disposal Locations for Apron 5H, Fehily Timoney (dated July 2022)

Fehily Timoney Company (FTC) was requested by Dublin Airport Authority to undertake site investigation to determine the concentrations of potential contaminants present in the soils that are to be excavated as part of Apron 5H extension works.

Concurrently Ground Investigation Ireland (GII) completed an intrusive investigation across the Site which involved excavation of 26 trial pits to a maximum depth of 3 mBGL and collection of 19 soil samples. All soil samples analysed for WAC were below the Inert Criteria, with the exception of 4 locations. A brief covering letter was issued alongside the results.

The intrusive site investigation was aimed to determine the extent of potential PFAS contamination on site and involved excavation of 13 trial pits advanced to a maximum of 2.0 mBGL.

PFAS was detected in 8 of the trial pits and concentrations ranged between 0.536 µg/kg to 141.0 µg/kg.

Ground Investigation Report, Dublin Airport 5H Apron, Ground Investigation Ireland (Reference 6291-10-16, dated 28 February 2017)

Ground Investigation Ireland (GII) was requested by the DAA and Kilwex to undertake a site investigation at the Dublin Airport in 2016 in prospect of the construction of a new apron extension with associated infrastructure. The sub-surface investigation included 23 trial pits, 23 dynamic probes, 9 cable percussion boreholes and installation of 8 groundwater monitoring wells.

The sequence of strata encountered across the site were consistent and mainly consisted of the topsoil, made ground and cohesive deposits. Topsoil was encountered at all investigation locations to a maximum depth of 0.3 mBGL. Tarmac was present at hardstanding locations to a depth of 0.05 mBGL. Made ground underlying the topsoil generally consists of brown sandy slightly gravelly clay with frequent cobbles and boulders, which extends to a depth between 0.6 mBGL and 1.4 mBGL. Made ground in the north-eastern corner of the site consists of brown sandy slightly gravelly clay with frequent cobbles and boulders; and brown clayey sand and gravel and extends to a depth between 1.7 mBGL and 2.0 mBGL and 1.1 mBGL in areas closer to the apron. Made ground across the site was observed to contain fragments of concrete, red brick, ceramic and plastic. Cohesive deposits underlying the made ground generally consist of brown sandy gravelly clay with occasional cobbles and boulders; and stiff to very stiff black sandy gravelly clay with occasional cobbles and boulders.

Dublin Aerospace Groundwater Monitoring Report 2021, AECOM (Reference 60681082_ACM_RP_ENV_001, dated 31 March 2022)

AECOM was requested by Dublin Aerospace Limited to prepare a groundwater report for the aircraft maintenance facility (located immediately south of the Site) that operates under Industrial Emissions

Licence reg. no. P0480-02. AECOM has previously identified two groundwater contaminant plumes at the Former Wheel and Brake Workshop and north-east area of Hangar 1, which is subject to ongoing monitoring.

Contaminants of concern identified include chlorinated hydrocarbons, total petroleum hydrocarbons in both plumes and sulphate, manganese, nitrite, ammoniacal nitrogen and methane at the Former Wheel and Brake Workshop.

The report (based on groundwater monitoring data from 2021 and the review of previous monitoring data) concluded that chlorinated hydrocarbon contamination at Hangar 1 remains an active issue with significant adopted Generic Assessment Criteria (GAC) exceedances. According to the report the plume appears to be localised and stable. Additional localised GAC exceedances of petroleum hydrocarbons and metals were also noted. The risk to off-site controlled waters receptors is considered to be low. Concentrations of chlorinated hydrocarbons are showing a declining trend, however, still exceeding Groundwater Threshold Values (GTVs).

3 SCOPE OF WORKS

The agreed scope of works is as follows:

- Conduct a detailed sampling and analysis investigation to include for delineation of vertical and lateral extent of contamination, threshold values and contaminants of concern. Classify the in-situ soils and stockpile materials and assess the suitability of these materials for recovery or disposal at authorised facilities or for potential reuse at Dublin Airport subject to meeting established re-use criteria.
- Propose for the management of excavated materials during phase 1 works including protocols that are protective of construction workers if required.

The project objective was to classify the in-situ soils and stockpile materials to assess the suitability of these materials for recovery or disposal at authorised facilities or for potential reuse at Dublin Airport subject to meeting established re-use criteria. SLJV confirmed that approximately 2m of the upper soil profile is to be removed from the footprint of the site along with removal /reuse of existing stockpile material as part of the enabling works for the North Apron 5H development works. Bulk excavation works will be undertaken for the removal of all soils for reuse/recovery or disposal.

4 SITE INVESTIGATION METHODOLOGY

An ex-situ stockpile sampling and in-situ trial pit site investigation was carried out by WSP across 31 days between 11 October 2022 and 6 March 2023 subject to Site conditions and on-Site Health and Safety Procedures. The overall scope includes the sampling of 13 stockpiles and 57 grids across the site. Approximately 188,400 m³ of material was assessed throughout the programme.

The sampling was completed in the accordance with the SAP prepared for the Site. The sampling methodology employed is based on a systematic sampling pattern to obtain composite samples allowing for representative sampling of in-situ soils in the upper 2.0 m bgl and from stockpiles to obtain the desired quantity of soil, both to be representative as well as being sufficient to meet the testing requirements. The sampling methodology employed is in general accordance with those set out in ISO 18400-101:2017 Soil Quality - Sampling – Framework for the Preparation and Application of a Sampling Plan and ISO: 18400-102 – Selection and application of sampling techniques.

The sampled material was checked for visual or olfactory evidence of contamination. Samples were collected using WSP Standard Operating Procedure for collection of PFAS impacted soils using laboratory supplied containers and dispatched to accredited laboratories (based on availability of turnaround time) for analysis under contract, accompanied with an appropriate chain of custody.

4.1 EX-SITU SAMPLING – STOCKPILE ASSESSMENT

Twelve stockpiles, amounting to approximately 6000 m³ of material in total, were sampled during the Phase 1-3 enabling construction works of a jet blast fence and perimeter road. In addition one stockpile sample was also taken from crushed concrete sourced from the apron hardstanding south-west of the site during the Phase 1A.

The sampling procedure in accordance with the SAP involved the collection of 12 subsamples for stockpiles approximately 500 m³ in volume to obtain a composite sample for the stockpile. Subsamples were collected at various depths and locations across the stockpile using an excavator to provide a sample that is representative of the bulk mass in the stockpile.

Larger stockpiles were delineated into divisions that represent approximately 500 m³ and sampled individually. The delineation was shown to a SLJV Site survey contact during sampling. Stockpiles were then instructed to be demarcated and split based on delineation in accordance with composite sample collection.

4.2 IN-SITU SAMPLING – TRIAL PITTING

In-situ Site investigation involved excavation of 197 trial pits across the Site which was split into 57 grids 40 m x 40 m in size. In total, 130 samples were collected using composite sampling techniques. The investigation covered an area of circa 91,200 m², amounting to approximately 182,400 m³ of material being assessed prior the commencement of civil works on Site. The work area was tested up to 2.0 mBGL in each grid to ensure that the material in each grid could be appropriately classified up to this depth. It is noted that the entire grid area does not necessarily require excavation to 2.0 mBGL and removal from Site.

Each trial pit location was cleared for utilities by SLJV. Trial pits were advanced to a maximum depth of 2.0 mBGL using an excavator subcontracted by SLJV. Each grid contains up to 4 sub-sampling locations vertically split into the top 1 m interval (0.1-1.0 mBGL) and the bottom 1 meter interval (1.0-2.0 mBGL).

40 grids contain all 4 sub-sampling locations, 5 grids contain 3 sub-sampling locations, 10 grids contain 2 sub-sampling locations and 2 grids contain one sub-sampling location due to limited location availability i.e. the actual grid size was restricted and or access airside was not permitted. Further Site conditions as for example waterlogged ground, active Site roads and infrastructure and Site boundary limited the areal extent to which some grids could be sampled. Surveyed Trial pit locations showing all sub sample locations for each grid are presented in Drawing 2, In-situ Grid Assessment, Appendix B.

4.3 ANALYTICAL SUITE AND ASSESSMENT

The analytical suite has been selected based primarily on the legislative requirements for waste characterisation, hazardous waste classification, and waste acceptance in accordance the Waste Framework Directive, 2003/EC/33, with a focus on contaminants of potential concern (COPC) typically found at airports and other contaminants of concern identified by investigations at the site.

Samples we scheduled for analysis at ALS Laboratories (UK) Limited Hawarden, a UKAS accredited laboratory and PFAS analysis was subcontracted to ALS Czech Republic s.r.o, an ILAC accredited laboratory. Based on programme time requirements a subset of 33 samples were scheduled for analysis at SGS Environmental Analytics, Rotterdam, Netherlands. SGS are also an accredited laboratory (ISO/ICE 17025:2017, Registration number: L028) for the analysis of PFAS compounds.

Samples were collected in accordance with the SAP and WSP PFAS Standard Operating Procedure. The samples were placed into clean, laboratory supplied containers and dispatched to above mentioned laboratories for analysis under contract, accompanied with an appropriate chain of custody and scheduled for the following analyses and assessments.

4.3.1 WASTE MATERIAL ASSESSMENT

Modified Rilta Suite (2016) Including Loss on Ignition

A subset of 18 in-situ (including 1 discrete sample) and 9 stockpile samples were analysed for the modified Rilta Suite (2016) including loss on ignition and CEN 10:1 leachate parameters for assessment against waste acceptance criteria to classify the material for on-site reuse or potential off-site disposal.

Asbestos Screening and Asbestos Identification

A subset of 16 in-situ and all stockpile samples we screened for identification of potentially asbestos containing material within the excavated material. One of these in-situ samples was scheduled for asbestos identification to upon the receipt of the batch at the laboratory, as the presence of potentially asbestos containing material was suspected.

Volatile Organic Compounds (VOCs)

A subset of 2 in-situ and 3 stockpile samples were analysed for VOCs as a precautionary assessment of soils potentially impacted by aviation maintenance activities in the vicinity of hangars.

4.3.2 PFAS ASSESSMENT

Based on previous Site investigations undertaken by third party consultants, the distribution of PFAS contamination across the Site was considered to be variable. To generate a robust dataset for the conceptual site model (CSM), the samples were scheduled for the following analyses.

PFAS suite

All 114 in-situ samples and 13 stockpile samples (including a stockpile of crushed concrete) were analysed for the conventional PFAS suite consisting of 17 different compounds including perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), also known as long-chain PFAS which are generally the main focus of regulation.

Total Oxidisable Precursors Assay

A subset of 9 in-situ and 5 stockpile samples were analysed for total oxidisable precursors assay (TOPA) to better understand the distribution and speciation of PFAS contamination on Site. TOPA is an oxidative sample pre-treatment designed to enable detection of underlying PFAS precursors that cannot be analysed by standard analysis. This analysis can potentially expose the presence of PFAS that may under certain conditions transform into perfluorinated alkyl substances of concern.

PFAS extended suite

A subset of 42 in-situ samples and 3 stockpile samples were analysed for extended PFAS suite analysis of which consists of 35 (ALS) and 30 (SGS) different PFAS compounds to better understand the distribution and speciation of PFAS contamination on Site.

5 SITE INVESTIGATION FINDINGS

5.1 GROUND CONDITIONS

The ground conditions across the Site are given below. The general ground profile consists of topsoil and / or made ground, underlain by natural clays (Glacial Till) known colloquially as boulder clay.

Made Ground

The made ground (which predominantly consists of sandy, gravelly clay) was encountered across the majority of the Site. Various fragments of construction material including brick, concrete and plastics were identified in this layer to a depth of approximately 1.0 mBGL.

Made ground and potentially re-worked material predominantly consisting of clayey gravel or gravelly clay was encountered across majority of the site to depths circa 1.0 mBGL. Alternatively, sandy gravel was encountered along site roads extending to maximum depths of 1.5 mBGL and sandy gravel (Clause 804) was observed in the site offices area extending to 0.8 mBGL. Red brick tiles and concrete hardstanding underlain by sandy gravel (Clause 804) generally extending to 0.5 m BGL were encountered in the south-west of the site, within the area of current Apron 5.

Various fragments of glass, pieces of fabrics and construction material including brick, concrete, wires and plastics were identified within made ground. Disused and disconnected underground services including wires and clay pipes (status confirmed by SLJV upon encounter) were observed across the site. A mass of concrete was encountered in two of the trial pits at depth 1.0 mBGL. within grid G5. Olfactory evidence of hydrocarbon was observed within grid G7 at depth 0.6 mBGL only.

Natural Ground

Natural ground generally consisted of brown to black (darkening with depth) gravelly clay with occasional cobbles and boulders and boulder clay which was observed to underlie the made ground across the entirety of the Site at varying depths. Bedrock was not encountered on Site during the work.

5.2 LABORATORY ANALYTICAL RESULTS

The laboratory certificates are presented in Appendix C. Table 01 presents a summary of PFAS detections in all samples analysed at the Site. The following observations are made with respect to the soil laboratory analytical data.

PFAS

PFAS was detected in 82 samples (both stockpiles and in-situ locations). PFOS concentrations range from non detect to 516 µg/kg in the upper layer and 568 µg/kg in the lower layer.

Concentrations of summed PFAS (excluding PFOS) range from non-detect to 415.5 µg/kg in the top layer and 373.6 µg/kg in the bottom layer. The distribution of PFAS detections by Grid distribution of is presented in Appendix B, Figures 2a and 2b. A summary table of PFAS results is also presented in Appendix B.

PFAS Total Oxidisable Precursors Assay (TOPA)

TOPA aims to detect PFAS precursor compounds by oxidising samples to see whether or not they develop into regulated (and easier to detect) PFAS compounds – indicative of whether there are regulated PFAS compounds at a site that might later emerge from existing PFAS precursors.

TOPA was completed on 14 soil samples during the early stages of the project.

PFAS concentrations reported using the TOPA analysis were compared against the results obtained using the standard PFAS suite. A statistical test was performed on the dataset to assess if there was a significant difference between the standard PFAS suite and the TOPA results. There were no significant differences noted between both analysis types. Considering the low to non detect concentrations of PFAS and PFAS TOPA analysis overall on site TOPA was significantly reduced.

Rilta 2016 Suite

The assessment of Rilta 2016 Suite results was performed using HazWasteOnline™ and the summary is discussed in section 6 below. Additionally, one discrete sample GG7B/0.3-0.5 collected due to olfactory evidence of hydrocarbon contamination reported high concentrations in long chain Gasoline Range Organics, Total Petroleum Hydrocarbons and Mineral Oil. The concentration of Mineral Oil in this sample was 1,120 mg/kg. This discrete sample was determined to be hazardous based on the HazWasteOnline™.

Asbestos

Asbestos containing material was not detected in any of the samples analysed. The laboratory reported potentially asbestos containing material in sample GE5/0.1-1.0 upon the receipt of samples. This sample was therefore scheduled for asbestos identification and quantitation. The sample was reported to contain no asbestos material and the suspected artefact was confirmed to be crushed red brick.

VOCs

VOC analysis was completed on a subset of samples to as a precautionary check for VOC compounds particularly trichloroethene and breakdown products (based on the desktop study indicating that the SR Technics Site has a historical TCE issue). VOCs were not detected in any of the samples analysed.

6 EXCAVATED SOIL WASTE PROPERTIES

This section of the report examines the waste properties of material if it is to be excavated and requires disposal off Site as part of the construction process. The analysis is per European and Irish Waste Legislation requirements.

Section 7.0 following this examines whether the material may be accepted at a particular type of landfill e.g. an inert landfill based on the waste acceptance criteria (WAC) of that landfill.

As mentioned in Section 1 there are no regulatory criteria available for disposal of PFAS impacted soils in Ireland. At the time of writing the report WSP understand that there is no landfill licensed to accept PFAS impacted soils in Ireland.

Therefore in terms of potential off Site disposal options the following hierarchy is noted:

1. Any grid samples that have detected PFAS are not suitable for disposal at landfill in Ireland
2. Grid samples that have not detected PFAS may be suitable for disposal at landfill in Ireland subject to the hazardous/non hazardous properties of the material and the waste acceptance criteria of the receiving facility
3. The receiving facility should satisfy itself as per normal practice that the material is suitable for acceptance at its facility.

6.1 WASTE PROPERTY SAMPLING CLASSIFICATION METHODOLOGY

It is understood that excavations of soils from the Site would meet the definition of waste under the Waste Framework Directive, and that the material may be classified in the List of Waste with a “mirror” entry EWC code, either 17-05-03* (soil and stones containing hazardous substances, classified as hazardous) or 17 05 04 (soil and stones other than those mentioned in 17-05-03, not hazardous).

Where a waste is a ‘mirror entry’ in the List of Waste, it can be classified via a process of analysis against standard hazard criteria set out in the Waste Framework Directive. In Ireland, the EPA has accepted the use of HazWasteOnline™, web-based commercial waste classification software marketed by OneTouch Data, to assist in the classification of potentially hazardous and non-hazardous materials (EPA, 2014). The software utilises the European List of Waste, the CLP Regulations and associated ‘Adaptations to Technical Progress’ (ATPs), and UK Guidance outlined in ‘Technical Guidance WM3: Waste Classification – Guidance on the classification assessment of waste’ (WM3, Environment Agency, 2018).

The results of chemical analysis of soil samples taken from the trial pits and stockpiles have been used to determine whether the material is likely to be classified as hazardous or non-hazardous under current EU legislation and EPA guidance (EPA, 2019). Where sufficient data have not been available, we have made assumptions based on the information supplied to us and our professional judgement.

6.2 WASTE PROPERTY CLASSIFICATION

The determinands analysed by the laboratory were imported into the HazWasteOnline™ tool (HWOL file) to determine whether soil represented by each composite sample is likely to be

classified as hazardous or non-hazardous waste. The results of the classification are presented in Appendix D. WSP personnel employed for this analysis have completed the Hazwasteonline™ tool training course and are considered competent to complete the analysis. The following points should be noted:

- The classification of waste as either hazardous or non-hazardous is based on the percentage of hazardous substances within the waste. Waste soils typically contain a small volume of water (expressed as moisture content). Laboratory soils concentrations are reported on a dry weight basis, so will tend to slightly overestimate the concentration of substances in the soil as a whole. The natural moisture content reported by the laboratory was used to correct the laboratory results in HazWasteOnline™;
- The hazardous properties 'Flammable' and 'Highly Flammable' require specific testing. Determinands with hazard statements related to these properties, such as petroleum hydrocarbons, will therefore be classified as 'potentially hazardous' in the HazWasteOnline™ tool.
- As part of this assessment, we have taken the view that the waste itself will not exhibit the hazardous properties 'Flammable' or 'Highly Flammable' as a result of contamination with these substances where the concentration is less than 10,000 mg/kg (1%);
- The classification of waste as hazardous or non-hazardous is also based on the concentration of specific substances within the waste. Laboratory analysis of metals returns the concentration (in mg/kg) of the metal ion, e.g., zinc, and does not indicate the metal speciation/compound, e.g., zinc oxide. In the absence of further information, we have made assumptions of worst-case compounds based on analytical results, the history of the site, and the nature of the compound (for example highly soluble species are not considered to be present);
- Chromium (VI) was not detected in any of the samples analysed. Chromium has been assumed to be chromium (III); and;
- Total petroleum hydrocarbon concentration (C5-C40) has been assessed as TPH C6-C40.
- Asbestos screen and identification analysis was conducted on the waste samples to determine the presence or absence of asbestos fibres within the excavated material. Asbestos fibres were not identified in any of the samples analysed.

6.3 WASTE PROPERTY CLASSIFICATION RESULTS

A total of 26 composite soil samples collected from the site were classified using HazWasteOnline™.

All 26 composite samples have been determined to be non-hazardous based on the HazWasteOnline™ assessment of the reported analytical results. Full details of the waste assessment are presented in Appendix D.

7 LANDFILL WASTE ACCEPTANCE CRITERIA

All 26 composite samples collected at the Site have been considered as non-hazardous waste (EWC Code 17-05-04) and therefore suitable for disposal at facilities authorised to accept EWC Code 17 05 04 subject to meeting site specific acceptance criteria.

It is noted again that samples containing PFAS (regardless of the WAC criteria at a landfill) are not suitable for disposal to landfill in Ireland.

An assessment of each sample against Waste Acceptance Criteria (WAC) for landfills and soil recovery facilities has been completed and is discussed in Section 7.1 with a summary shown below.

7.1 WASTE ACCEPTANCE FOR LANDFILL UNDER 2003/33/EC

WAC for inert, stable non-reactive hazardous waste, and hazardous waste have been agreed by the European Commission (Council Decision 2003/33/EC) and are only relevant if a waste is destined for disposal to landfill. Individual member states and, subsequently, licensed landfill operators, may establish more stringent WAC. The WAC and the associated laboratory analyses are not suitable for use in the determination of whether a waste is hazardous or non-hazardous.

The analytical results, including leaching at a liquid to solid ratio of 10 l/kg, are provided in Appendix C with comparison against the inert, stable non-reactive hazardous, and hazardous WAC established in 2003/33/EC.

- 24 composite samples meet the inert waste limits (Category B1) and are suitable for disposal at an inert landfill such as IMS and Walshestown if grid samples do not contain PFAS; and
- 2 composite samples exceed the inert waste limits for zinc (SP04) and selenium (GD7/1.4-2.4) but meets the Non-Hazardous limits and is suitable for disposal at a Non Hazardous landfill if the grid sample does not contain PFAS.

8 DISCUSSION

Stockpiles

12 stockpiles were available to be sampled from the perimeter Jet Blast fence work. Each stockpile was circa 500 m³ in volume, amounting to approximately 6,000 m³. Two stockpiles (PR02A and PR02B sampled on 10th January) reported no PFAS detects equivalent to approximately 1,000 m³. Ten stockpiles detected one or more PFAS compounds, equivalent to approximately 5,000 m³. An Additional stockpile sample taken from crushed concrete sourced from the apron hardstanding also detected one or more PFAS compounds.

In-situ Sampling

The Site was subdivided horizontally into 57 grids 40 x 40 m in size and vertically into 2 profiles 0-1 m bgl and 1-2 m bgl. In total, 114 grids, each 1,600 m³ in volume were assessed, amounting to approximately 182,400 m³ of material. The work area was tested up to 2.0 mBGL in each grid to ensure that the material in each grid could be appropriately classified up to this depth. It is noted that the entire grid area does not necessarily require excavation to 2.0 mBGL and removal from Site. The grid shape and distribution of PFAS contamination is presented in Appendix B, Figures 2a and 2b. A summary of the results is given below.

43 grids in total reported no detection of PFAS compounds (approximately 68,800 m³ of material). 17 grids (27,200 m³ located from 0 – 1.0 m bgl) and 26 grids (41,600 m³) located 1-2m bgl.

71 grids reported one or more PFAS detections amounting to 113,600 m³ of material out of which 40 grids 64,000 m³ is sourced from the upper profile and 31 grids 49,600 m³ from the lower profile.

Table 8-1 Summary of In-Situ PFAS detections per Grid

Location	PFAS non detect	Approximate Volume (m ³)	PFAS detection	Approximate Volume (m ³)
0 - 1 m bgl	17	27,200	40	64,000
1 – 2 m bgl	26	41,600	31	49,600

Soil Waste Properties and Waste Acceptance at Landfill

There is no landfill in Ireland permitted to accept PFAS impacted soil and stone. Therefore, any grid that contains PFAS detections is not considered suitable for disposal at landfill in Ireland regardless of WAC results for available criteria.

The results of the HazWasteOnline analysis show that the excavated soils are all classified as non hazardous. All samples pass the WAC for inert landfills with the exception of one sample with a marginal exceedance for Zinc. WSP recommend that this area of the site is subsampled/delineated around this minor exceedance. Alternatively the receiving facility can be made aware of this minor exceedance and complete sampling of the material prior to acceptance.

9 SUMMARY AND CONCLUSION

A Site investigation was completed by WSP at Dublin Airport at the Apron 5H Redevelopment Site on behalf of Sisk Lagan Joint Venture (SLJV). Previous Site Investigations completed at the Site had shown the presence of low concentrations of PFAS compounds. The source of these PFAS impacts in soil is understood to be emplacement of historical fill material from elsewhere within DAA during earlier phases of redevelopment at the Site.

A Site investigation was completed between October 2022 and March 2023 based on availability of access to complete the work. 197 trial pits were excavated across the Site and 130 samples were collected using composite sampling techniques. WSP standard operating procedures were used for the collection of all samples.

One or more PFAS compounds were detected in 12 stockpiles including a crushed concrete stockpile. One or more PFAS compounds were detected in 71 grid locations across the Site.

A subset of 26 composite samples assessed using HazWasteOnline™ have been all determined to be non-hazardous. 24 samples further meet the inert waste limits (Category B1) and are suitable for disposal at an inert landfill. WSP recommend that subsampling of the soils to delineate the presence of Zinc in soils is completed. Alternatively a nominated waste receiver can complete soil sampling of the material prior to acceptance at its facility (subject to meeting all acceptance criteria).

The above classification is based on the assumption that no PFAS was detected. In the absence of regulation/guidance in Ireland with respect to PFAS impacted soil/stone, any sample where PFAS was detected cannot be disposed of to landfill in Ireland regardless of the HazWasteOnline™ and WAC assessment. The hierarchy is summarised as follows.

4. Any grid samples that have detected PFAS are not suitable for disposal at landfill in Ireland
5. Grid samples that have not detected PFAS may be suitable for disposal at landfill in Ireland subject to the hazardous/non hazardous properties of the material and the waste acceptance criteria of the receiving facility
6. The receiving facility should satisfy itself as per normal practice that the material is suitable for acceptance at its facility.

A Summary table and approximate volumes of soil that detected one or more PFAS compound is given below.

Location	PFAS non detect	Approximate Volume (m³)	PFAS detection	Approximate Volume (m³)
0 - 1 m bgl	17	27,200	40	64,000
1 – 2 m bgl	26	41,600	31	49,600

10 REFERENCES

- WSP Golder Standard Operating Procedures (SOP) for PFAS Sampling
- ISO 18400-101:2018 – Soil Quality- Sampling-Framework for the preparation and application of a sampling plan.
- ISO 18400-102:2017 Soil quality — Sampling — Part 102: Selection and application of sampling techniques
- ISO 18400-104:2018 – Soil Quality- Sampling-Strategies
- ISO 18400-106:2017 Soil quality — Sampling — Part 106: Quality control and quality assurance
- ISO 18400-201:2017 Soil quality — Sampling — Part 201: Physical pretreatment in the field
- ISO 18400-203:2018 Soil quality — Sampling — Part 203: Investigation of potentially contaminated sites
- Safety, Health and Welfare Act 2005 (No. 10 of 2005).
- Safety, Health and Welfare at Work (Exposure to Asbestos)(Amendment) Regulations 2010 (S.I. No. 589 of 2010).



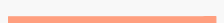
APPENDIX A

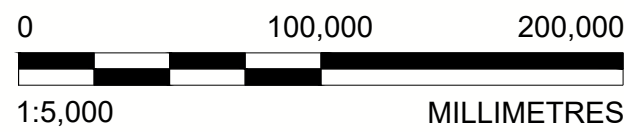
Drawings

Path: C:\Users\IEP\A031\Desktop\ Drawing 01 - Civil Work Area Boundary.dwg



LEGEND

-  Cartographical Background
-  Civil Works Area Boundary



CLIENT

SLJV

CONSULTANT



YYYY-MM-DD	2023-04-03
PREPARED	LP
DESIGN	LP
REVIEW	LP
APPROVED	LP

PROJECT

APRON 5H

SHEET TITLE

CIVIL WORKS AREA BOUNDARY

PROJECT No.
40000208

DRAWING NO.
1

Rev.
A

SCALE
As Shown @ A1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

25 mm



APPENDIX B

In-Situ Soil Assessment

Figure 2a – Lateral Distribution of PFAS Concentration – WSP Site Investigation – 0.1 to 1.0 mBGL

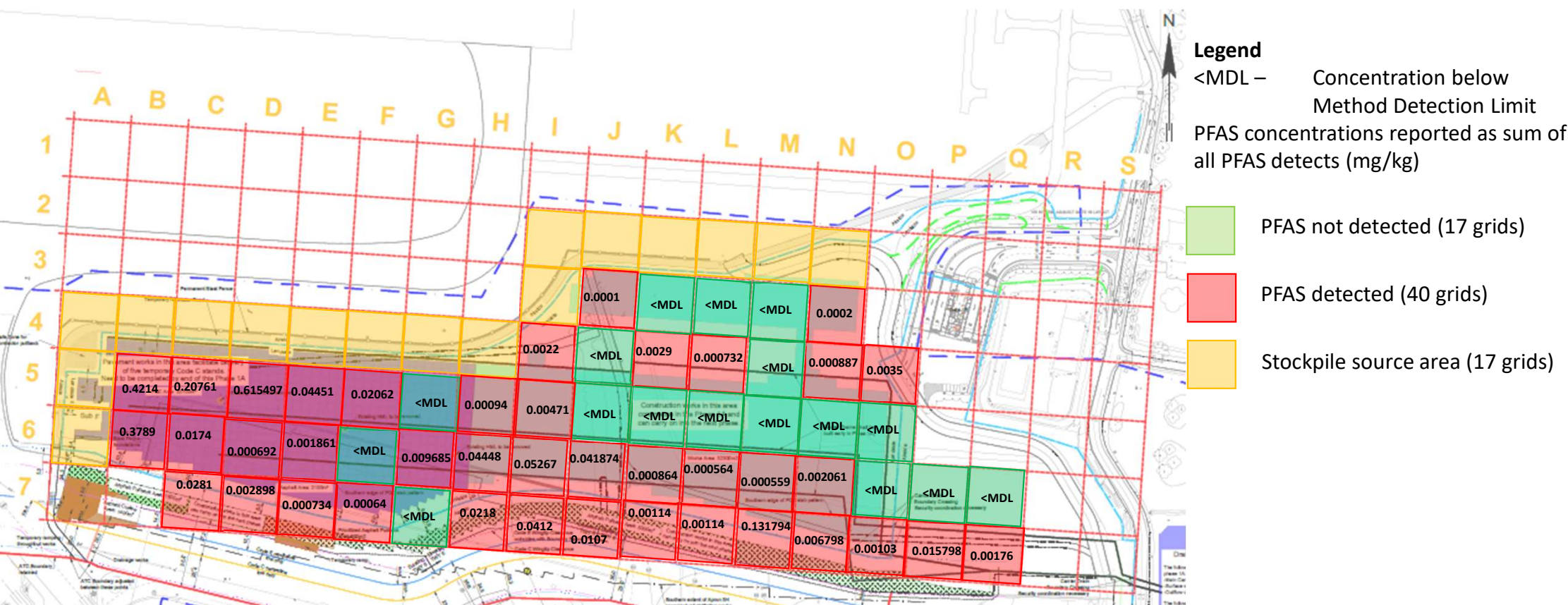


Figure 2b – Lateral Distribution of PFAS Concentration – WSP Site Investigation – 1.0 to 2.0 mBGL

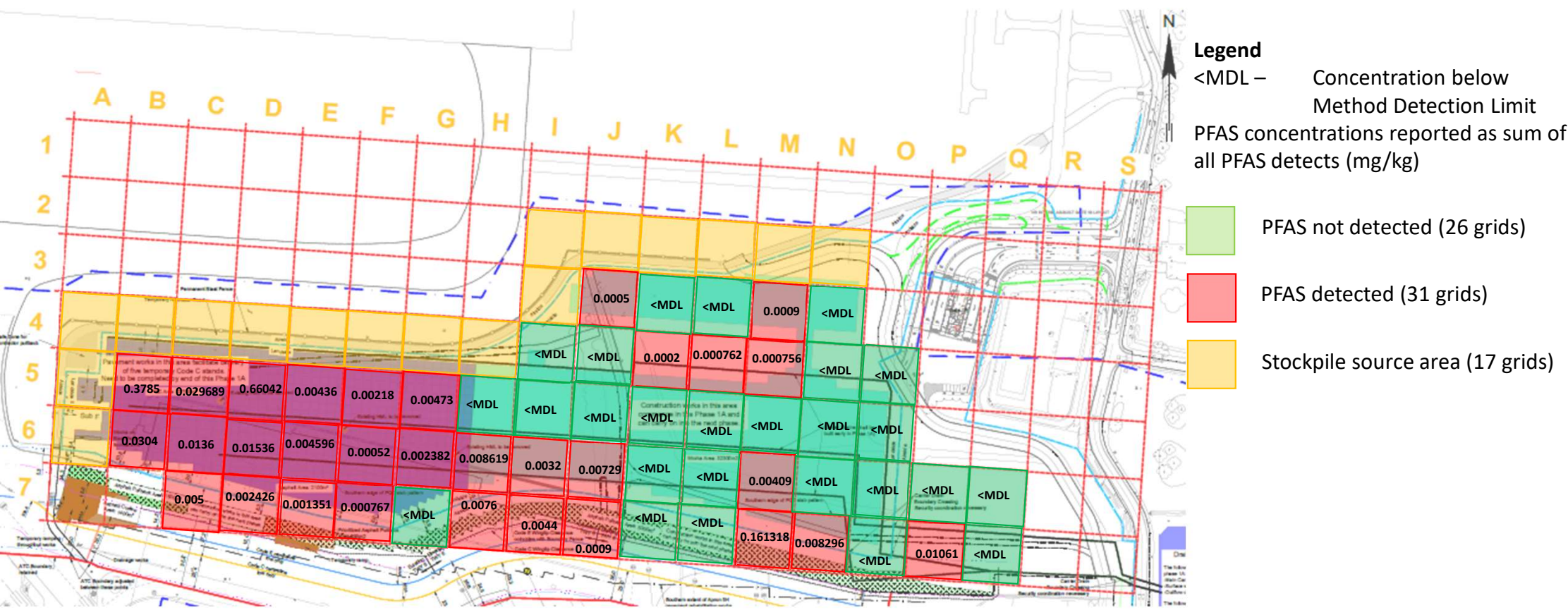


Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	Customer Sample ID		SP01	SP02	SP04	SP05	SP06	GN6/0.1-1.0	GN6/1.0-2.0	GC5/0.1-1.0	GC5/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0	GK5/0.0-1.0	GK5/1.0-2.0	GL5/0.0-1.0
	Depth		NA	NA	NA	NA	NA	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00
	Sampled Date		12/10/2022	19/10/2022	02/11/2022	02/11/2022	02/11/2022	16/11/2022	16/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022	22/11/2022	22/11/2022	22/11/2022
	SDG		221014-62	221021-102	221104-92	221104-92	221104-92	221118-165	221118-165	221123-181	221123-181	221123-181	221123-181	221123-181	221123-181	221201-28	221201-28	221201-28
	Lab Sample Number		27018767	27056551	27119824	27119831	27119839	27186433	27186439	27206101	27206107	27206086	27206094	27206115	27206121	27244350	27244356	27244342
Analyte	Method	Unit	MDL															
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00113	0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00852	0.00872	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	0.000538	<0.0005	<0.0005	<0.0005	0.000764	<0.0005	0.00199	0.00113	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00907	0.00235	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000545	<0.0005	0.00915	0.00395	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00213	<0.0005	0.0025	0.00409	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	0.000729	<0.0005	<0.0005	<0.0005	0.002	0.000551	0.00406	0.00343	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	0.00131	<0.0005	0.00051	0.000584	<0.0005	0.0133	0.00733	0.00628	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	0.000517	<0.0005	<0.0005	<0.0005	0.00159	0.000576	0.00311	0.00267	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	SUB	mg/kg	<0.0005	<0.0005	0.000609	0.00156	<0.0005	<0.0005	0.000565	<0.0005	0.0046	0.000612	0.0113	0.0258	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000557	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	SUB	mg/kg	<0.0005	0.000514	0.00247	0.00548	0.000532	0.000512	0.000912	<0.0005	0.173	0.0188	0.516	0.568	<0.0005	0.000756	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)*	SUB	mg/kg	<0.0005	<0.0005	0.000824	0.00162	<0.0005	<0.0005	<0.0005	<0.0005	0.00743	0.00182	0.0142	0.0145	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentanoic acid (PFPeA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	0.000736	<0.0005	<0.0005	<0.0005	<0.0005	0.00169	<0.0005	0.00563	0.00374	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	SUB	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000561	<0.0005	0.022	0.0125	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4:2 FTS (757124-72:4)	TM338	mg/kg	<0.002	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:3 FTCA (914637-49:3)	TM338	mg/kg	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2-FTS (27619-97:2)	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	-
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	-
8:2 FTS (39108-34:4)	TM338	mg/kg	<0.002	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.0232	-	0.0232	-	<0.001	-	<0.001	-
Branched PFOS (Post Ox.)	TM428	mg/kg	<0.001	<0.001	<0.001	0.00134	<0.001	<0.001	<0.001	-	0.0281	-	0.042	-	<0.001	-	<0.001	-
Linear PFOS(1763-23:1) Perfluoro-1-octanesulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	0.00423	0.00202	<0.001	<0.001	-	0.0536	-	0.198	-	<0.001	-	<0.001	-
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	TM428	mg/kg	<0.001	<0.001	0.0022	0.00451	0.00144	<0.001	<0.001	-	0.0435	-	0.311	-	<0.001	-	<0.001	-
PFBA (375-22:4) Perfluoro-n-butanoic acid	TM338	mg/kg	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-
PFBA (Post Ox.) Perfluoro-n-butanoic acid	TM428	mg/kg	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-
PFBS (375-73:5) Perfluoro-1-butanedisulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFDA (335-76:2) Perfluoro-n-decanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	0.00518	-	<0.001	-	<0.001	-
PFDA (Post Ox.) Perfluoro-n-decanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFDoA (307-55:1) Perfluoro-n-dodecanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFDS (335-73:3) Perfluoro-1-decanedisulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	0.00245	-	<0.001	-	<0.001	-
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	0.00202	-	<0.001	-	<0.001	-
PFHpA (375-85:9) Perfluoro-n-heptanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00141	-	0.00245	-	<0.001	-	<0.001	-
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00204	-	0.00119	-	<0.001	-	<0.001	-
PFHpS (375-92:8) Perfluoro-1-heptanesulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00252	-	0.00108	-	<0.001	-	<0.001	-
PFHpS (Post Ox.) Perfluoro-1-heptanesulfonate	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00134	-	0.00299	-	<0.001	-	<0.001	-
PFHxA (307-24:4) Perfluoro-n-hexanoic acid	TM338	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	-	<0.002	-	<0.002	-
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	TM428	mg/kg	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	0.00396	-	<0.002	-	<0.002	-	<0.002	-
PFHxS (355-46:4) Perfluoro-1-hexanesulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	0.0013	<0.001	<0.001	<0.001	-	0.0113	-	0.00349	-	<0.001	-	<0.001	-
PFHxS (Post Ox.) Perfluoro-1-hexanesulfonate	TM428	mg/kg	<0.001	<0.001	<0.001	0.00163	<0.001	<0.001	<0.001	-	0.00811	-	0.00603	-	<0.001	-	<0.001	-
PFNA (375-95:1) Perfluoro-n-nonanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	0.00127	<0.001	<0.001	<0.001	-	0.00379	-	0.00717	-	<0.001	-	<0.001	-
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00298	-	<0.001	-	<0.001	-	<0.001	-
PFOA (335-67:1) Perfluoro-n-octanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	0.00164	0.00122	<0.001	0.00143	-	0.00577	-	0.00868	-	<0.001	-	<0.001	-
PFOA (Post Ox.) Perfluoro-n-octanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	0.00425	-	<0.001	-	<0.001	-	<0.001	-
PFOSA (754-91:6) Perfluoro-octanesulfonamide	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

		Customer Sample ID		SP01	SP02	SP04	SP05	SP06	GN6/0.1-1.0	GN6/1.0-2.0	GC5/0.1-1.0	GC5/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0	GK5/0.0-1.0	GK5/1.0-2.0	GL5/0.0-1.0
PFPa (2706-90-3) Perfluoro-n-pentanoic acid	TM338	mg/kg	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	-
PFPa (Post Ox.) Perfluoro-n-pentanoic acid	TM428	mg/kg	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	-
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	TM338	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	0.0122	-	<0.001	-	<0.001	-	-
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	TM428	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	-
Total PFOS	TM338	mg/kg	<0.001	<0.001	<0.001	0.00423	0.00282	<0.001	<0.001	-	0.0768	-	0.221	-	<0.001	-	<0.001	-	-
Total PFOS (Post Ox.)	TM428	mg/kg	<0.002	<0.002	0.0022	0.00585	<0.002	<0.002	<0.002	-	0.0716	-	0.353	-	<0.002	-	<0.002	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	SUB	mg/kg	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
perfluorooctadecanoic acid (PFODa)*	SUB	mg/kg	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpa)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)*	SUB	mg/kg	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS (4:2 fluorotelomer sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 FTS (6:2 fluorotelomer sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (8:2 fluorotelomer sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MeFOSA (N-methylperfluorooctanesulfonamide)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (perfluorobutanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (perfluorobutane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (perfluorodecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoDA (perfluorododecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (perfluorodecane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (perfluoroheptanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (perfluoroheptane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (perfluorohexanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxDA (perfluorohexadecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (perfluorohexane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (perfluorononanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA branched (perfluorooctanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA linear (perfluorooctanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFODA (perfluorooctadecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS branched (perfluorooctane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS linear (perfluorooctane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (perfluorooctanesulfonamide)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeA (perfluoropentanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (perfluoropentane sulfonic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTeDA (perfluorotetradecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTriDA (perfluorotridecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnDA (perfluoroundecanoic acid)	SGS	mg/kgdm	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOA	SGS	mg/kgdm	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOS	SGS	mg/kgdm	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFAS detected				YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	NO	NO	NO

Table 01 - SLIV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

[illegible]

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

[illegible]

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GN4/1.00-2.00	GN7/0.10-1.00	GN7/1.00-2.00	GO7/0.10-1.00	GO7/1.00-2.00	G7B/0.30-0.50	G7B/0.60	GD6/0.30-1.00	GD6/1.00-2.00	GD7/0.40-1.40	GD7/1.40-2.40	GE6/0.10-1.00	GE6/1.00-2.00	GE7/0.10-1.00	GE7/1.00-2.00	GF6/0.10-1.00	GF6/1.00-2.00	GF7/0.10-1.00	GF7/1.00-2.00	GG6/0.30-1.00	GG6/1.00-2.00	GG7/0.10-1.00
	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.30-0.50	0.6	0.30-1.00	1.00-2.00	0.40-1.40	1.40-2.40	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.30-1.00	1.00-2.00	0.10-1.00
	19/12/2022	19/12/2022	19/12/2022	13/12/2022	13/12/2022	18/01/2023	18/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023	13/01/2023	13/01/2023	12/01/2023	12/01/2023	18/01/2023	18/01/2023	17/01/2023	17/01/2023	23/01/2023	20/01/2023	18/01/2023
	221222-90	221222-90	221222-90	221222-90	221222-90	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103
	27353976	27353977	27353979	27353980	27353981	27458477	27458476	27457889	27457892	27457903	27457904	27458481	27458480	27458478	27458479	27458468	27458469	27458473	27458472	27457893	27457895	27458471
Analyte																						
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000692	0.000826	0.000768	0.00079	0.000765	0.000844	0.000734	0.000792	<0.0005	<0.0005	0.00064	0.000767	0.000827	0.000793	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooheptane sulfonic acid (PFHpS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooheptanoic acid (PFHpA)*	<0.0005	0.000959	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	0.000549	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	<0.0005	0.000623	0.00326	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00384	<0.0005	0.0011	0.000555	0.000542	<0.0005	<0.0005	<0.0005	<0.0005	0.00052	<0.0005	0.000562	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)*	<0.0005	0.00126	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000562	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	<0.0005	0.000504	0.00116	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	<0.0005	0.000986	0.00238	0.00103	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0097	0.00213	0.000536	<0.0005	<0.0005	<0.0005	0.000559	<0.0005	<0.0005	<0.0005	0.000972	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)*	<0.0005	0.000756	0.000989	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000994	<0.0005	<0.0005	0.000541	0.00321	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00372	0.00104	<0.0005
Perfluoropentanoic acid (PFPeA)*	<0.0005	0.00171	0.000507	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000642	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4:2 FTS (757124-72:4)	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:3 FTCA (914637-49:3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2-FTS (27619-97:2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (39108-34:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (375-22-4) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (Post Ox.) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (335-76-2) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (Post Ox.) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (Post Ox.) Perfluoro-1-heptanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (Post Ox.) Perfluoro-1-hexanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (375-95-1) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (335-67-1) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (Post Ox.) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (754-91-6) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GN4/1.00-2.00	GN7/0.10-1.00	GN7/1.00-2.00	GO7/0.10-1.00	GO7/1.00-2.00	G7B/0.30-0.50	G7B/0.60	GD6/0.30-1.00	GD6/1.00-2.00	GD7/0.40-1.40	GD7/1.40-2.40	GE6/0.10-1.00	GE6/1.00-2.00	GE7/0.10-1.00	GE7/1.00-2.00	GF6/0.10-1.00	GF6/1.00-2.00	GF7/0.10-1.00	GF7/1.00-2.00	GG6/0.30-1.00	GG6/1.00-2.00	GG7/0.10-1.00
PFPa (2706-90-3) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPa (Post Ox.) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
perfluorooctadecanoic acid (PFODA)*	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-3 7-dimethyltectoic acid (P37DMOA)*	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS (4:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 FTS (6:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (8:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MeFOSA (N-methylperfluorooctanesulfonamide)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (perfluorobutanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (perfluorobutane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (perfluorodecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoDA (perfluorododecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (perfluorododecane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (perfluoroheptanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (perfluoroheptane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (perfluorohexanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxDA (perfluorohexadecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (perfluorohexane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (perfluorononanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA branched (perfluorooctanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA linear (perfluorooctanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFODA (perfluorooctadecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS branched (perfluorooctane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS linear (perfluorooctane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (perfluorooctanesulfonamide)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeA (perfluoropentanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (perfluoropentane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTeDA (perfluorotetradecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTriDA (perfluorotridecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnDA (perfluoroundecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFAS detected	NO	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	NO

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GG7/1.00-2.00	GH6/0.10-1.00	GH6/1.00-2.00	GK3/0.00-1.00	GK3/1.00-2.00	GL3/0.00-1.00	GL3/1.00-2.00	GL4/0.80-1.80	GL4/1.80-2.80	GP6/0.20-1.00	GP6/1.00-2.00	GP7/0.20-1.00	GP7/1.00-2.00	GQ6/0.20-1.00	GQ6/1.00-2.00	GQ7/0.30-1.00	GQ7/1.00-2.00	GI6/0.10-1.00	GI6/1.00-2.00	BK-L7/0.10-1.00	BK-L7/1.00-2.00	PR01
	1.00-2.00	0.10-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.80-1.80	1.80-2.80	0.20-1.00	1.00-2.00	0.20-1.00	1.00-2.00	0.20-1.00	1.00-2.00	0.30-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	-
	18/01/2023	12/01/2023	12/01/2023	23/01/2023	23/01/2023	18/01/2023	18/01/2023	23/01/2023	23/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023	11/01/2023	11/01/2023	11/01/2023	11/01/2023	10/01/2023
	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	230114-36	230114-36	230114-36	230114-36	230114-36
	27458475	27458470	27458467	27457906	27457905	27458465	27458466	27458047	27458048	27457897	27457898	27457901	27457899	27457896	27457894	27457900	27457902	27407888	27407889	27407886	27407887	27407890
Analyte																						
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000732	0.000762	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorobutanoic acid (PFBA)*	<0.0005	0.00128	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorodecane sulfonic acid (PFDS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorodecanoic acid (PFDA)*	<0.0005	0.00128	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorododecanoic acid (PFDoDA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluoroheptanoic acid (PFHpA)*	<0.0005	0.00442	0.00129	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorohexane sulfonic acid (PFHxS)*	<0.0005	0.00237	0.00129	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000979	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorohexanoic acid (PFHxA)*	<0.0005	0.00259	0.000813	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorononanoic acid (PFNA)*	<0.0005	0.00807	0.000629	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00355	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorooctane sulfonamide (FOSA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)*	<0.0005	0.00947	0.000739	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00954	0.00691	<0.0005	<0.0005	0.00176	<0.0005	<0.0005	-	-	-	-
Perfluorooctanoic acid (PFOA)*	<0.0005	0.0114	0.00292	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00121	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluoropentanoic acid (PFPeA)*	<0.0005	0.0036	0.000938	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000519	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
Perfluoroundecanoic acid (PFUnDA)*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-
4:2 FTS (757124-72:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:3 FTCA (914637-49:3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2-FTS (27619-97:2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (39108-34:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0026	<0.001	<0.001	<0.001	<0.001
Branched PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0182	0.0016	<0.001	<0.001	0.00222
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (375-22-4) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	<0.003	<0.003	<0.003
PFBA (Post Ox.) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.00154
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (335-76-2) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00108	<0.001	<0.001	<0.001	<0.001
PFDA (Post Ox.) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00153	<0.001	<0.001	<0.001	<0.001
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFHpS (Post Ox.) Perfluoro-1-heptanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00273	<0.001	0.00114	<0.001	<0.001
PFHxS (Post Ox.) Perfluoro-1-hexanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (375-95-1) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00269	<0.001	<0.001	<0.001	<0.001
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (335-67-1) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00304	<0.001	<0.001	<0.001	<0.001
PFOA (Post Ox.) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (754-91-6) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GG7/1.00-2.00	GH6/0.10-1.00	GH6/1.00-2.00	GK3/0.00-1.00	GK3/1.00-2.00	GL3/0.00-1.00	GL3/1.00-2.00	GL4/0.80-1.80	GL4/1.80-2.80	GP6/0.20-1.00	GP6/1.00-2.00	GP7/0.20-1.00	GP7/1.00-2.00	GQ6/0.20-1.00	GQ6/1.00-2.00	GQ7/0.30-1.00	GQ7/1.00-2.00	GI6/0.10-1.00	GI6/1.00-2.00	JK-L7/0.10-1.00	JK-L7/1.00-2.00	PR01
PFPa (2706-90-3) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	<0.003	<0.003	<0.003
PFPa (Post Ox.) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0208	0.0016	<0.001	<0.001	0.00222
Total PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
perfluorooctadecanoic acid (PFODa)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpa)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS (4:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 FTS (6:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (8:2 fluorotelomer sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MeFOSA (N-methylperfluorooctanesulfonamide)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (perfluorobutanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (perfluorobutane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (perfluorodecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoDA (perfluorododecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (perfluorodecane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (perfluoroheptanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (perfluoroheptane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (perfluorohexanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxDA (perfluorohexadecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (perfluorohexane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (perfluorononanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA branched (perfluorooctanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA linear (perfluorooctanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFODA (perfluorooctadecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS branched (perfluorooctane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOS linear (perfluorooctane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (perfluorooctanesulfonamide)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeA (perfluoropentanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (perfluoropentane sulfonic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTeDA (perfluorotetradecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFTriDA (perfluorotridecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnDA (perfluoroundecanoic acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sum PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFAS detected	NO	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	NO	YES	YES	YES	NO	YES

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	PR02A	PR02B	SP07	GJ3/0.10-1.00	GJ3/1.00-2.00	GJ4/0.10-1.00	GJ4/1.00-2.00	GK4/0.60-1.00	GK4/1.00-2.00	GB6/1.00-2.00	GB5/0.10-1.00	GC6/1.00-2.00	GB6/0.10-1.00	GB5/1.00-2.00	GC6/0.50-1.00	GC7/0.50-1.00	GC7/1.00-2.00	PR2B	PR3	PR4	GN3/0.10-1.00	GN3/1.00-2.00
	-	-	-	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.60-1.00	1.00-2.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.50-1.00	0.50-1.00	1.00-2.00	NA	NA	NA	0.10-1.00	1.00-2.00
	10/01/2023	10/01/2023	10/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023	26/01/2023	26/01/2023	26/01/2023	25/01/2023	25/01/2023
	230114-36	230114-36	230114-36	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13808687	13809447	13809447	13809447	13809447	13809447
	27407891	27407892	27407893	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Analyte																						
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic acid (PFBA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecane sulfonic acid (PFDS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecanoic acid (PFDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic acid (PFDoDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanoic acid (PFHpA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexane sulfonic acid (PFHxS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanoic acid (PFHxA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic acid (PFNA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamide (FOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic acid (PFOA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanoic acid (PFPeA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroundecanoic acid (PFUnDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS (757124-72:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:3 FTCA (914637-49:3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2-FTS (27619-97:2)	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (39108-34:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001	<0.001	0.00162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003	<0.003	<0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (Post Ox.) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (Post Ox.) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (Post Ox.) Perfluoro-1-heptanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002	<0.002	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (Post Ox.) Perfluoro-1-hexanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (Post Ox.) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	PR02A	PR02B	SP07	GJ3/0.10-1.00	GJ3/1.00-2.00	GJ4/0.10-1.00	GJ4/1.00-2.00	GK4/0.60-1.00	GK4/1.00-2.00	GB6/1.00-2.00	GB5/0.10-1.00	GC6/1.00-2.00	GB6/0.10-1.00	GB5/1.00-2.00	GC6/0.50-1.00	GC7/0.50-1.00	GC7/1.00-2.00	PR2B	PR3	PR4	GN3/0.10-1.00	GN3/1.00-2.00
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003	<0.003	<0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPA (Post Ox.) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS	<0.001	<0.001	0.00162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
perfluorooctadecanoic acid (PFODCA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0019	<0.0001	0.0015	0.0002	0.0004	0.0003	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
4:2 FTS (4:2 fluorotelomer sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
6:2 FTS (6:2 fluorotelomer sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0009	0.0016	0.0009	0.0009	0.0009	0.0005	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
8:2 FTS (8:2 fluorotelomer sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0037	0.0002	0.0035	0.0008	0.0006	0.0003	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
MeFOSA (N-methylperfluorooctanesulfonamide)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFBA (perfluorobutanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0017	0.0001	0.0012	0.0006	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
PFBS (perfluorobutane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFDA (perfluorodecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0042	<0.0001	0.0025	0.0011	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFDoDA (perfluorododecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFDS (perfluorodecane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0047	<0.0001	0.0013	0.0011	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFHpA (perfluoroheptanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0007	0.003	0.0023	0.0019	0.0019	0.0012	0.0002	<0.0001	0.0002	<0.0001	0.0001	<0.0001	<0.0001
PFHpS (perfluoroheptane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0024	0.0001	0.0013	0.0031	0.0003	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFHxA (perfluorohexanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0006	0.0026	0.0012	0.0016	0.0017	0.0006	0.0005	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
PFHxDA (perfluorohexadecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFHxS (perfluorohexane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0013	0.0002	0.0024	0.0055	0.0042	0.0043	0.0056	0.0047	0.0073	0.002	0.0008	<0.0001	0.0002	<0.0001	<0.0001
PFNA (perfluorononanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0017	0.0094	0.0004	0.0056	0.019	0.0012	0.0023	0.0002	0.0003	<0.0001	0.0001	<0.0001	<0.0001
PFOA branched (perfluorooctanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFOA linear (perfluorooctanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	0.0016	0.0059	0.0014	0.0048	0.0049	0.0017	0.0012	0.0003	0.0004	<0.0001	0.0002	<0.0001	<0.0001
PFODA (perfluorooctadecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFOS branched (perfluorooctane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	<0.0001	0.0066	0.036	0.0006	0.06	0.14	0.0022	0.0047	0.0007	0.0008	<0.0001	0.0003	<0.0001	<0.0001
PFOS linear (perfluorooctane sulfonic acid)	-	-	-	<0.0001	0.0005	<0.0001	<0.0001	0.0003	0.0001	0.015	0.31	0.0005	0.28	0.19	0.003	0.0088	0.0012	0.002	0.0003	0.0006	0.0002	0.0001
PFOSA (perfluorooctanesulfonamide)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFPeA (perfluoropentanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0006	0.0047	0.0007	0.0031	0.0023	0.0003	0.0002	<0.0001	0.0003	<0.0001	0.0001	<0.0001	<0.0001
PFPeS (perfluoropentane sulfonic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFTeDA (perfluorotetradecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFTriDA (perfluorotridecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0029	<0.0001	0.0006	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PFUnDA (perfluoroundecanoic acid)	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.017	<0.0001	0.0043	0.0047	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
sum PFOA	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0016	0.0059	0.0014	0.0048	0.0049	0.0017	0.0013	0.0003	0.0				

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GH7/0.00-1.00	GH7/1.00-2.00	GI7/0.00-1.00	GI7/1.00-2.00	GJ7/0.00-1.00	GJ7/1.00-2.00	SO4/0.00-1.00	SO4/1.00-2.00	GJ5/0.50-1.00	GJ5/1.00-2.00	GM3/0.00-1.00	GM3/1.00-2.00	GI4/0.10-1.00	GI4/1.00-2.00	GI5/0.1-1.0	GI5/1.0-2.0	GI5/1.0-2.00	GG5/0.10-1.00	GG5/1.00-2.00	GH5/0.10-1.00	GH5/1.00-2.00	SP CONCRETE
	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.50-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	1.00-2.00	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00	NA
	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	15/03/2023	15/03/2023	15/03/2023	13/03/2023	13/03/2023	13/03/2023	13/03/2023	13/03/2023
	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	13808688	230316-71	230316-71	230315-106	230315-106	230315-106	230315-106	230315-106	230315-106
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27690681	27690687	27690691	27685373	27685375	27685377	27685379	27685372
Analyte																						
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00053
Perfluorobutane sulfonic acid (PFBS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00055	<0.0005	<0.0005	<0.0005	0.00071	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00105	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	0.00053	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00162	<0.0005	<0.0005	<0.0005	0.00092	0.00094	<0.0005	0.00056
Perfluorooctanoic acid (PFOA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00087	<0.0005	<0.0005	<0.0005	0.00096	<0.0005	<0.0005	<0.0005
Perfluoropentanoic acid (PFPeA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00062	<0.0005	<0.0005	<0.0005	0.00071	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4:2 FTS (757124-72:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:3 FTCA (914637-49:3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2-FTS (27619-97:2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS (39108-34:4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Branched PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (375-22-4) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBA (Post Ox.) Perfluoro-n-butanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (335-76-2) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDA (Post Ox.) Perfluoro-n-decanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHpS (Post Ox.) Perfluoro-1-heptanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFHxS (Post Ox.) Perfluoro-1-hexanedisulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (375-95-1) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (335-67-1) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOA (Post Ox.) Perfluoro-n-octanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (754-91-6) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GH7/0.00-1.00	GH7/1.00-2.00	GI7/0.00-1.00	GI7/1.00-2.00	GJ7/0.00-1.00	GJ7/1.00-2.00	SO4/0.00-1.00	SO4/1.00-2.00	GJ5/0.50-1.00	GJ5/1.00-2.00	GM3/0.00-1.00	GM3/1.00-2.00	GI4/0.10-1.00	GI4/1.00-2.00	GI5/0.1-1.0	GI5/1.0-2.0	GI5/1.0-2.0D	GG5/0.10-1.00	GG5/1.00-2.00	GH5/0.10-1.00	GH5/1.00-2.00	SP CONCRETE
PFPa (2706-90-3) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPa (Post Ox.) Perfluoro-n-pentanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFOS (Post Ox.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
perfluorooctadecanoic acid (PFODa)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-3,7-dimethyloctanoic acid (P37DMOA)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
4:2 FTS (4:2 fluorotelomer sulfonic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
6:2 FTS (6:2 fluorotelomer sulfonic acid)	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
8:2 FTS (8:2 fluorotelomer sulfonic acid)	0.0004	<0.0001	0.0002	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
MeFOSA (N-methylperfluorooctanesulfonamide)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFBA (perfluorobutanoic acid)	0.0002	<0.0001	0.0012	0.0001	0.0002	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFBS (perfluorobutane sulfonic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFDA (perfluorodecanoic acid)	0.0004	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFDoDA (perfluorododecanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFDS (perfluorodecane sulfonic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFHpA (perfluoroheptanoic acid)	0.0008	0.0004	0.0038	0.0006	0.0004	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	-	-	-	-	-	-	-
PFHpS (perfluoroheptane sulfonic acid)	0.0003	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFHxA (perfluorohexanoic acid)	0.0005	0.0004	0.003	0.0009	0.0005	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	-	-	-	-	-	-	-
PFHxDA (perfluorohexadecanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFHxS (perfluorohexane sulfonic acid)	0.0018	0.0012	0.0037	0.0009	0.001	0.0004	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	-	-	-	-	-	-
PFNA (perfluorononanoic acid)	0.0026	0.0008	0.0026	<0.0001	0.0006	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	-	-	-	-	-	-	-
PFOA branched (perfluorooctanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFOA linear (perfluorooctanoic acid)	0.0029	0.0009	0.0046	0.0003	0.0008	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0004	<0.0001	-	-	-	-	-	-
PFODA (perfluorooctadecanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-
PFOS branched (perfluorooctane sulfonic acid)	0.004	0.0014	0.0034	0.0002	0.0018	0.0002	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	-	-	-	-	-	-	-
PFOS linear (perfluorooctane sulfonic acid)	0.007	0.0021	0.014	0.0003	0.0046	0.0002	0.0016	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	0.0003	<0.0001	-	-	-	-	-	-	-
PFOSA (perfluorooctanesulfonamide)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFPeA (perfluoropentanoic acid)	0.0005	0.0003	0.0045	0.0011	0.0007	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	-	-	-	-	-	-
PFPeS (perfluoropentane sulfonic acid)	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-
PFTeDA (perfluorotetradecanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
PFTriDA (perfluorotridecanoic acid)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.								

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GE5/0.1-1.0	GE5/1.0-2.0	GF5/0.1-1.0	GF5/1.0-2.0
	0.10-1.00	1.00-2.00	0.10-1.00	1.00-2.00
	06/03/2023	06/03/2023	06/03/2023	06/03/2023
	230321-71	230321-71	230321-71	230321-71
	27662123	27662124	27662121	27662122
Analyte				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	0.00089	<0.0005	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	0.00076	<0.0005	0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	0.00255	<0.0005	0.0006	<0.0005
Perfluorododecanoic acid (PFDoDA)*	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	0.00257	0.00067	0.00111	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	0.00164	0.00056	0.00068	<0.0005
Perfluorohexanoic acid (PFHxA)*	0.0014	<0.0005	0.00063	<0.0005
Perfluorononanoic acid (PFNA)*	0.00954	0.00069	0.00467	0.00061
Perfluorooctane sulfonamide (FOSA)*	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	0.0137	0.00094	0.00769	0.00091
Perfluorooctanoic acid (PFOA)*	0.00833	0.0015	0.00376	0.00066
Perfluoropentanoic acid (PFPeA)*	0.00157	<0.0005	0.00098	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	0.00156	<0.0005	<0.0005	<0.0005
4:2 FTS (757124-72:4)	-	-	-	-
5:3 FTCA (914637-49:3)	-	-	-	-
6:2-FTS (27619-97:2)	-	-	-	-
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	-	-	-	-
8:2 FTS (39108-34:4)	-	-	-	-
Branched PFOS	-	-	-	-
Branched PFOS (Post Ox.)	-	-	-	-
Linear PFOS(1763-23:1) Perfluoro-1-octanesulfonate	-	-	-	-
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	-	-	-	-
PFBA (375-22:4) Perfluoro-n-butanoic acid	-	-	-	-
PFBA (Post Ox.) Perfluoro-n-butanoic acid	-	-	-	-
PFBS (375-73:5) Perfluoro-1-butanedisulfonate	-	-	-	-
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	-	-	-	-
PFDA (335-76:2) Perfluoro-n-decanoic acid	-	-	-	-
PFDA (Post Ox.) Perfluoro-n-decanoic acid	-	-	-	-
PFDoA (307-55:1) Perfluoro-n-dodecanoic acid	-	-	-	-
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	-	-	-	-
PFDS (335-73:3) Perfluoro-1-decanedisulfonate	-	-	-	-
PFDS (Post Ox.) Perfluoro-1-decanedisulfonate	-	-	-	-
PFHpA (375-85:9) Perfluoro-n-heptanoic acid	-	-	-	-
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	-	-	-	-
PFHpS (375-92:8) Perfluoro-1-heptanedisulfonate	-	-	-	-
PFHpS (Post Ox.) Perfluoro-1-heptanedisulfonate	-	-	-	-
PFHxA (307-24:4) Perfluoro-n-hexanoic acid	-	-	-	-
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	-	-	-	-
PFHxS (355-46:4) Perfluoro-1-hexanedisulfonate	-	-	-	-
PFHxS (Post Ox.) Perfluoro-1-hexanedisulfonate	-	-	-	-
PFNA (375-95:1) Perfluoro-n-nonanoic acid	-	-	-	-
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	-	-	-	-
PFOA (335-67:1) Perfluoro-n-octanoic acid	-	-	-	-
PFOA (Post Ox.) Perfluoro-n-octanoic acid	-	-	-	-
PFOSA (754-91:6) Perfluoro-octanesulfonamide	-	-	-	-
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	-	-	-	-

Table 01 - SLJV Dublin Airport Apron 5H Site Investigation PFAS Summary Results

	GE5/0.1-1.0	GE5/1.0-2.0	GF5/0.1-1.0	GF5/1.0-2.0
PFPa (2706-90-3) Perfluoro-n-pentanoic acid	-	-	-	-
PFPa (Post Ox.) Perfluoro-n-pentanoic acid	-	-	-	-
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	-	-	-	-
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	-	-	-	-
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	-	-	-	-
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	-	-	-	-
Total PFOS	-	-	-	-
Total PFOS (Post Ox.)	-	-	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	-	-	-	-
Perfluorododecane sulfonic acid (PFDoDS)*	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)*	-	-	-	-
Perfluorononane sulfonic acid (PFNS)*	-	-	-	-
perfluorooctadecanoic acid (PFODa)*	-	-	-	-
Perfluorooctane sulfonamidoacetic acid*	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)*	-	-	-	-
Perfluorotetradecanoic acid (PFTeDA)*	-	-	-	-
Perfluorotridecanoic acid (PFTriDA)*	-	-	-	-
7H-perfluoroheptanoic acid (HPFHpA)*	-	-	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol*	-	-	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	-	-	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid*	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol*	-	-	-	-
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	-	-	-	-
10:2 FTS (10:2 fluorotelomer sulfonic acid)	-	-	-	-
4:2 FTS (4:2 fluorotelomer sulfonic acid)	-	-	-	-
6:2 FTS (6:2 fluorotelomer sulfonic acid)	-	-	-	-
8:2 DIPAP (8:2 polyfluoroalkyl phosphate diester)	-	-	-	-
8:2 FTS (8:2 fluorotelomer sulfonic acid)	-	-	-	-
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	-	-	-	-
MeFOSA (N-methylperfluorooctanesulfonamide)	-	-	-	-
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	-	-	-	-
PFBA (perfluorobutanoic acid)	-	-	-	-
PFBS (perfluorobutane sulfonic acid)	-	-	-	-
PFDA (perfluorodecanoic acid)	-	-	-	-
PFDoDA (perfluorododecanoic acid)	-	-	-	-
PFDS (perfluorododecane sulfonic acid)	-	-	-	-
PFHpA (perfluoroheptanoic acid)	-	-	-	-
PFHpS (perfluoroheptane sulfonic acid)	-	-	-	-
PFHxA (perfluorohexanoic acid)	-	-	-	-
PFHxDA (perfluorohexadecanoic acid)	-	-	-	-
PFHxS (perfluorohexane sulfonic acid)	-	-	-	-
PFNA (perfluorononanoic acid)	-	-	-	-
PFOA branched (perfluorooctanoic acid)	-	-	-	-
PFOA linear (perfluorooctanoic acid)	-	-	-	-
PFODA (perfluorooctadecanoic acid)	-	-	-	-
PFOS branched (perfluorooctane sulfonic acid)	-	-	-	-
PFOS linear (perfluorooctane sulfonic acid)	-	-	-	-
PFOSA (perfluorooctanesulfonamide)	-	-	-	-
PFPeA (perfluoropentanoic acid)	-	-	-	-
PFPeS (perfluoropentane sulfonic acid)	-	-	-	-
PFTeDA (perfluorotetradecanoic acid)	-	-	-	-
PFTriDA (perfluorotridecanoic acid)	-	-	-	-
PFUnDA (perfluoroundecanoic acid)	-	-	-	-
sum PFOA	-	-	-	-
sum PFOS	-	-	-	-
PFAS detected	YES	YES	YES	YES



APPENDIX C

Laboratory Certificates



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

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 17 November 2022
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221014-62
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 668813
Order Number:

This report has been revised and directly supersedes 666401 in its entirety.

We received 2 samples on Friday October 14, 2022 and 2 of these samples were scheduled for analysis which was completed on Thursday November 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





WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 November 2022
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221021-102
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 670172
Order Number:

This report has been revised and directly supersedes 670163 in its entirety.

We received 2 samples on Friday October 21, 2022 and 2 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: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27056551	SP02	B	0.00 - 0.00	19/10/2022
27056558	TB02	B	0.00 - 0.00	19/10/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend



Test


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)

27056551

27056558

Customer
Sample Reference

SP02

TB02

AGS Reference

B

B

Depth (m)

0.00 - 0.00

0.00 - 0.00

Container

Handle (ALE260)

1kg TUB with
(ALE210)

250g Amber Jar
(ALE215)

60g VOC (ALE215)

500ml Plastic
(ALE208)

Sample Type

S

S

S

SW

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Asbestos ID in Solid Samples

All

NDPs: 0
Tests: 1

X

CEN Readings

All

NDPs: 0
Tests: 1

X

Chromium III

All

NDPs: 0
Tests: 1

X

Coronene

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X

Dissolved Organic/Inorganic Carbon

All

NDPs: 0
Tests: 1

X

EPH by GCxGC-FID

All

NDPs: 0
Tests: 1

X

EPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

Fluoride

All

NDPs: 0
Tests: 1

X

GRO by GC-FID (S)

All

NDPs: 0
Tests: 1

X

Hexavalent Chromium (s)

All

NDPs: 0
Tests: 1

X

Loss on Ignition in soils

All

NDPs: 0
Tests: 1

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Metals in solid samples by OES

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend



Test


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)

27056551

27056558

Customer
Sample Reference

SP02

TB02

AGS Reference

B

B

Depth (m)

0.00 - 0.00

0.00 - 0.00

Container

1kg TUB with
Handle (ALE260)

250g Amber Jar
(ALE210)

60g VOC (ALE215)

500ml Plastic
(ALE208)

Sample Type

S

S

S

SW

PAH 16 & 17 Calc

All

NDPs: 0
Tests: 1

X

PAH by GCMS

All

NDPs: 0
Tests: 1

X

PCBs by GCMS

All

NDPs: 0
Tests: 1

X

PFAS (Post Ox.) Liquids

All

NDPs: 0
Tests: 1

X

PFAS (Post Ox.) Solids

All

NDPs: 0
Tests: 1

X

PFAS by LCMS on solids (S-PFCLMS02)

All

NDPs: 0
Tests: 1

X

PFAS Liquids

All

NDPs: 0
Tests: 1

X

PFAS Liquids (EU specified)

All

NDPs: 0
Tests: 1

X

PFAS Solids

All

NDPs: 0
Tests: 1

X

pH

All

NDPs: 0
Tests: 1

X

pH Value of Filtered Water

All

NDPs: 0
Tests: 1

X

Phenols by HPLC (W)

All

NDPs: 0
Tests: 1

X

Sample description

All

NDPs: 0
Tests: 1

X

Total Dissolved Solids on Leachates

All

NDPs: 0
Tests: 1

X

Total Organic Carbon

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend



Test


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)

27056551

27056558

Customer
Sample Reference

SP02

TB02

AGS Reference

B

B

Depth (m)

0.00 - 0.00

0.00 - 0.00

Container

1kg TUB with
Handle (ALE260)

250g Amber Jar
(ALE210)

60g VOC (ALE215)

500ml Plastic
(ALE208)

Sample Type

S

S

S

SW

Total Organic Fluorine*

All

NDPs: 0
Tests: 1

X

TPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

VOC MS (S)

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

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
27056551	SP02	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: 221021-102
Client Ref.: DAA PFASReport Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend			Customer Sample Ref.	SP02	TB02			
# 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	0.00 - 0.00 Soil/Solid (S) 19/10/2022	0.00 - 0.00 Surface Water (SW) 19/10/2022			
4:2 FTS (757124-72-4)	<0.002 µg/l	TM337			<0.002			
8:2 FTS (39108-34-4)	<0.002 µg/l	TM337			<0.002			
5:3 FTCA (914637-49-3)	<0.02 µg/l	TM337			<0.02			
PFBA (375-22-4)	<0.002 µg/l	TM337			<0.0035			
PFPA (2706-90-3)	<0.001 µg/l	TM337			<0.001			
PFHxA (307-24-4)	<0.001 µg/l	TM337			<0.001			
PFBS (375-73-5)	<0.001 µg/l	TM337			<0.001			
PFHpA (375-85-9)	<0.001 µg/l	TM337			<0.001			
6:2 FTS (27619-97-2)	<0.001 µg/l	TM337			<0.001			
PFOA (335-67-1)	<0.00065 µg/l	TM337			<0.00065			
PFHxS (355-46-4)	<0.001 µg/l	TM337			<0.001			
PFNA (375-95-1)	<0.001 µg/l	TM337			<0.001			
PFHpS (375-92-8)	<0.001 µg/l	TM337			<0.001			
PFDA (335-76-2)	<0.001 µg/l	TM337			<0.001			
Linear PFOS (1763-23-1)	<0.00065 µg/l	TM337			<0.00065			
Branched PFOS	<0.00065 µg/l	TM337			<0.00065			
PFUnA (2058-94-8)	<0.001 µg/l	TM337			<0.001			
PFDoA (307-55-1)	<0.001 µg/l	TM337			<0.001			
PFOSA (754-91-6)	<0.002 µg/l	TM337			<0.002			
PFDS (335-77-3)	<0.001 µg/l	TM337			<0.001			
PFPeS (2706-91-4)	<0.001 µg/l	TM337			<0.001			
Total PFOS	<0.00065 µg/l	TM337			<0.00065			
PFBA (Post Ox.) (375-22-4)	<0.004 µg/l	TM405			<0.004			
PFPA (Post Ox.) (2706-90-3)	<0.002 µg/l	TM405			<0.002			
PFHxA (Post Ox.) (307-24-4)	<0.002 µg/l	TM405			<0.002			
PFBS (Post Ox.) (375-73-5)	<0.002 µg/l	TM405			<0.002			
PFHpA (Post Ox.) (375-85-9)	<0.002 µg/l	TM405			<0.002			
6:2 FTS (Post Ox.) (27619-97-2)	<0.002 µg/l	TM405			<0.002			
PFOA (Post Ox.) (335-67-1)	<0.002 µg/l	TM405			<0.002			
PFHxS (Post Ox.) (355-46-4)	<0.002 µg/l	TM405			<0.002			
PFNA (Post Ox.) (375-95-1)	<0.002 µg/l	TM405			<0.002			
PFHpS (Post Ox.) (375-92-8)	<0.002 µg/l	TM405			<0.002			
PFDA (Post Ox.) (335-76-2)	<0.002 µg/l	TM405			<0.002			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend		Customer Sample Ref.	SP02	TB02			
# ISO17025 accredited. M mCERTS accredited. as. 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 Soil/Solid (S) 19/10/2022 . 21/10/2022 221021-102 27056551 B	0.00 - 0.00 Surface Water (SW) 19/10/2022 . 21/10/2022 221021-102 27056558 B			
Component	LOD/Units	Method					
Linear PFOS (Post Ox.) (1763-23-1)	<0.002 µg/l	TM405		<0.002			
Branched PFOS (Post Ox.)	<0.002 µg/l	TM405		<0.002			
PFUnA (Post Ox.) (2058-94-8)	<0.002 µg/l	TM405		<0.002			
PFDoA (Post Ox.) (307-55-1)	<0.002 µg/l	TM405		<0.002			
PFOSA (Post Ox.) (754-91-6)	<0.004 µg/l	TM405		<0.004			
PFDS (Post Ox.) (335-77-3)	<0.002 µg/l	TM405		<0.002			
PFPeS (Post Ox.) (2706-91-4)	<0.002 µg/l	TM405		<0.002			
Total PFOS (Post Ox.)	<0.002 µg/l	TM405		<0.002			
PFTrDA (72629-94-8)	<0.001 µg/l	TM433		<0.001			
PFNS (68259-12-1)	<0.001 µg/l	TM433		<0.001			
PFUnDS (749786-16-1)	<0.001 µg/l	TM433		<0.001			
PFDoS (79780-39-5)	<0.001 µg/l	TM433		<0.001			
PFTrDS (174675-49-1)	<0.001 µg/l	TM433		<0.001			
Moisture Content Ratio (% of as received sample)	%	PM024	19				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005				
Total Organic Fluorine*	mg/kg	SUB	<1				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005				
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005				
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005				
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005				
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005				
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005				
Perfluorooheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005				
Perfluorooheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005				
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005				
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005				
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.000609				
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005				
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.00247				
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.000824				
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005				
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005				
Loss on ignition	<0.7 %	TM018	6.67	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFASReport Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend		Customer Sample Ref.	SP02	TB02				
# 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)		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) 19/10/2022 21/10/2022 221021-102 27056551 B	0.00 - 0.00 Surface Water (SW) 19/10/2022 21/10/2022 221021-102 27056558 B				
Component	LOD/Units	Method						
Organic Carbon, Total	<0.2 %	TM132	1.86 M					
pH	1 pH Units	TM133	8.23 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M					
PCB congener 28	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 52	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 101	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 118	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 138	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 153	<0.003 mg/kg	TM168	<0.006 M					
PCB congener 180	<0.003 mg/kg	TM168	<0.006 M					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.042					
Chromium, Trivalent	<0.9 mg/kg	TM181	11.6					
Antimony	<0.6 mg/kg	TM181	0.918 #					
Arsenic	<0.6 mg/kg	TM181	18.2 M					
Barium	<0.6 mg/kg	TM181	119 #					
Cadmium	<0.02 mg/kg	TM181	1.89 M					
Chromium	<0.9 mg/kg	TM181	11.6 M					
Copper	<1.4 mg/kg	TM181	32.7 M					
Lead	<0.7 mg/kg	TM181	43.7 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Molybdenum	<0.1 mg/kg	TM181	3.58 #					
Nickel	<0.2 mg/kg	TM181	40.8 M					
Selenium	<1 mg/kg	TM181	2.4 #					
Zinc	<1.9 mg/kg	TM181	94.9 M					
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003					
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003					
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002					
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001					
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	<0.001					
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	<0.001					
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<0.001 mg/kg	TM338	<0.001					
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	<0.001					
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<0.001 mg/kg	TM338	<0.001					



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Results Legend		Customer Sample Ref.	SP02	TB02				
# 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)		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) 19/10/2022 21/10/2022 221021-102 27056551 B	0.00 - 0.00 Surface Water (SW) 19/10/2022 21/10/2022 221021-102 27056558 B				
Component	LOD/Units	Method						
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001					
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	<0.001					
Branched PFOS	<0.001 mg/kg	TM338	<0.001					
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001					
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001					
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001					
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001					
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<0.001 mg/kg	TM338	<0.001					
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001					
Total PFOS	<0.001 mg/kg	TM338	<0.001					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10					
Coronene	<0.2 mg/kg	TM410	<0.2					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	17.3					
PFBA (Post Ox.) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM428	<0.003					
PFPA (Post Ox.) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM428	<0.003					
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM428	<0.002					
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM428	<0.001					
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM428	<0.001					
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	<0.001 mg/kg	TM428	<0.001					
PFOA (Post Ox.) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM428	<0.001					
PFHxS (Post Ox.) Perfluoro-1-hexanesulfonate	<0.001 mg/kg	TM428	<0.001					
PFNA (Post Ox.) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM428	<0.001					
PFHpS (Post Ox.) Perfluoro-1-heptanesulfonate	<0.001 mg/kg	TM428	<0.001					
PFDA (Post Ox.) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM428	<0.001					
Linear PFOS (Post Ox.) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM428	0.0022					
Branched PFOS (Post Ox.)	<0.001 mg/kg	TM428	<0.001					
PFUnA (Post Ox.) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM428	<0.001					
PFDoA (Post Ox.) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM428	<0.001					
PFOSA (Post Ox.) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM428	<0.001					
PFDS (Post Ox.) Perfluoro-1-decanesulfonate	<0.001 mg/kg	TM428	<0.001					
PFPeS (Post Ox.) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM428	<0.001					
Total PFOS (Post Ox.)	<0.002 mg/kg	TM428	0.0022					



CERTIFICATE OF ANALYSIS

SDG: 221021-102
Client Ref.: DAA PFASReport Number: 670172
Location: Dublin Airport

Superseded Report: 670163

TPH CWG (S)

Results Legend		Customer Sample Ref.	SP02				
# 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 Soil/Solid (S) 19/10/2022 21/10/2022 221021-102 27056551 B				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	101				
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	2.32	#			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	7.48	#			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	29.1	#			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	25				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	63.9				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	353				
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	1.17	#			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	7.6	#			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	170	#			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	110				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	40.5				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	289				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	353				
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05				
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

VOC MS (S)

Results Legend		Customer Sample Ref.	SP02				
# 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 Soil/Solid (S) 19/10/2022 21/10/2022 221021-102 27056551 B				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	108				
Toluene-d8**	%	TM116	99.2				
4-Bromofluorobenzene**	%	TM116	94.2				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06	#			
Chloromethane	<0.007 mg/kg	TM116	<0.07	#			
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06	M			
Bromomethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroethane	<0.01 mg/kg	TM116	<0.1	M			
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06	M			
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1	#			
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07	M			
Dichloromethane	<0.01 mg/kg	TM116	<0.2	3 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1	M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1	M			
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08	M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06	M			
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroform	<0.008 mg/kg	TM116	<0.08	3 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07	M			
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1	M			
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05	3 M			
Benzene	<0.009 mg/kg	TM116	<0.09	M			
Trichloroethene	<0.009 mg/kg	TM116	<0.09	#			
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1	M			
Dibromomethane	<0.009 mg/kg	TM116	<0.09	M			
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07	M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Toluene	<0.007 mg/kg	TM116	<0.07	M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1	M			
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

VOC MS (S)

Results Legend		Customer Sample Ref.	SP02					
# ISO17025 accredited. M mCERTS accredited. sq. Aqueous / settled sample. dis. fil. 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 Soil/Solid (S) 19/10/2022 . 21/10/2022 221021-102 27056551 B					
Component	LOD/Units	Method						
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05	M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1	M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1	M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.05	M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.04	M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.1	#				
o-Xylene	<0.01 mg/kg	TM116	<0.1	M				
Styrene	<0.01 mg/kg	TM116	<0.1	#				
Bromofom	<0.01 mg/kg	TM116	<0.1	M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05	#				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	#				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16	M				
Bromobenzene	<0.01 mg/kg	TM116	<0.1	M				
Propylbenzene	<0.01 mg/kg	TM116	<0.1	M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09	M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08	M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1	M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14	#				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09	#				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1					
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1					
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08	M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05	M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11					
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1	M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.14	M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1	#				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2					
Naphthalene	<0.013 mg/kg	TM116	<0.13	M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2	#				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					



CERTIFICATE OF ANALYSIS

SDG: 221021-102
Client Ref.: DAA PFASReport Number: 670172
Location: Dublin Airport

Superseded Report: 670163

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.	SP02B	28/10/2022	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.00 - 0.00										
Sample Type	SOLID										
Date Sampled	19/10/2022 00:00:00										
Date Received	21/10/2022 05:00:00										
SDG	221021-102										
Original Sample	27056551										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFASReport Number: 670172
Location: Dublin Airport

Superseded Report: 670163

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.111	Natural Moisture Content (%)	23.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	81.2
Particle Size <4mm	>95%		

Case	
SDG	221021-102
Lab Sample Number(s)	27056551
Sampled Date	19-Oct-2022
Customer Sample Ref.	SP02 BZ
Depth (m)	0.00 - 0.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.86
Loss on Ignition (%)	6.67
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.042
Mineral Oil (mg/kg) (EH_2D_AL)	17.3
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.23
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00089	<0.0005	0.0089	<0.005	0.5	2	25
Barium	0.0117	<0.0002	0.117	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00491	<0.0003	0.0491	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00825	<0.003	0.0825	<0.03	0.5	10	30
Nickel	0.00201	<0.0004	0.0201	<0.004	0.4	10	40
Lead	0.000252	<0.0002	0.00252	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00188	<0.001	0.0188	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.619	<0.5	6.19	<5	10	150	500
Sulphate (soluble)	20.6	<2	206	<20	1000	20000	50000
Total Dissolved Solids	131	<10	1310	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.83	<3	68.3	<30	500	800	1000

Leach Test Information

Date Prepared	24-Oct-2022
pH (pH Units)	8.45
Conductivity (µS/cm)	177
Volume Leachant (Litres)	0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

29/11/2022 14:56:59

14:56:43 29/11/2022



CERTIFICATE OF ANALYSIS

Validated

SDG: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990:BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM405	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay
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: 221021-102
Client Ref.: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

Test Completion Dates

Lab Sample No(s)	27056551	27056558
Customer Sample Ref.	SP02	TB02
AGS Ref.	B	B
Depth	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Surface Water

Anions by Kone (w)	27-Oct-2022	
Asbestos ID in Solid Samples	28-Oct-2022	
CEN 10:1 Leachate (1 Stage)	25-Oct-2022	
CEN Readings	28-Oct-2022	
Chromium III	27-Oct-2022	
Coronene	26-Oct-2022	
Dissolved Metals by ICP-MS	01-Nov-2022	
Dissolved Organic/Inorganic Carbon	29-Oct-2022	
EPH by GCxGC-FID	26-Oct-2022	
EPH CWG GC (S)	26-Oct-2022	
Fluoride	27-Oct-2022	
GRO by GC-FID (S)	27-Oct-2022	
Hexavalent Chromium (s)	26-Oct-2022	
Loss on Ignition in soils	27-Oct-2022	
Mercury Dissolved	31-Oct-2022	
Metals in solid samples by OES	27-Oct-2022	
Moisture at 105C	24-Oct-2022	
PAH 16 & 17 Calc	26-Oct-2022	
PAH by GCMS	28-Oct-2022	
PCBs by GCMS	26-Oct-2022	
PFAS (Post Ox.) Liquids		28-Oct-2022
PFAS (Post Ox.) Solids	29-Nov-2022	
PFAS by LCMS on solids (S-PFCLMS02)	22-Nov-2022	
PFAS Liquids		28-Oct-2022
PFAS Liquids (EU specified)		28-Oct-2022
PFAS Solids	29-Nov-2022	
pH	26-Oct-2022	
pH Value of Filtered Water	28-Oct-2022	
Phenols by HPLC (W)	28-Oct-2022	
Sample description	24-Oct-2022	
Total Dissolved Solids on Leachates	27-Oct-2022	
Total Organic Carbon	27-Oct-2022	
Total Organic Fluorine*	17-Nov-2022	
TPH CWG GC (S)	27-Oct-2022	
VOC MS (S)	26-Oct-2022	

CERTIFICATE OF ANALYSIS

Work Order	: EB2233674	Page	: 1 of 2
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Contact	: Customer Services EB
Address	: Hawarden Business Park, Manor Lane Hawarden, Deeside, UK, CH5 3US	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: ----	Date Samples Received	: 09-Nov-2022 13:42
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: ----	Issue Date	: 17-Nov-2022 14:51
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

- EP040: Total Organic Fluorine (TOF) in solids represents the total fluorine in the organic forms extracted by the method.

Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Sample ID

				27096947	----	----	----	----
				SP02				
Sampling date / time				19-Oct-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2233674-001	-----	-----	-----	-----
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	18.2	----	----	----	----
EP040: Total Organic Fluorine (TOF)								
Total Organic Fluorine	----	1.0	mg/kg	<1.0	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EB2233674	Page	: 1 of 3
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Contact	: Customer Services EB
Address	: Hawarden Business Park, Manor Lane Hawarden, Deeside, UK, CH5 3US	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: ----	Date Samples Received	: 09-Nov-2022
Order number	: ----	Date Analysis Commenced	: 14-Nov-2022
C-O-C number	: ----	Issue Date	: 17-Nov-2022
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP040: Total Organic Fluorine (TOF) (QC Lot: 4698808)									
EB2233674-001	27096947 SP02	EP040: Total Organic Fluorine	----	1	mg/kg	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4703835)									
EB2233674-001	27096947 SP02	EA055: Moisture Content	----	0.1	%	18.2	18.4	1.0	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP040: Total Organic Fluorine (TOF) (QCLot: 4698808)								
EP040: Total Organic Fluorine	----	1	mg/kg	<1.0	2.385 mg/kg	99.8	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number		MS	Low	High
EP040: Total Organic Fluorine (TOF) (QCLot: 4698808)							
EB2233675-001	Anonymous	EP040: Total Organic Fluorine	----	2.385 mg/kg	74.8	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EB2233674**

Page : 1 of 4

Client : **ALS UK**
 Contact : **RESULTS HAWARDEN**
 Project : ----
 Site : ----
 Sampler : ----
 Order number : ----

Laboratory : Environmental Division Brisbane
 Telephone : +61-7-3243 7222
 Date Samples Received : 09-Nov-2022
 Issue Date : 17-Nov-2022
 No. of samples received : 1
 No. of samples analysed : 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Miscellaneous Plastic Container 27096947 - SP02	----	----	----	15-Nov-2022	02-Nov-2022	13

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Miscellaneous Plastic Container (EA055) 27096947 - SP02	19-Oct-2022	----	----	----	15-Nov-2022	02-Nov-2022	✖
EP040: Total Organic Fluorine (TOF)							
Miscellaneous Plastic Container (EP040) 27096947 - SP02	19-Oct-2022	14-Nov-2022	16-Nov-2022	✔	15-Nov-2022	16-Nov-2022	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Fluorine (TOF)	EP040	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Organic Fluorine (TOF)	EP040	SOIL	In house: Fluorinated organic compounds are isolated from the sample by solvent extraction. Hydropyrolytic combustion of the soil extract converts organic forms of fluorine to hydrogen fluoride (HF). The HF is adsorbed in a trapping solution and the total fluoride concentration determined by Ion Chromatography (IC).
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
QuEChERS Extraction of Solids for Total Organic Fluorine	ORG71-TOF	SOIL	In house: Extraction of homogenised aliquot of soil by QuEChERS for Total Organic Fluorine.



CERTIFICATE OF ANALYSIS

Work Order	: PR22B0023	Issue Date	: 21-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221021-102	Page	: 1 of 2
Order number	: ----	Date Samples	: 31-Oct-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 31-Oct-2022 - 21-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

27065234

SP02

Laboratory sample ID

PR22B0023001

Client sampling date / time

24-Oct-2022 11:20

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.000824	± 30.0%	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.000609	± 30.0%	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.00247	± 30.0%	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	77.0	± 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.

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: 221021-102
Client Ref: DAA PFAS

Report Number: 670172
Location: Dublin Airport

Superseded Report: 670163

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.



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27018767	SP01		0.00 - 0.00	12/10/2022
27018773	TB01		0.00 - 0.00	12/10/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend



Test


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)

27018773
27018767

Customer
Sample Reference

SP01

TB01

AGS Reference

Depth (m)

0.00 - 0.00
0.00 - 0.00

Container

500ml Plastic
(ALE208)

60g VOC (ALE215)

250g Amber Jar
(ALE210)

1kg TUB with
Handle (ALE260)

Sample Type

S

S

S

SW

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Asbestos ID in Solid Samples

All

NDPs: 0
Tests: 1

X

CEN Readings

All

NDPs: 0
Tests: 1

X

Chromium III

All

NDPs: 0
Tests: 1

X

Coronene

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X

Dissolved Organic/Inorganic Carbon

All

NDPs: 0
Tests: 1

X

EPH by GCxGC-FID

All

NDPs: 0
Tests: 1

X

EPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

Fluoride

All

NDPs: 0
Tests: 1

X

GRO by GC-FID (S)

All

NDPs: 0
Tests: 1

X

Hexavalent Chromium (s)

All

NDPs: 0
Tests: 1

X

Loss on Ignition in soils

All

NDPs: 0
Tests: 1

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Metals in solid samples by OES

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend



Test



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)

27018767

27018773

Customer Sample Reference

SP01

TB01

AGS Reference

Depth (m)

0.00 - 0.00

0.00 - 0.00

Container

1kg TUB with Handle (ALE260)

250g Amber Jar (ALE210)

60g VOC (ALE215)

500ml Plastic (ALE208)

Sample Type

S

S

S

SW

PAH 16 & 17 Calc

All

NDPs: 0
Tests: 1

X

PAH by GCMS

All

NDPs: 0
Tests: 1

X

PCBs by GCMS

All

NDPs: 0
Tests: 1

X

PFAS (Post Ox.) Liquids

All

NDPs: 0
Tests: 1

X

PFAS (Post Ox.) Solids

All

NDPs: 0
Tests: 1

X

PFAS by LCMS on solids (S-PFCLMS02)

All

NDPs: 0
Tests: 1

X

PFAS Liquids

All

NDPs: 0
Tests: 1

X

PFAS Liquids (EU specified)

All

NDPs: 0
Tests: 1

X

PFAS Solids

All

NDPs: 0
Tests: 1

X

pH

All

NDPs: 0
Tests: 1

X

pH Value of Filtered Water

All

NDPs: 0
Tests: 1

X

Phenols by HPLC (W)

All

NDPs: 0
Tests: 1

X

Sample description

All

NDPs: 0
Tests: 1

X

Total Organic Carbon

All

NDPs: 0
Tests: 1

X

Total Organic Fluorine*

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend



Test



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)

27018767

27018773

Customer
Sample Reference

SP01

TB01

AGS Reference

Depth (m)

0.00 - 0.00

0.00 - 0.00

Container

1kg TUB with
Handle (ALE260)

250g Amber Jar
(ALE210)

60g VOC (ALE215)

500ml Plastic
(ALE208)

Sample Type

S

S

S

SW

TPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

VOC MS (S)

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

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
27018767	SP01	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: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend			Customer Sample Ref.		SP01	TB01			
# 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.					Soil/Solid (S)	Surface Water (SW)			
aq Aqueous / settled sample.					12/10/2022	12/10/2022			
diss.filt Dissolved / filtered sample.					14/10/2022	14/10/2022			
tot.unfilt Total / unfiltered sample.					221014-62	221014-62			
* Subcontracted - refer to subcontractor report for accreditation status.					27018767	27018773			
** % 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)	<0.002 µg/l	TM337				<0.002			
8:2 FTS (39108-34-4)	<0.002 µg/l	TM337				<0.002			
5:3 FTCA (914637-49-3)	<0.02 µg/l	TM337				<0.02			
PFBA (375-22-4)	<0.002 µg/l	TM337				<0.002			
PFPA (2706-90-3)	<0.001 µg/l	TM337				<0.001			
PFHxA (307-24-4)	<0.001 µg/l	TM337				<0.001			
PFBS (375-73-5)	<0.001 µg/l	TM337				<0.001			
PFHpA (375-85-9)	<0.001 µg/l	TM337				<0.001			
6:2 FTS (27619-97-2)	<0.001 µg/l	TM337				<0.001			
PFOA (335-67-1)	<0.00065 µg/l	TM337				<0.00065			
PFHxS (355-46-4)	<0.001 µg/l	TM337				<0.001			
PFNA (375-95-1)	<0.001 µg/l	TM337				<0.001			
PFHpS (375-92-8)	<0.001 µg/l	TM337				<0.001			
PFDA (335-76-2)	<0.001 µg/l	TM337				<0.001			
Linear PFOS (1763-23-1)	<0.00065 µg/l	TM337				<0.00065			
Branched PFOS	<0.00065 µg/l	TM337				<0.00065			
PFUnA (2058-94-8)	<0.001 µg/l	TM337				<0.001			
PFDoA (307-55-1)	<0.001 µg/l	TM337				<0.001			
PFOSA (754-91-6)	<0.002 µg/l	TM337				<0.002			
PFDS (335-77-3)	<0.001 µg/l	TM337				<0.001			
PFPeS (2706-91-4)	<0.001 µg/l	TM337				<0.001			
Total PFOS	<0.00065 µg/l	TM337				<0.00065			
PFBA (Post Ox.) (375-22-4)	<0.004 µg/l	TM405				<0.004			
PFPA (Post Ox.) (2706-90-3)	<0.002 µg/l	TM405				<0.002			
PFHxA (Post Ox.) (307-24-4)	<0.002 µg/l	TM405				<0.002			
PFBS (Post Ox.) (375-73-5)	<0.002 µg/l	TM405				<0.002			
PFHpA (Post Ox.) (375-85-9)	<0.002 µg/l	TM405				<0.002			
6:2 FTS (Post Ox.) (27619-97-2)	<0.002 µg/l	TM405				<0.002			
PFOA (Post Ox.) (335-67-1)	<0.002 µg/l	TM405				<0.002			
PFHxS (Post Ox.) (355-46-4)	<0.002 µg/l	TM405				<0.002			
PFNA (Post Ox.) (375-95-1)	<0.002 µg/l	TM405				<0.002			
PFHpS (Post Ox.) (375-92-8)	<0.002 µg/l	TM405				<0.002			
PFDA (Post Ox.) (335-76-2)	<0.002 µg/l	TM405				<0.002			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend			Customer Sample Ref.		SP01	TB01			
# ISO17025 accredited.			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	TM405	0.00 - 0.00	0.00 - 0.00			
M mCERTS accredited.					Soil/Solid (S)	Surface Water (SW)			
aq. Aqueous / settled sample.					12/10/2022	12/10/2022			
dis.filt. Dissolved / filtered sample.									
tot.unfilt. Total / unfiltered sample.					14/10/2022	14/10/2022			
* Subcontracted - refer to subcontractor report for accreditation status.					221014-62	221014-62			
** % 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					27018767	27018773			
(F) Trigger breach confirmed									
1-4* Sample deviation (see appendix)									
Component	LOD/Units	Method							
Linear PFOS (Post Ox.) (1763-23-1)	<0.002 µg/l	TM405				<0.002			
Branched PFOS (Post Ox.)	<0.002 µg/l	TM405				<0.002			
PFUnA (Post Ox.) (2058-94-8)	<0.002 µg/l	TM405				<0.002			
PFDoA (Post Ox.) (307-55-1)	<0.002 µg/l	TM405				<0.002			
PFOSA (Post Ox.) (754-91-6)	<0.004 µg/l	TM405				<0.004			
PFDS (Post Ox.) (335-77-3)	<0.002 µg/l	TM405				<0.002			
PFPeS (Post Ox.) (2706-91-4)	<0.002 µg/l	TM405				<0.002			
Total PFOS (Post Ox.)	<0.002 µg/l	TM405				<0.002			
PFTrDA (72629-94-8)	<0.001 µg/l	TM433				<0.001			
PFNS (68259-12-1)	<0.001 µg/l	TM433				<0.001			
PFUnDS (749786-16-1)	<0.001 µg/l	TM433				<0.001			
PFDoS (79780-39-5)	<0.001 µg/l	TM433				<0.001			
PFTrDS (174675-49-1)	<0.001 µg/l	TM433				<0.001			
Moisture Content Ratio (% of as received sample)	%	PM024			14				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	<0.0005 mg/kg	SUB			<0.0005				
Total Organic Fluorine*	<1 mg/kg	SUB			<1				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorobutane sulfonic acid (PFBS)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorobutanoic acid (PFBA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorodecane sulfonic acid (PFDS)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorodecanoic acid (PFDA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorododecanoic acid (PFDoDA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorooheptane sulfonic acid (PFHpS)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorooheptanoic acid (PFHpA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorohexane sulfonic acid (PFHxS)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorohexanoic acid (PFHxA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorononanoic acid (PFNA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorooctane sulfonamide (FOSA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluorooctane sulfonic acid (PFOS)*	<0.0005 mg/kg	SUB			0.000514				
Perfluorooctanoic acid (PFOA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluoropentanoic acid (PFPeA)*	<0.0005 mg/kg	SUB			<0.0005				
Perfluoroundecanoic acid (PFUnDA)*	<0.0005 mg/kg	SUB			<0.0005				
Loss on ignition	<0.7 %	TM018			3.82				
					M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend		Customer Sample Ref.	SP01	TB01			
#	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					
Organic Carbon, Total	<0.2 %	TM132	0.8				
			M				
pH	1 pH Units	TM133	8.44				
			M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6				
			M				
PCB congener 28	<0.003 mg/kg	TM168	0.00551				
			M				
PCB congener 52	<0.003 mg/kg	TM168	<0.003				
			M				
PCB congener 101	<0.003 mg/kg	TM168	<0.003				
			M				
PCB congener 118	<0.003 mg/kg	TM168	<0.003				
			M				
PCB congener 138	<0.003 mg/kg	TM168	<0.003				
			M				
PCB congener 153	<0.003 mg/kg	TM168	<0.003				
			M				
PCB congener 180	<0.003 mg/kg	TM168	<0.003				
			M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021				
Chromium, Trivalent	<0.9 mg/kg	TM181	11.6				
Antimony	<0.6 mg/kg	TM181	<0.6				
			#				
Arsenic	<0.6 mg/kg	TM181	13.4				
			M				
Barium	<0.6 mg/kg	TM181	110				
			#				
Cadmium	<0.02 mg/kg	TM181	1.75				
			M				
Chromium	<0.9 mg/kg	TM181	11.6				
			M				
Copper	<1.4 mg/kg	TM181	27.6				
			M				
Lead	<0.7 mg/kg	TM181	28.4				
			M				
Mercury	<0.1 mg/kg	TM181	<0.1				
			M				
Molybdenum	<0.1 mg/kg	TM181	3.38				
			#				
Nickel	<0.2 mg/kg	TM181	40.7				
			M				
Selenium	<1 mg/kg	TM181	1.81				
			#				
Zinc	<1.9 mg/kg	TM181	77				
			M				
4:2 FTS (757124-72-4)	<0.002 mg/kg	TM338	<0.002				
8:2 FTS (39108-34-4)	<0.002 mg/kg	TM338	<0.002				
5:3 FTCA (914637-49-3)	<0.02 mg/kg	TM338	<0.02				
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003				
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003				
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002				
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001				
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	<0.001				
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	<0.001				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Results Legend		Customer Sample Ref.	SP01	TB01			
# ISO17025 accredited. M mCERTS accredited. sq. 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 Soil/Solid (S) 12/10/2022 14/10/2022 221014-62 27018767	0.00 - 0.00 Surface Water (SW) 12/10/2022 14/10/2022 221014-62 27018773			
Component	LOD/Units	Method					
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<0.001 mg/kg	TM338	<0.001				
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	<0.001				
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<0.001 mg/kg	TM338	<0.001				
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001				
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	<0.001				
Branched PFOS	<0.001 mg/kg	TM338	<0.001				
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001				
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001				
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001				
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001				
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<0.001 mg/kg	TM338	<0.001				
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001				
Total PFOS	<0.001 mg/kg	TM338	<0.001				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10				
Coronene	<0.2 mg/kg	TM410	<0.2				
EPH Surrogate % recovery**	%	TM415	103				
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 @ M				
EPH Band >C10-C12	<35 mg/kg	TM415	<35				
EPH Band >C12-C16	<35 mg/kg	TM415	<35				
EPH Band >C16-C21	<35 mg/kg	TM415	<35				
EPH Band >C21-C28	<35 mg/kg	TM415	<35				
EPH Band >C28-C35	<35 mg/kg	TM415	<35				
EPH Band >C35-C40	<35 mg/kg	TM415	<35				
EPH band >C10-C28	<35 mg/kg	TM415	<35				
EPH Band >C28-C40	<35 mg/kg	TM415	<35				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	7.73				
PFBA (Post Ox.) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM428	<0.003				
PFPA (Post Ox.) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM428	<0.003				
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM428	<0.002				
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM428	<0.001				
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM428	<0.001				
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	<0.001 mg/kg	TM428	<0.001				
PFOA (Post Ox.) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM428	<0.001				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

TPH CWG (S)

Results Legend		Customer Sample Ref.	SP01				
# 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 Soil/Solid (S) 12/10/2022 14/10/2022 221014-62 27018767				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	95.9				
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	1.03	#			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	21	#			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	51.6				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	73.7				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	147				
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	41.7	#			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	30.6				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	6.68				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	73.2				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	147				
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05				
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

VOC MS (S)

Results Legend		Customer Sample Ref.	SP01				
# 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*5@ 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 Soil/Solid (S) 12/10/2022 14/10/2022 221014-62 27018767				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	109				
Toluene-d8**	%	TM116	98.8				
4-Bromofluorobenzene**	%	TM116	93.6				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06	#			
Chloromethane	<0.007 mg/kg	TM116	<0.07	#			
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06	M			
Bromomethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroethane	<0.01 mg/kg	TM116	<0.1	M			
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06	M			
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1	#			
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07	M			
Dichloromethane	<0.01 mg/kg	TM116	<0.1	#			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1	M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1	M			
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08	M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06	M			
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroform	<0.008 mg/kg	TM116	<0.08	M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07	M			
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1	M			
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05	M			
Benzene	<0.009 mg/kg	TM116	<0.09	M			
Trichloroethene	<0.009 mg/kg	TM116	<0.09	#			
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1	M			
Dibromomethane	<0.009 mg/kg	TM116	<0.09	M			
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07	M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Toluene	<0.007 mg/kg	TM116	<0.07	M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1	M			
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

VOC MS (S)

Results Legend		Customer Sample Ref.	SP01					
# ISO17025 accredited. M mCERTS accredited. sq. Aqueous / settled sample. dis. fil. 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 Soil/Solid (S) 12/10/2022 . 14/10/2022 221014-62 27018767					
Component	LOD/Units	Method						
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05	M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1	M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1	M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.05	M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.04	M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.1	#				
o-Xylene	<0.01 mg/kg	TM116	<0.1	M				
Styrene	<0.01 mg/kg	TM116	<0.1	#				
Bromofom	<0.01 mg/kg	TM116	<0.1	M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05	#				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	#				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16	M				
Bromobenzene	<0.01 mg/kg	TM116	<0.1	M				
Propylbenzene	<0.01 mg/kg	TM116	<0.1	M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09	M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08	M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1	M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14	#				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09	#				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1					
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1					
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08	M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05	M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11					
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1	M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.14	M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1	#				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2					
Naphthalene	<0.013 mg/kg	TM116	<0.13	M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2	#				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Extractable Petroleum Hydrocarbons (EPH) By GC-FID

EPH Clean Up >C10-C40

Sample No	Customer Sample Ref.	Depth	Matrix (mg/kg)	EPH	Interpretation
27077733	SP01	0.00 - 0.00	SOLID	<35.0	No interpretation possible

Extractable Petroleum Hydrocarbons (formally Diesel Range Organics) :- Any compound extractable in n-hexane within the carbon range C10-C40, includes Aliphatic (Min Oil), Aromatic (PAHs) and naturally occurring compounds.



CERTIFICATE OF ANALYSIS

SDG: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

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.	SP01	21/10/2022	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.00 - 0.00										
Sample Type	SOLID										
Date Sampled	12/10/2022 00:00:00										
Date Received	14/10/2022 10:00:00										
SDG	221014-62										
Original Sample	27018767										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFASReport Number: 668813
Location: Dublin Airport

Superseded Report: 666401

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.109	Natural Moisture Content (%)	20.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221014-62	
Lab Sample Number(s)	27018767	
Sampled Date	12-Oct-2022	
Customer Sample Ref.	SP01	
Depth (m)	0.00 - 0.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.8	3	5	6
Loss on Ignition (%)	3.82	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	7.73	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.44	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00179	<0.0005	0.0179	<0.005	0.5	2	25
Barium	0.0176	<0.0002	0.176	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00485	<0.0003	0.0485	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.026	<0.003	0.26	<0.03	0.5	10	30
Nickel	0.00162	<0.0004	0.0162	<0.004	0.4	10	40
Lead	0.000231	<0.0002	0.00231	<0.002	0.5	10	50
Antimony	0.00162	<0.001	0.0162	<0.01	0.06	0.7	5
Selenium	0.00143	<0.001	0.0143	<0.01	0.1	0.5	7
Zinc	0.013	<0.001	0.13	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	6.4	<2	64	<20	1000	20000	50000
Total Dissolved Solids	112	<5	1120	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.34	<3	73.4	<30	500	800	1000

Leach Test Information

Date Prepared	15-Oct-2022
pH (pH Units)	8.55
Conductivity (µS/cm)	130
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

17/11/2022 11:01:49

11:01:34 17/11/2022



CERTIFICATE OF ANALYSIS

Validated

SDG: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM405	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay
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: 221014-62
Client Ref.: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

Test Completion Dates

Lab Sample No(s)	27018767	27018773
Customer Sample Ref.	SP01	TB01
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Soil/Solid (S)	Surface Water

Anions by Kone (w)	20-Oct-2022	
Asbestos ID in Solid Samples	21-Oct-2022	
CEN 10:1 Leachate (1 Stage)	18-Oct-2022	
CEN Readings	19-Oct-2022	
Chromium III	20-Oct-2022	
Coronene	19-Oct-2022	
Dissolved Metals by ICP-MS	21-Oct-2022	
Dissolved Organic/Inorganic Carbon	20-Oct-2022	
EPH by GCxGC-FID	28-Oct-2022	
EPH CWG GC (S)	18-Oct-2022	
Fluoride	20-Oct-2022	
GRO by GC-FID (S)	18-Oct-2022	
Hexavalent Chromium (s)	18-Oct-2022	
Loss on Ignition in soils	19-Oct-2022	
Mercury Dissolved	21-Oct-2022	
Metals in solid samples by OES	20-Oct-2022	
Moisture at 105C	15-Oct-2022	
PAH 16 & 17 Calc	24-Oct-2022	
PAH by GCMS	19-Oct-2022	
PCBs by GCMS	19-Oct-2022	
PFAS (Post Ox.) Liquids		21-Oct-2022
PFAS (Post Ox.) Solids	24-Oct-2022	
PFAS by LCMS on solids (S-PFCLMS02)	09-Nov-2022	
PFAS Liquids		19-Oct-2022
PFAS Liquids (EU specified)		19-Oct-2022
PFAS Solids	19-Oct-2022	
pH	19-Oct-2022	
pH Value of Filtered Water	20-Oct-2022	
Phenols by HPLC (W)	21-Oct-2022	
Sample description	14-Oct-2022	
Total Organic Carbon	19-Oct-2022	
Total Organic Fluorine*	17-Nov-2022	
TPH CWG GC (S)	18-Oct-2022	
VOC MS (S)	19-Oct-2022	



CERTIFICATE OF ANALYSIS

Work Order	: PR22B1455	Issue Date	: 07-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	: 221014-62	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 01-Nov-2022
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 01-Nov-2022 - 07-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: **SOLID**

Client sample ID

27077759

SP01

Laboratory sample ID

PR22B1455001

Client sampling date / time

26-Oct-2022 14:35

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.000514	± 30.0%	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.000514	± 30.0%	----	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	89.8	± 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.

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: 221014-62
Client Ref: DAA PFAS

Report Number: 668813
Location: Dublin Airport

Superseded Report: 666401

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 12 December 2022
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221104-92
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 671840
Order Number: 28002918

This report has been revised and directly supersedes 670203 in its entirety.

We received 4 samples on Friday November 04, 2022 and 4 of these samples were scheduled for analysis which was completed on Monday December 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 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: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27119824	SP04	B	0.00 - 0.00	02/11/2022
27119831	SP05	B	0.00 - 0.00	02/11/2022
27119839	SP06	B	0.00 - 0.00	02/11/2022
27119847	TB06	B	0.00 - 0.00	02/11/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

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
US - Treated Sewage
UNL - 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

			27119824	27119831	27119839	27119847
			SP04	SP05	SP06	TB06
			B	B	B	B
			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
			S	S	S	SW
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X	X	X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X	X	X	
CEN Readings	All	NDPs: 0 Tests: 3	X	X	X	
Chromium III	All	NDPs: 0 Tests: 3		X		X
Coronene	All	NDPs: 0 Tests: 3		X		X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X	X	X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X	X	X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X		X
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X		X
Fluoride	All	NDPs: 0 Tests: 3	X	X	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3		X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X		X
Loss on Ignition in soils	All	NDPs: 0 Tests: 3		X		X
Mercury Dissolved	All	NDPs: 0 Tests: 3	X	X	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

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

Results Legend	Lab Sample No(s)		27119824		27119831		27119839		27119847	
	Customer Sample Reference		SP04		SP05		SP06		TB06	
Sample Types -	AGS Reference		B		B		B		B	
	Depth (m)		0.00 - 0.00		0.00 - 0.00		0.00 - 0.00		0.00 - 0.00	
Sample Types -	Container		500ml Plastic (ALE208)		60g VOC (ALE215)		250g Amber Jar (ALE210)		1kg TUB with Handle (ALE260)	
	Sample Type		S		S		S		S	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3		X		X		X		
PAH by GCMS	All	NDPs: 0 Tests: 3		X		X		X		
PCBs by GCMS	All	NDPs: 0 Tests: 3		X		X		X		
PFAS (Post Ox.) Solids	All	NDPs: 0 Tests: 3	X		X		X			
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 3	X		X		X			
PFAS Liquids	All	NDPs: 0 Tests: 1								X
PFAS Liquids (EU specified)	All	NDPs: 0 Tests: 1								X
PFAS Solids	All	NDPs: 0 Tests: 3	X		X		X			
pH	All	NDPs: 0 Tests: 3		X		X		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X		X		X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3	X		X		X			
Sample description	All	NDPs: 0 Tests: 3		X		X		X		
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 3	X		X		X			
Total Organic Carbon	All	NDPs: 0 Tests: 3		X		X		X		
Total Organic Fluorine*	All	NDPs: 0 Tests: 3		X		X		X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

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
27119824	SP04	0.00 - 0.00	Dark Brown	Clay Loam	Stones	Vegetation
27119831	SP05	0.00 - 0.00	Dark Brown	Clay Loam	Stones	Vegetation
27119839	SP06	0.00 - 0.00	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: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Results Legend		Customer Sample Ref.	SP04	SP05	SP06	TB06		
# ISO17025 accredited.			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)	Surface Water (SW)		
aq Aqueous / settled sample.			02/11/2022	02/11/2022	02/11/2022	02/11/2022		
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)		Lab Sample No.(s) AGS Reference						
Component	LOD/Units	Method						
4:2 FTS (757124-72-4)	<0.002 µg/l	TM337				<0.002		
8:2 FTS (39108-34-4)	<0.002 µg/l	TM337				<0.002		
5:3 FTCA (914637-49-3)	<0.02 µg/l	TM337				<0.02		
PFBA (375-22-4)	<0.002 µg/l	TM337				<0.0035		
PFPA (2706-90-3)	<0.001 µg/l	TM337				<0.001		
PFHxA (307-24-4)	<0.001 µg/l	TM337				<0.001		
PFBS (375-73-5)	<0.001 µg/l	TM337				<0.001		
PFHpA (375-85-9)	<0.001 µg/l	TM337				<0.001		
6:2 FTS (27619-97-2)	<0.001 µg/l	TM337				<0.001		
PFOA (335-67-1)	<0.00065 µg/l	TM337				<0.00065		
PFHxS (355-46-4)	<0.001 µg/l	TM337				<0.001		
PFNA (375-95-1)	<0.001 µg/l	TM337				<0.001		
PFHpS (375-92-8)	<0.001 µg/l	TM337				<0.001		
PFDA (335-76-2)	<0.001 µg/l	TM337				<0.001		
Linear PFOS (1763-23-1)	<0.00065 µg/l	TM337				<0.00065		
Branched PFOS	<0.00065 µg/l	TM337				<0.00065		
PFUnA (2058-94-8)	<0.001 µg/l	TM337				<0.001		
PFDoA (307-55-1)	<0.001 µg/l	TM337				<0.001		
PFOSA (754-91-6)	<0.002 µg/l	TM337				<0.002		
PFDS (335-77-3)	<0.001 µg/l	TM337				<0.001		
PFPeS (2706-91-4)	<0.001 µg/l	TM337				<0.001		
Total PFOS	<0.00065 µg/l	TM337				<0.00065		
PFTTrDA (72629-94-8)	<0.001 µg/l	TM433				<0.001		
PFNS (68259-12-1)	<0.001 µg/l	TM433				<0.001		
PFUnDS (749786-16-1)	<0.001 µg/l	TM433				<0.001		
PFDoS (79780-39-5)	<0.001 µg/l	TM433				<0.001		
PFTTrDS (174675-49-1)	<0.001 µg/l	TM433				<0.001		
Moisture Content Ratio (% of as received sample)	%	PM024	14	18	12			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Total Organic Fluorine*	mg/kg	SUB	<1	<1	<1			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	0.000538	<0.0005	<0.0005			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Results Legend		Customer Sample Ref.	SP04	SP05	SP06	TB06		
# 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)		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) 02/11/2022 04/11/2022 221104-92 27119824 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 04/11/2022 221104-92 27119831 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 04/11/2022 221104-92 27119839 B	0.00 - 0.00 Surface Water (SW) 02/11/2022 04/11/2022 221104-92 27119847 B		
Component	LOD/Units	Method						
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	0.000729	<0.0005	<0.0005			
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.00131	<0.0005	0.00051			
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	0.000517	<0.0005	<0.0005			
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.00156	<0.0005	<0.0005			
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.00548	0.000532	0.000512			
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.00162	<0.0005	<0.0005			
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.000736	<0.0005	<0.0005			
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005			
Loss on ignition	<0.7 %	TM018	5.33 M	5.21 M	3.07 M			
Organic Carbon, Total	<0.2 %	TM132	0.743 M	2.29 M	0.688 M			
pH	1 pH Units	TM133	8.52 M	8.39 M	8.76 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
PCB congener 28	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 52	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 101	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 118	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 138	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 153	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
PCB congener 180	<0.003 mg/kg	TM168	<0.015 M	<0.03 M	<0.003 M			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.105	<0.21	<0.021			
Chromium, Trivalent	<0.9 mg/kg	TM181	9.1	13.2	9.19			
Antimony	<0.6 mg/kg	TM181	<0.6 #	1.2 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	13 M	14.8 M	12.7 M			
Barium	<0.6 mg/kg	TM181	90.9 #	102 #	103 #			
Cadmium	<0.02 mg/kg	TM181	1.72 M	1.41 M	1.93 M			
Chromium	<0.9 mg/kg	TM181	9.1 M	13.2 M	9.19 M			
Copper	<1.4 mg/kg	TM181	23.5 M	28.4 M	24.9 M			
Lead	<0.7 mg/kg	TM181	25.1 M	44.6 M	23.5 M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Results Legend		Customer Sample Ref.	SP04	SP05	SP06	TB06		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
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						
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Molybdenum	<0.1 mg/kg	TM181	3.43 #	2.96 #	3.09 #			
Nickel	<0.2 mg/kg	TM181	35.5 M	33.9 M	35.1 M			
Selenium	<1 mg/kg	TM181	1.25 #	1.58 #	1.15 #			
Zinc	<1.9 mg/kg	TM181	69.4 M	82.3 M	70.8 M			
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003	<0.003			
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003	<0.003			
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002	<0.002	<0.002			
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	0.00164	0.00122	<0.001			
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<0.001 mg/kg	TM338	0.0013	<0.001	<0.001			
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	0.00127	<0.001	<0.001			
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	0.00423	0.00202	<0.001			
Branched PFOS	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001			
Total PFOS	<0.001 mg/kg	TM338	0.00423	0.00282	<0.001			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<0.2 mg/kg	TM410	<0.2	<0.2	<0.2			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	70.5	<5	<5			
PFBA (Post Ox.) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM428	<0.003	<0.003	<0.003			
PFPA (Post Ox.) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM428	<0.003	<0.003	<0.003			
PFHxA (Post Ox.) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM428	<0.002	<0.002	<0.002			
PFBS (Post Ox.) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM428	<0.001	<0.001	<0.001			
PFHpA (Post Ox.) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM428	<0.001	<0.001	<0.001			
6:2 PTS (Post Ox.) Perfluoro-octane sulfonate 6:2	<0.001 mg/kg	TM428	<0.001	<0.001	<0.001			

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840

Superseded Report: 670203

Client Ref.: DAA PFAS

Location: Dublin Airport

PAH by GCMS

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

TPH CWG (S)

Results Legend		Customer Sample Ref.	SP04	SP05	SP06			
# ISO17025 accredited. M mCERES 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 Soil/Solid (S) 02/11/2022 04/11/2022 221104-92 27119824 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 04/11/2022 221104-92 27119831 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 04/11/2022 221104-92 27119839 B			
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	86.3	78.6	94.2			
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	1.6 #	8.09 #	3.9 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	7.46	7.02			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	15.7	10.9			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10	151	36.7			
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	34.8 #	<1 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	2.6 #	65.3 #	15.8 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	2.39	34.7	9.58			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	11.5	3.07			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	5.58	136	25.7			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10	151	36.7			
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

VOC MS (S)

Results Legend			Customer Sample Ref.	SP04	SP05	SP06			
#	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.			02/11/2022	02/11/2022	02/11/2022			
diss.filt	Dissolved / filtered sample.			.	.	.			
tot.unfilt	Total / unfiltered sample.			04/11/2022	04/11/2022	04/11/2022			
*	Subcontracted - refer to subcontractor report for accreditation status.			221104-92	221104-92	221104-92			
**	% 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			27119824	27119831	27119839			
(F)	Trigger breach confirmed			B	B	B			
1-4**@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	114	109	107				
Toluene-d8**	%	TM116	97.9	95.5	97.7				
4-Bromofluorobenzene**	%	TM116	108	96.6	108				
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06					
Chloromethane	<0.007 mg/kg	TM116		<0.07					
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06					
Bromomethane	<0.01 mg/kg	TM116		<0.1					
Chloroethane	<0.01 mg/kg	TM116		<0.1					
Trichlorofluoromethane	<0.006 mg/kg	TM116		<0.06					
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1					
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07					
Dichloromethane	<0.01 mg/kg	TM116		<0.2					
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1	<0.1	<0.1				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1					
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08					
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06					
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1					
Bromochloromethane	<0.01 mg/kg	TM116		<0.1					
Chloroform	<0.008 mg/kg	TM116		<0.08					
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07					
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1					
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1					
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05					
Benzene	<0.009 mg/kg	TM116	<0.09	<0.09	<0.09				
Trichloroethene	<0.009 mg/kg	TM116		<0.09					
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1					
Dibromomethane	<0.009 mg/kg	TM116		<0.09					
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07					
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1					
Toluene	<0.007 mg/kg	TM116	<0.07	<0.07	<0.07				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1					
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1					
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07					



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

VOC MS (S)

Results Legend		Customer Sample Ref.	SP04	SP05	SP06			
# ISO17025 accredited. M mCERTS accredited. sq. Aqueous / settled sample. dis. fil. 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 Soil/Solid (S) 02/11/2022 . 04/11/2022 221104-92 27119824 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 . 04/11/2022 221104-92 27119831 B	0.00 - 0.00 Soil/Solid (S) 02/11/2022 . 04/11/2022 221104-92 27119839 B			
Component	LOD/Units	Method						
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 M			
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #			
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M			
Styrene	<0.01 mg/kg	TM116		<0.1 #				
Bromofom	<0.01 mg/kg	TM116		<0.1 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.1 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.1 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 #				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2				
Naphthalene	<0.013 mg/kg	TM116		<0.13 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2				



CERTIFICATE OF ANALYSIS

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

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	SP04B 0.00 - 0.00 SOLID 02/11/2022 00:00:00 04/11/2022 13:00:00 221104-92 27119824 TM048	12/12/2022	Paul Poynton	N/A	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	SP05B 0.00 - 0.00 SOLID 02/11/2022 00:00:00 04/11/2022 13:00:00 221104-92 27119831 TM048	12/12/2022	Paul Poynton	N/A	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	SP06B 0.00 - 0.00 SOLID 02/11/2022 00:00:00 04/11/2022 13:00:00 221104-92 27119839 TM048	12/12/2022	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	19.3
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.8
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221104-92	
Lab Sample Number(s)	27119824	
Sampled Date	02-Nov-2022	
Customer Sample Ref.	SP04 BZ	
Depth (m)	0.00 - 0.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.743	3	5	6
Loss on Ignition (%)	5.33	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.105	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	70.5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.52	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000668	<0.0005	0.00668	<0.005	0.5	2	25
Barium	0.0104	<0.0002	0.104	<0.002	20	100	300
Cadmium	0.000111	<0.00008	0.00111	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00199	<0.0003	0.0199	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00852	<0.003	0.0852	<0.03	0.5	10	30
Nickel	0.00153	<0.0004	0.0153	<0.004	0.4	10	40
Lead	0.000322	<0.0002	0.00322	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.525	<0.001	5.25	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.526	<0.5	5.26	<5	10	150	500
Sulphate (soluble)	3.2	<2	32	<20	1000	20000	50000
Total Dissolved Solids	111	<10	1110	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.56	<3	55.6	<30	500	800	1000

Leach Test Information

Date Prepared	08-Nov-2022
pH (pH Units)	8.40
Conductivity (µS/cm)	154
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

12/12/2022 15:47:50

15:46:58 12/12/2022



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)	17.8
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	84.9
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221104-92	
Lab Sample Number(s)	27119831	
Sampled Date	02-Nov-2022	
Customer Sample Ref.	SP05 BZ	
Depth (m)	0.00 - 0.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	2.29	3	5	6
Loss on Ignition (%)	5.21	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.21	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.39	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00789	<0.0002	0.0789	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00174	<0.0003	0.0174	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0192	<0.003	0.192	<0.03	0.5	10	30
Nickel	0.000468	<0.0004	0.00468	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00165	<0.001	0.0165	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.54	<0.5	5.4	<5	10	150	500
Sulphate (soluble)	5.8	<2	58	<20	1000	20000	50000
Total Dissolved Solids	82.2	<10	822	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	08-Nov-2022
pH (pH Units)	8.57
Conductivity (µS/cm)	120
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

12/12/2022 15:47:50

15:46:58 12/12/2022



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFASReport Number: 671840
Location: Dublin Airport

Superseded Report: 670203

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.102	Natural Moisture Content (%)	13.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	88.3
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221104-92	
Lab Sample Number(s)	27119839	
Sampled Date	02-Nov-2022	
Customer Sample Ref.	SP06 BZ	
Depth (m)	0.00 - 0.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.688	3	5	6
Loss on Ignition (%)	3.07	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.76	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00173	<0.0005	0.0173	<0.005	0.5	2	25
Barium	0.00681	<0.0002	0.0681	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00107	<0.001	0.0107	<0.01	0.5	10	70
Copper	0.00311	<0.0003	0.0311	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0273	<0.003	0.273	<0.03	0.5	10	30
Nickel	0.000806	<0.0004	0.00806	<0.004	0.4	10	40
Lead	0.000212	<0.0002	0.00212	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00228	<0.001	0.0228	<0.01	0.1	0.5	7
Zinc	0.00154	<0.001	0.0154	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.531	<0.5	5.31	<5	10	150	500
Sulphate (soluble)	12.9	<2	129	<20	1000	20000	50000
Total Dissolved Solids	69.3	<10	693	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.83	<3	38.3	<30	500	800	1000

Leach Test Information

Date Prepared	08-Nov-2022
pH (pH Units)	9.08
Conductivity (µS/cm)	100
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

12/12/2022 15:47:50

15:46:58 12/12/2022



CERTIFICATE OF ANALYSIS

Validated

SDG: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990:BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM337	PFAS in Environmental Water Matrices	Analysis of PFAS
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay
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: 221104-92
Client Ref.: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

Test Completion Dates

Lab Sample No(s)	27119824	27119831	27119839	27119847
Customer Sample Ref.	SP04	SP05	SP06	TB06
AGS Ref.	B	B	B	B
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)	Surface Water
Anions by Kone (w)	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Asbestos ID in Solid Samples	12-Dec-2022	12-Dec-2022	12-Dec-2022	
CEN 10:1 Leachate (1 Stage)	08-Nov-2022	08-Nov-2022	08-Nov-2022	
CEN Readings	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Chromium III	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Coronene	08-Nov-2022	08-Nov-2022	08-Nov-2022	
Dissolved Metals by ICP-MS	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Dissolved Organic/Inorganic Carbon	10-Nov-2022	10-Nov-2022	10-Nov-2022	
EPH by GCxGC-FID	10-Nov-2022	10-Nov-2022	10-Nov-2022	
EPH CWG GC (S)	09-Nov-2022	09-Nov-2022	09-Nov-2022	
Fluoride	09-Nov-2022	09-Nov-2022	09-Nov-2022	
GRO by GC-FID (S)	14-Nov-2022	07-Nov-2022	07-Nov-2022	
Hexavalent Chromium (s)	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Loss on Ignition in soils	09-Nov-2022	10-Nov-2022	10-Nov-2022	
Mercury Dissolved	11-Nov-2022	10-Nov-2022	10-Nov-2022	
Metals in solid samples by OES	09-Nov-2022	10-Nov-2022	09-Nov-2022	
Moisture at 105C	08-Nov-2022	08-Nov-2022	08-Nov-2022	
PAH 16 & 17 Calc	09-Nov-2022	09-Nov-2022	09-Nov-2022	
PAH by GCMS	09-Nov-2022	09-Nov-2022	09-Nov-2022	
PCBs by GCMS	09-Nov-2022	09-Nov-2022	09-Nov-2022	
PFAS (Post Ox.) Solids	29-Nov-2022	29-Nov-2022	29-Nov-2022	
PFAS by LCMS on solids (S-PFCLMS02)	23-Nov-2022	23-Nov-2022	23-Nov-2022	
PFAS Liquids				10-Nov-2022
PFAS Liquids (EU specified)				10-Nov-2022
PFAS Solids	25-Nov-2022	25-Nov-2022	25-Nov-2022	
pH	10-Nov-2022	10-Nov-2022	10-Nov-2022	
pH Value of Filtered Water	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Phenols by HPLC (W)	11-Nov-2022	10-Nov-2022	10-Nov-2022	
Sample description	04-Nov-2022	04-Nov-2022	04-Nov-2022	
Total Dissolved Solids on Leachates	11-Nov-2022	11-Nov-2022	11-Nov-2022	
Total Organic Carbon	10-Nov-2022	10-Nov-2022	10-Nov-2022	
Total Organic Fluorine*	27-Nov-2022	27-Nov-2022	27-Nov-2022	
TPH CWG GC (S)	14-Nov-2022	09-Nov-2022	09-Nov-2022	
VOC MS (S)	07-Nov-2022	07-Nov-2022	07-Nov-2022	



CERTIFICATE OF ANALYSIS

Work Order	: PR22B5315	Issue Date	: 23-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221104-92	Page	: 1 of 2
Order number	: ----	Date Samples	: 11-Nov-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 11-Nov-2022 - 23-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

				27125643 SP04		27125650 SP05		27125655 SP06	
				PR22B5315001		PR22B5315002		PR22B5315003	
				07-Nov-2022 10:16		07-Nov-2022 10:18		07-Nov-2022 10:18	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	0.000538	± 30.0%	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	0.000736	± 30.0%	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	0.000517	± 30.0%	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	0.000729	± 30.0%	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.00162	± 30.0%	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.00156	± 30.0%	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00131	± 30.0%	<0.000500	---	0.000510	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.00548	± 30.0%	0.000532	± 30.0%	0.000512	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.0125	± 30.0%	0.000532	± 30.0%	0.00102	± 30.0%
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	79.4	± 6.0%	84.1	± 6.0%	89.8	± 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.

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

Work Order	: EB2234208	Page	: 1 of 2
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Contact	: Customer Services EB
Address	: Hawarden Business Park, Manor Lane Hawarden, Deeside, UK, CH5 3US	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 221104-92	Date Samples Received	: 15-Nov-2022 16:13
Order number	: 221104-92	Date Analysis Commenced	: 21-Nov-2022
C-O-C number	: 39261	Issue Date	: 25-Nov-2022 13:55
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	2IC Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

- EP040: Total Organic Fluorine (TOF) in solids represents the total fluorine in the organic forms extracted by the method.

Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SP04 27120632	SP05 27120647	SP06 27120662	----	----
Sampling date / time				02-Nov-2022 00:00	02-Nov-2022 00:00	02-Nov-2022 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2234208-001	EB2234208-002	EB2234208-003	-----	-----
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	13.6	16.2	15.8	----	----
EP040: Total Organic Fluorine (TOF)								
Total Organic Fluorine	----	1.0	mg/kg	<1.0	<1.0	<1.0	----	----

QUALITY CONTROL REPORT

Work Order	: EB2234208	Page	: 1 of 3
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Contact	: Customer Services EB
Address	: Hawarden Business Park, Manor Lane Hawarden, Deeside, UK, CH5 3US	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 221104-92	Date Samples Received	: 15-Nov-2022
Order number	: 221104-92	Date Analysis Commenced	: 21-Nov-2022
C-O-C number	: 39261	Issue Date	: 25-Nov-2022
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	2IC Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP040: Total Organic Fluorine (TOF) (QC Lot: 4714706)									
EB2234208-001	SP04 27120632	EP040: Total Organic Fluorine	----	1	mg/kg	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4714707)									
EB2234208-001	SP04 27120632	EA055: Moisture Content	----	0.1	%	13.6	13.6	0.0	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP040: Total Organic Fluorine (TOF) (QCLot: 4714706)								
EP040: Total Organic Fluorine	----	1	mg/kg	<1.0	2.385 mg/kg	88.1	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP040: Total Organic Fluorine (TOF) (QCLot: 4714706)							
EB2234208-002	SP05 27120647	EP040: Total Organic Fluorine	----	2.385 mg/kg	87.5	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2234208	Page	: 1 of 4
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Telephone	: +61-7-3243 7222
Project	: 221104-92	Date Samples Received	: 15-Nov-2022
Site	: ----	Issue Date	: 25-Nov-2022
Sampler	: ----	No. of samples received	: 3
Order number	: 221104-92	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Miscellaneous Plastic Container SP04 - 27120632, SP06 - 27120662	SP05 - 27120647,	----	----	21-Nov-2022	16-Nov-2022	5

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Miscellaneous Plastic Container (EA055) SP04 - 27120632, SP06 - 27120662		SP05 - 27120647, 02-Nov-2022	----	----	----	21-Nov-2022	16-Nov-2022	✖
EP040: Total Organic Fluorine (TOF)								
Miscellaneous Plastic Container (EP040) SP04 - 27120632, SP06 - 27120662		SP05 - 27120647, 02-Nov-2022	21-Nov-2022	30-Nov-2022	✔	23-Nov-2022	30-Nov-2022	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Fluorine (TOF)	EP040	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Organic Fluorine (TOF)	EP040	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Organic Fluorine (TOF)	EP040	SOIL	In house: Fluorinated organic compounds are isolated from the sample by solvent extraction. Hydropyrolytic combustion of the soil extract converts organic forms of fluorine to hydrogen fluoride (HF). The HF is adsorbed in a trapping solution and the total fluoride concentration determined by Ion Chromatography (IC).
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
QuEChERS Extraction of Solids for Total Organic Fluorine	ORG71-TOF	SOIL	In house: Extraction of homogenised aliquot of soil by QuEChERS for Total Organic Fluorine.



CERTIFICATE OF ANALYSIS

SDG: 221104-92
Client Ref: DAA PFAS

Report Number: 671840
Location: Dublin Airport

Superseded Report: 670203

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 February 2023
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221118-165
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 677594
Order Number: 28002924

This report has been revised and directly supersedes 671809 in its entirety.

We received 4 samples on Friday November 18, 2022 and 3 of these samples were scheduled for analysis which was completed on Monday February 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: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27186433	GN6/0.1-1.0		0.10 - 1.00	16/11/2022
27186439	GN6/1.0-2.0		1.00 - 2.00	16/11/2022
27186445	GO6/0.1-1.0		0.10 - 1.00	16/11/2022
27186451	GO6/1.0-2.0		1.00 - 2.00	16/11/2022

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



CERTIFICATE OF ANALYSIS

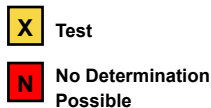
Validated

SDG: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Results Legend



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

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

CEN Readings

All

NDPs: 0
Tests: 1

X

Chromium III

All

NDPs: 0
Tests: 1

X

Coronene

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X

Dissolved Organic/Inorganic Carbon

All

NDPs: 0
Tests: 1

X

EPH by GCxGC-FID

All

NDPs: 0
Tests: 1

X

EPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

Fluoride

All

NDPs: 0
Tests: 1

X

GRO by GC-FID (S)

All

NDPs: 0
Tests: 1

X

Hexavalent Chromium (s)

All

NDPs: 0
Tests: 1

X

Loss on Ignition in soils

All

NDPs: 0
Tests: 1

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Metals in solid samples by OES

All

NDPs: 0
Tests: 1

X

PAH 16 & 17 Calc

All

NDPs: 0
Tests: 1

X



SDG: 221118-165
Client Ref.: DAA PFAS

Superseded Report: 671809

Location: Dublin Airport

§

X

X

X

X

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

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
27186433	GN6/0.1-1.0	0.10 - 1.00	Dark Brown	Clay Loam	Stones	Vegetation
27186439	GN6/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27186451	GO6/1.0-2.0	1.00 - 2.00	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

SDG: 221118-165
Client Ref.: DAA PFASReport Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Results Legend			Customer Sample Ref.			GN6/0.1-1.0			GN6/1.0-2.0			GO6/1.0-2.0					
#	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	0.10 - 1.00	Soil/Solid (S)	16/11/2022		18/11/2022	221118-165	27186433	27186439	16	12	13		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*			mg/kg	SUB	1.00 - 2.00	Soil/Solid (S)	16/11/2022		18/11/2022	221118-165	27186433	27186439	<0.0005	<0.0005			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorobutane sulfonic acid (PFBS)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorobutanoic acid (PFBA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorodecane sulfonic acid (PFDS)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorodecanoic acid (PFDA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorododecanoic acid (PFDoDA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluoroheptane sulfonic acid (PFHpS)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluoroheptanoic acid (PFHpA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorohexane sulfonic acid (PFHxS)*			mg/kg	SUB									0.000584	<0.0005			
Perfluorohexanoic acid (PFHxA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorononanoic acid (PFNA)*			mg/kg	SUB									0.000565	<0.0005			
Perfluorooctane sulfonamide (FOSA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluorooctane sulfonic acid (PFOS)*			mg/kg	SUB									0.000912	<0.0005			
Perfluorooctanoic acid (PFOA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluoropentanoic acid (PFPeA)*			mg/kg	SUB									<0.0005	<0.0005			
Perfluoroundecanoic acid (PFUnDA)*			mg/kg	SUB									<0.0005	<0.0005			
Loss on ignition			<0.7 %	TM018											3.63		
Organic Carbon, Total			<0.2 %	TM132												M	
pH			1 pH Units	TM133											0.493		
Chromium, Hexavalent			<0.6 mg/kg	TM151												M	
PCB congener 28			<0.003 mg/kg	TM168											<0.6		
PCB congener 52			<0.003 mg/kg	TM168											<0.003		
PCB congener 101			<0.003 mg/kg	TM168											<0.003		
PCB congener 118			<0.003 mg/kg	TM168											<0.003		
PCB congener 138			<0.003 mg/kg	TM168											<0.003		
PCB congener 153			<0.003 mg/kg	TM168											<0.003		
PCB congener 180			<0.003 mg/kg	TM168											<0.003		
Sum of detected PCB 7 Congeners			<0.021 mg/kg	TM168											<0.003		
Chromium, Trivalent			<0.9 mg/kg	TM181											7.27		
Antimony			<0.6 mg/kg	TM181											1.52		
Arsenic			<0.6 mg/kg	TM181											13		

SDG: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Results Legend # 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*5@ Sample deviation (see appendix)		Customer Sample Ref.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	GN6/0.1-1.0 0.10 - 1.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186433	GN6/1.0-2.0 1.00 - 2.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186439	GO6/1.0-2.0 1.00 - 2.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186451			
Component		LOD/Units	Method						
Barium		<0.6 mg/kg	TM181			79.2	#		
Cadmium		<0.02 mg/kg	TM181			1.84	M		
Chromium		<0.9 mg/kg	TM181			7.27	M		
Copper		<1.4 mg/kg	TM181			23.1	M		
Lead		<0.7 mg/kg	TM181			17.7	M		
Mercury		<0.1 mg/kg	TM181			<0.1	M		
Molybdenum		<0.1 mg/kg	TM181			4.07	#		
Nickel		<0.2 mg/kg	TM181			37.8	M		
Selenium		<1 mg/kg	TM181			3.39	#		
Zinc		<1.9 mg/kg	TM181			66.2	M		
PFBA (375-22-4) Perfluoro-n-butanoic acid		<0.003 mg/kg	TM338	<0.003					
PFPA (2706-90-3) Perfluoro-n-pentanoic acid		<0.003 mg/kg	TM338	<0.003					
PFHxA (307-24-4) Perfluoro-n-hexanoic acid		<0.002 mg/kg	TM338	<0.002					
PFBS (375-73-5) Perfluoro-1-butanesulfonate		<0.001 mg/kg	TM338	<0.001					
PFHpA (375-85-9) Perfluoro-n-heptanoic acid		<0.001 mg/kg	TM338	<0.001					
PFOA (335-67-1) Perfluoro-n-octanoic acid		<0.001 mg/kg	TM338	0.00143					
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate		<0.001 mg/kg	TM338	<0.001					
PFNA (375-95-1) Perfluoro-n-nonanoic acid		<0.001 mg/kg	TM338	<0.001					
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate		<0.001 mg/kg	TM338	<0.001					
PFDA (335-76-2) Perfluoro-n-decanoic acid		<0.001 mg/kg	TM338	<0.001					
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate		<0.001 mg/kg	TM338	<0.001					
Branched PFOS		<0.001 mg/kg	TM338	<0.001					
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid		<0.001 mg/kg	TM338	<0.001					
PFDaA (307-55-1) Perfluoro-n-dodecanoic acid		<0.001 mg/kg	TM338	<0.001					
PFOSA (754-91-6) Perfluoro-octanesulfonamide		<0.001 mg/kg	TM338	<0.001					
6:2-FTS (27619-97-2)		<0.001 mg/kg	TM338	<0.001					
PFDS (335-73-3) Perfluoro-1-decanesulfonate		<0.001 mg/kg	TM338	<0.001					
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate		<0.001 mg/kg	TM338	<0.001					
Total PFOS		<0.001 mg/kg	TM338	<0.001					
PAH Total 17 (inc Coronene) Moisture Corrected		<10 mg/kg	TM410			<10			
Coronene		<0.2 mg/kg	TM410			<0.2			
Mineral Oil >C10-C40 (EH_2D_AL)		<5 mg/kg	TM415			<5			
PFBA (Post Ox.) Perfluoro-n-butanoic acid		<0.003 mg/kg	TM428	<0.003					

SDG: 221118-165
Client Ref.: DAA PFAS



CERTIFICATE OF ANALYSIS

SDG: 221118-165
Client Ref.: DAA PFASReport Number: 677594
Location: Dublin Airport

Superseded Report: 671809

TPH CWG (S)

Results Legend		Customer Sample Ref.					
# ISO17025 accredited. M mCERES 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		GO6/1.0-2.0 1.00 - 2.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186451			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	95.2				
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10				
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10				
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05				
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFASReport Number: 677594
Location: Dublin Airport

Superseded Report: 671809

VOC MS (S)

Results Legend		Customer Sample Ref.	GO6/1.0-2.0				
# ISO17025 accredited. M mCERES 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*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 2.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186451				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	110				
Toluene-d8**	%	TM116	100				
4-Bromofluorobenzene**	%	TM116	91.3				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06	#			
Chloromethane	<0.007 mg/kg	TM116	<0.07	#			
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06	M			
Bromomethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroethane	<0.01 mg/kg	TM116	<0.1	M			
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06	M			
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1	#			
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07	M			
Dichloromethane	<0.01 mg/kg	TM116	<0.1	#			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1	M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1	M			
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08	M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06	M			
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1	M			
Chloroform	<0.008 mg/kg	TM116	<0.08	M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07	M			
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1	M			
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05	M			
Benzene	<0.009 mg/kg	TM116	<0.09	M			
Trichloroethene	<0.009 mg/kg	TM116	<0.09	#			
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1	M			
Dibromomethane	<0.009 mg/kg	TM116	<0.09	M			
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07	M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1	M			
Toluene	<0.007 mg/kg	TM116	<0.07	M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1	M			
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFASReport Number: 677594
Location: Dublin Airport

Superseded Report: 671809

VOC MS (S)

Results Legend		Customer Sample Ref.	G06/1.0-2.0					
# 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)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 2.00 Soil/Solid (S) 16/11/2022 18/11/2022 221118-165 27186451					
Component	LOD/Units	Method						
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05 M					
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1 M					
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1 M					
Chlorobenzene	<0.005 mg/kg	TM116	<0.05 M					
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 M					
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M					
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #					
o-Xylene	<0.01 mg/kg	TM116	<0.1 M					
Styrene	<0.01 mg/kg	TM116	<0.1 #					
Bromofom	<0.01 mg/kg	TM116	<0.1 M					
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05 #					
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 #					
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16 M					
Bromobenzene	<0.01 mg/kg	TM116	<0.1 M					
Propylbenzene	<0.01 mg/kg	TM116	<0.1 M					
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09 M					
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08 M					
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1 M					
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14 #					
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09 #					
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1					
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1					
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08 M					
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05 M					
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11					
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1 M					
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.14 M					
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #					
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2					
Naphthalene	<0.013 mg/kg	TM116	<0.13 M					
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2 #					
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2					



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFASReport Number: 677594
Location: Dublin Airport

Superseded Report: 671809

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.099	Natural Moisture Content (%)	9.89
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	91
Particle Size <4mm	>95%		

Case	
SDG	221118-165
Lab Sample Number(s)	27186451
Sampled Date	16-Nov-2022
Customer Sample Ref.	GO6/1.0-2.0
Depth (m)	1.00 - 2.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.493
Loss on Ignition (%)	3.63
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.62
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00668	<0.0002	0.0668	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000491	<0.0003	0.00491	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0203	<0.003	0.203	<0.03	0.5	10	30
Nickel	0.000451	<0.0004	0.00451	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00247	<0.001	0.0247	<0.01	0.1	0.5	7
Zinc	0.00134	<0.001	0.0134	<0.01	4	50	200
Chloride	4.2	<2	42	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	66.1	<10	661	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.02	<3	50.2	<30	500	800	1000

Leach Test Information

Date Prepared	24-Nov-2022
pH (pH Units)	8.23
Conductivity (µS/cm)	90
Volume Leachant (Litres)	0.891

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 14:42:49

14:42:17 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990/BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221118-165
Client Ref.: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

Test Completion Dates

Lab Sample No(s)	27186433	27186439	27186451
Customer Sample Ref.	GN6/0.1-1.0	GN6/1.0-2.0	GO6/1.0-2.0
AGS Ref.			
Depth	0.10 - 1.00	1.00 - 2.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Anions by Kone (w)			25-Nov-2022
CEN 10:1 Leachate (1 Stage)			24-Nov-2022
CEN Readings			28-Nov-2022
Chromium III			25-Nov-2022
Coronene			25-Nov-2022
Dissolved Metals by ICP-MS			28-Nov-2022
Dissolved Organic/Inorganic Carbon			26-Nov-2022
EPH by GCxGC-FID			25-Nov-2022
EPH CWG GC (S)			24-Nov-2022
Fluoride			28-Nov-2022
GRO by GC-FID (S)			23-Nov-2022
Hexavalent Chromium (s)			25-Nov-2022
Loss on Ignition in soils			25-Nov-2022
Mercury Dissolved			28-Nov-2022
Metals in solid samples by OES			24-Nov-2022
Moisture at 105C			24-Nov-2022
PAH 16 & 17 Calc			28-Nov-2022
PAH by GCMS			28-Nov-2022
PCBs by GCMS			30-Nov-2022
PFAS (Post Ox.) Solids	12-Dec-2022		
PFAS by LCMS on solids (S-PFCLMS02)	01-Dec-2022	06-Feb-2023	
PFAS Solids	08-Dec-2022		
pH			25-Nov-2022
pH Value of Filtered Water			28-Nov-2022
Phenols by HPLC (W)			28-Nov-2022
Sample description	19-Nov-2022	09-Jan-2023	19-Nov-2022
Total Dissolved Solids on Leachates			28-Nov-2022
Total Organic Carbon			24-Nov-2022
TPH CWG GC (S)			24-Nov-2022
VOC MS (S)			23-Nov-2022



CERTIFICATE OF ANALYSIS

Work Order	: PR22C0795	Issue Date	: 01-Dec-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221118-165	Page	: 1 of 2
Order number	: ----	Date Samples	: 28-Nov-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 28-Nov-2022 - 01-Dec-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

27201351
GN6/0.1-1.0

Laboratory sample ID

PR22C0795001

Client sampling date / time

23-Nov-2022 07:39

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.000565	± 30.0%	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.000584	± 30.0%	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.000912	± 30.0%	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.00206	± 30.0%	----	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.1	± 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.

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: 221118-165
Client Ref: DAA PFAS

Report Number: 677594
Location: Dublin Airport

Superseded Report: 671809

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 03 April 2023
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221123-181
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 684384
Order Number: 28002977

This report has been revised and directly supersedes 684376 in its entirety.

We received 6 samples on Wednesday November 23, 2022 and 6 of these samples were scheduled for analysis which was completed on Monday April 03, 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: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27206101	GC5/0.1-1.0		0.10 - 1.00	18/11/2022
27206107	GC5/1.0-2.0		1.00 - 2.00	18/11/2022
27206086	GD5/0.1-1.0		0.10 - 1.00	18/11/2022
27206094	GD5/1.0-2.0		1.00 - 2.00	18/11/2022
27206115	GM4/0.1-1.0		0.10 - 1.00	18/11/2022
27206121	GM4/1.0-2.0		1.00 - 2.00	18/11/2022

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



CERTIFICATE OF ANALYSIS

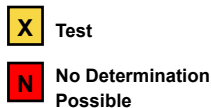
Validated

SDG: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Results Legend



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

Results Legend	Lab Sample No(s)		27206101	27206107	27206086	27206094	27206115	27206121
	Customer Sample Reference		GCS0/1-1-0	GCS1/0-2-0	GDS0/1-1-0	GDS1/0-2-0	GM40/1-1-0	GM41/0-2-0
AGS Reference								
Depth (m)		1.00 - 2.00						
Container		250g Amber Jar (ALE210)						
Sample Type		S						
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X					
CEN Readings	All	NDPs: 0 Tests: 1	X					
Chromium III	All	NDPs: 0 Tests: 1		X				
Coronene	All	NDPs: 0 Tests: 1		X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X				
Fluoride	All	NDPs: 0 Tests: 1	X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X				
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X				
Mercury Dissolved	All	NDPs: 0 Tests: 1	X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X				
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Results Legend



Test



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

			27206101	27206107	27206086	27206094	27206115	27206121
			GCS/0.1-1.0	GCS/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0
			0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
			250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)
			S	S	S	S	S	S
PAH by GCMS	All	NDPs: 0 Tests: 1	X					
PCBs by GCMS	All	NDPs: 0 Tests: 1	X					
PFAS (Post Ox.) Solids	All	NDPs: 0 Tests: 3	X		X		X	
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
PFAS Solids	All	NDPs: 0 Tests: 3	X		X		X	
pH	All	NDPs: 0 Tests: 1	X					
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X					
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X					
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 1	X					
Total Organic Carbon	All	NDPs: 0 Tests: 1	X					
Total Organic Fluorine*	All	NDPs: 0 Tests: 1			X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X					
VOC MS (S)	All	NDPs: 0 Tests: 1		X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

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
27206101	GC5/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
27206107	GC5/1.0-2.0	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27206086	GD5/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
27206094	GD5/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Loam	Stones	Vegetation
27206115	GM4/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27206121	GM4/1.0-2.0	1.00 - 2.00	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

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Results Legend		Customer Sample Ref.	GC5/0.1-1.0	GC5/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0
#	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						
Moisture Content Ratio (% of as received sample)	%	PM024	16	12	19	18	16	16
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	0.00113	0.0025	<0.0005	<0.0005
Total Organic Fluorine*	mg/kg	SUB			2.7			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	0.00852	0.00872	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	0.000764	<0.0005	0.00199	0.00113	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	0.00907	0.00235	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	0.000545	<0.0005	0.00915	0.00395	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	0.00213	<0.0005	0.0025	0.00409	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	0.002	0.000551	0.00406	0.00343	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.0133	0.00733	0.00628	0.00704	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	0.00159	0.000576	0.00311	0.00267	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.0046	0.000612	0.0113	0.0258	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	0.000557	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.173	0.0188	0.516	0.568	<0.0005	0.000756
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.00743	0.00182	0.0142	0.0145	<0.0005	<0.0005
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.00169	<0.0005	0.00563	0.00374	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	0.000561	<0.0005	0.022	0.0125	<0.0005	<0.0005
Loss on ignition	<0.7 %	TM018	5.34					
			M					
Organic Carbon, Total	<0.2 %	TM132	2					
			M					
pH	1 pH Units	TM133	8.48					
			M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6					
			M					
PCB congener 28	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 52	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 101	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 118	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 138	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 153	<0.003 mg/kg	TM168	<0.003					
			M					
PCB congener 180	<0.003 mg/kg	TM168	<0.003					
			M					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021					
Chromium, Trivalent	<0.9 mg/kg	TM181	9.43					
Antimony	<0.6 mg/kg	TM181	1.53	#				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Results Legend		Customer Sample Ref.	GC5/0.1-1.0	GC5/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0
# 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)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206101	1.00 - 2.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206107	0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206086	1.00 - 2.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206094	0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206115	1.00 - 2.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206121
Component	LOD/Units	Method						
Arsenic	<0.6 mg/kg	TM181	15 M					
Barium	<0.6 mg/kg	TM181	82.1 #					
Cadmium	<0.02 mg/kg	TM181	1.87 M					
Chromium	<0.9 mg/kg	TM181	9.43 M					
Copper	<1.4 mg/kg	TM181	29.3 M					
Lead	<0.7 mg/kg	TM181	33.9 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Molybdenum	<0.1 mg/kg	TM181	3.92 #					
Nickel	<0.2 mg/kg	TM181	42.5 M					
Selenium	<1 mg/kg	TM181	1.81 #					
Zinc	<1.9 mg/kg	TM181	85.5 M					
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003		<0.003		<0.003	
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003		<0.003		<0.003	
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002		<0.002		<0.002	
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001		<0.001		<0.001	
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	0.00141		0.00245		<0.001	
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	0.00577		0.00868		<0.001	
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<0.001 mg/kg	TM338	0.0113		0.00349		<0.001	
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	0.00379		0.00717		<0.001	
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<0.001 mg/kg	TM338	0.00252		0.00108		<0.001	
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001		0.00518		<0.001	
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	0.0536		0.198		<0.001	
Branched PFOS	<0.001 mg/kg	TM338	0.0232		0.0232		<0.001	
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001		0.0122		<0.001	
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001		<0.001		<0.001	
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001		<0.001		<0.001	
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001		<0.001		<0.001	
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<0.001 mg/kg	TM338	<0.001		0.00245		<0.001	
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001		<0.001		<0.001	
Total PFOS	<0.001 mg/kg	TM338	0.0768		0.221		<0.001	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10					
Coronene	<0.2 mg/kg	TM410	<0.2					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5					



CERTIFICATE OF ANALYSIS

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

TPH CWG (S)

Results Legend		Customer Sample Ref.					
# ISO17025 accredited. M mCERES 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	GC5/0.1-1.0 0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206101				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	92.8				
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	#			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	2.75	#			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10				
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	#			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10				
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05				
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

VOC MS (S)

Results Legend		Customer Sample Ref.	GC50.1-1.0				
# 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*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206101				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	111				
Toluene-d8**	%	TM116	97.4				
4-Bromofluorobenzene**	%	TM116	93.5				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06 #				
Chloromethane	<0.007 mg/kg	TM116	<0.07 #				
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06 @ M				
Bromomethane	<0.01 mg/kg	TM116	<0.1 M				
Chloroethane	<0.01 mg/kg	TM116	<0.1 M				
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1 #				
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07 M				
Dichloromethane	<0.01 mg/kg	TM116	<0.1 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1 M				
Chloroform	<0.008 mg/kg	TM116	<0.08 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M				
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05 M				
Benzene	<0.009 mg/kg	TM116	<0.09 M				
Trichloroethene	<0.009 mg/kg	TM116	<0.09 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1 M				
Dibromomethane	<0.009 mg/kg	TM116	<0.09 M				
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M				
Toluene	<0.007 mg/kg	TM116	<0.07 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07 M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

VOC MS (S)

Results Legend		Customer Sample Ref.	GC5/0.1-1.0				
# 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)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.10 - 1.00 Soil/Solid (S) 18/11/2022 23/11/2022 221123-181 27206101				
Component	LOD/Units	Method					
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.05 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #				
o-Xylene	<0.01 mg/kg	TM116	<0.1 M				
Styrene	<0.01 mg/kg	TM116	<0.1 @ #				
Bromofom	<0.01 mg/kg	TM116	<0.1 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.1 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.1 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14 #				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.14 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2				
Naphthalene	<0.013 mg/kg	TM116	<0.13 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFASReport Number: 684384
Location: Dublin Airport

Superseded Report: 684376

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.107

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Dublin Airport

Natural Moisture Content (%) 19.6

Dry Matter Content (%) 83.6

Case

SDG 221123-181

Lab Sample Number(s) 27206101

Sampled Date 18-Nov-2022

Customer Sample Ref. GC5/0.1-1.0

Depth (m) 0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%)	2
Loss on Ignition (%)	5.34
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.48
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00495	<0.0002	0.0495	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00149	<0.0003	0.0149	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00845	<0.003	0.0845	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00142	<0.001	0.0142	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	92.3	<10	923	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.7	<3	57	<30	500	800	1000

Leach Test Information

Date Prepared	24-Nov-2022
pH (pH Units)	8.22
Conductivity (µS/cm)	122
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

03/04/2023 10:06:21

10:05:58 03/04/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB	Subcontracted Test
TM018	Determination of Loss on Ignition
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	The Determination of Total Dissolved Solids in Water
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM338	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221123-181
Client Ref.: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

Test Completion Dates

Lab Sample No(s)	27206101	27206107	27206086	27206094	27206115	27206121
Customer Sample Ref.	GC5/0.1-1.0	GC5/1.0-2.0	GD5/0.1-1.0	GD5/1.0-2.0	GM4/0.1-1.0	GM4/1.0-2.0
AGS Ref.						
Depth	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	25-Nov-2022					
CEN 10:1 Leachate (1 Stage)	01-Dec-2022					
CEN Readings	05-Dec-2022					
Chromium III	07-Dec-2022					
Coronene	29-Nov-2022					
Dissolved Metals by ICP-MS	03-Apr-2023					
Dissolved Organic/Inorganic Carbon	26-Nov-2022					
EPH by GCxGC-FID	28-Nov-2022					
EPH CWG GC (S)	28-Nov-2022					
Fluoride	28-Nov-2022					
GRO by GC-FID (S)	01-Dec-2022					
Hexavalent Chromium (s)	07-Dec-2022					
Loss on Ignition in soils	30-Nov-2022					
Mercury Dissolved	07-Dec-2022					
Metals in solid samples by OES	02-Dec-2022					
Moisture at 105C	24-Nov-2022					
PAH 16 & 17 Calc	28-Nov-2022					
PAH by GCMS	28-Nov-2022					
PCBs by GCMS	01-Dec-2022					
PFAS (Post Ox.) Solids	12-Dec-2022		29-Nov-2022		12-Dec-2022	
PFAS by LCMS on solids (S-PFCLMS02)	10-Dec-2022	10-Dec-2022	10-Dec-2022	06-Feb-2023	10-Dec-2022	06-Feb-2023
PFAS Solids	08-Dec-2022		28-Nov-2022		08-Dec-2022	
pH	25-Nov-2022					
pH Value of Filtered Water	05-Dec-2022					
Phenols by HPLC (W)	01-Dec-2022					
Sample description	24-Nov-2022	24-Nov-2022	24-Nov-2022	09-Jan-2023	24-Nov-2022	09-Jan-2023
Total Dissolved Solids on Leachates	28-Nov-2022					
Total Organic Carbon	01-Dec-2022					
Total Organic Fluorine*			16-Dec-2022			
TPH CWG GC (S)	01-Dec-2022					
VOC MS (S)	02-Dec-2022					



CERTIFICATE OF ANALYSIS

Work Order	: PR22C3869	Issue Date	: 09-Dec-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221123-181	Page	: 1 of 3
Order number	: ----	Date Samples	: 30-Nov-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 02-Dec-2022 - 09-Dec-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

				27208358 GD5/0.1-1.0		27207370 GF5-G5/0.1-1.0		27208200 GF5-G5/1.0-2.0	
				PR22C3869001		PR22C3869002		PR22C3869003	
				24-Nov-2022 08:36		24-Nov-2022 06:02		24-Nov-2022 08:16	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	0.00199	± 30.0%	0.000764	± 30.0%	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	0.00563	± 30.0%	0.00169	± 30.0%	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	0.00311	± 30.0%	0.00159	± 30.0%	0.000576	± 30.0%
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	0.00406	± 30.0%	0.00200	± 30.0%	0.000551	± 30.0%
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.0142	± 30.0%	0.00743	± 30.0%	0.00182	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.0113	± 30.0%	0.00460	± 30.0%	0.000612	± 30.0%
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	0.00915	± 30.0%	0.000545	± 30.0%	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	0.0220	± 30.0%	0.000561	± 30.0%	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00628	± 30.0%	0.0133	± 30.0%	0.00733	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	0.00250	± 30.0%	0.00213	± 30.0%	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.516	± 30.0%	0.173	± 30.0%	0.0188	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	0.00907	± 30.0%	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.00113	± 30.0%	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.00852	± 30.0%	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	0.000557	± 30.0%	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.573	± 30.0%	0.205	± 30.0%	0.0297	± 30.0%
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.2	± 6.0%	82.2	± 6.0%	88.5	± 6.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID
Client sampling date / time

				27208166 GM4/0.1-1.0		----		----	
				PR22C3869004		----		----	
				24-Nov-2022 08:15		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----



Sub-Matrix: SOIL				Client sample ID		27208166 GM4/0.1-1.0		----	
				Laboratory sample ID		PR22C3869004		----	
				Client sampling date / time		24-Nov-2022 08:15		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued									
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	----	---	----	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	85.0	± 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.

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

Work Order : **EB2236385**
Client : **ALS UK**
Contact : RESULTS HAWARDEN
Address : 2 Bartholemews Walk Cambridgeshire Business Park Ely,
 Cambridgeshire
 Cambridgeshire UK CB7 4ZE

Telephone : ----
Project : 221123-181
Order number : 221123-181
C-O-C number : 39392
Sampler : ----
Site : ----
Quote number : EN/222
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053

Telephone : +61-7-3243 7222
Date Samples Received : 05-Dec-2022 13:06
Date Analysis Commenced : 14-Dec-2022
Issue Date : 16-Dec-2022 15:48



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

- EP040: Total Organic Fluorine (TOF) in solids represents the total fluorine in the organic forms extracted by the method.

Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Sample ID

				27207366	----	----	----	----
				GD5/01-1.0				
Sampling date / time				18-Nov-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2236385-001	-----	-----	-----	-----
Result					----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	17.4	----	----	----	----
EP040: Total Organic Fluorine (TOF)								
Total Organic Fluorine	----	1.0	mg/kg	2.7	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EB2236385	Page	: 1 of 3
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Contact	: Customer Services EB
Address	: 2 Bartholemews Walk Cambridgeshire Business Park Ely, Cambridgeshire Cambridgeshire UK CB7 4ZE	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 221123-181	Date Samples Received	: 05-Dec-2022
Order number	: 221123-181	Date Analysis Commenced	: 14-Dec-2022
C-O-C number	: 39392	Issue Date	: 16-Dec-2022
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP040: Total Organic Fluorine (TOF) (QC Lot: 4767507)									
EB2236385-001	27207366 GD5/01-1.0	EP040: Total Organic Fluorine	----	1	mg/kg	2.7	2.9	7.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4767508)									
EB2236385-001	27207366 GD5/01-1.0	EA055: Moisture Content	----	0.1	%	17.4	19.1	8.9	0% - 20%



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit			Result	LCS	Low
EP040: Total Organic Fluorine (TOF) (QCLot: 4767507)								
EP040: Total Organic Fluorine	----	1	mg/kg	<1.0	2.385 mg/kg	90.9	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2236385	Page	: 1 of 4
Client	: ALS UK	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS HAWARDEN	Telephone	: +61-7-3243 7222
Project	: 221123-181	Date Samples Received	: 05-Dec-2022
Site	: ----	Issue Date	: 16-Dec-2022
Sampler	: ----	No. of samples received	: 1
Order number	: 221123-181	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Soil Glass Jar - Unpreserved 27207366 - GD5/01-1.0	----	----	----	14-Dec-2022	02-Dec-2022	12

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Total Organic Fluorine (TOF)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) 27207366 - GD5/01-1.0	18-Nov-2022	----	----	----	14-Dec-2022	02-Dec-2022	✖
EP040: Total Organic Fluorine (TOF)							
Soil Glass Jar - Unpreserved (EP040) 27207366 - GD5/01-1.0	18-Nov-2022	14-Dec-2022	16-Dec-2022	✓	15-Dec-2022	16-Dec-2022	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Fluorine (TOF)	EP040	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Organic Fluorine (TOF)	EP040	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Organic Fluorine (TOF)	EP040	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Organic Fluorine (TOF)	EP040	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Organic Fluorine (TOF)	EP040	SOIL	In house: Fluorinated organic compounds are isolated from the sample by solvent extraction. Hydropyrolytic combustion of the soil extract converts organic forms of fluorine to hydrogen fluoride (HF). The HF is adsorbed in a trapping solution and the total fluoride concentration determined by Ion Chromatography (IC).
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
QuEChERS Extraction of Solids for Total Organic Fluorine	ORG71-TOF	SOIL	In house: Extraction of homogenised aliquot of soil by QuEChERS for Total Organic Fluorine.



CERTIFICATE OF ANALYSIS

Work Order	: PR2302815	Issue Date	: 06-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221123-181	Page	: 1 of 2
Order number	: ----	Date Samples	: 12-Jan-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 12-Jan-2023 - 06-Feb-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

27382222

27382685

GD5/1.0-2.0

GM4/1.0-2.0

Laboratory sample ID

PR2302815001

PR2302815002

Client sampling date / time

09-Jan-2023 10:07

09-Jan-2023 11:56

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	0.00113	± 30.0%	<0.000500	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	0.00374	± 30.0%	<0.000500	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	0.00267	± 30.0%	<0.000500	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	0.00343	± 30.0%	<0.000500	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.0145	± 30.0%	<0.000500	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.0258	± 30.0%	<0.000500	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	0.00395	± 30.0%	<0.000500	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	0.0125	± 30.0%	<0.000500	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00704	± 30.0%	<0.000500	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	0.00409	± 30.0%	<0.000500	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.568	± 30.0%	0.000756	± 30.0%	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	0.00235	± 30.0%	<0.000500	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.00250	± 30.0%	<0.000500	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.00872	± 30.0%	<0.000500	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.633	± 40.0%	0.00076	± 40.0%	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	81.1	± 5.0%	87.3	± 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: 221123-181
Client Ref: DAA PFAS

Report Number: 684384
Location: Dublin Airport

Superseded Report: 684376

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
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 February 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	221201-28
Your Reference:	DAA PFAS
Location:	Dublin Airport
Report No:	677597
Order Number:	28002977

This report has been revised and directly supersedes 673970 in its entirety.

We received 14 samples on Wednesday November 30, 2022 and 14 of these samples were scheduled for analysis which was completed on Monday February 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: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27244350	GK5/0.0-1.0		0.00 - 1.00	22/11/2022
27244356	GK5/1.0-2.0		1.00 - 2.00	22/11/2022
27244342	GL5/0.0-1.0		0.00 - 1.00	22/11/2022
27244346	GL5/1.0-2.0		1.00 - 2.00	22/11/2022
27244311	GL6/0.0-1.0		0.00 - 1.00	24/11/2022
27244317	GL6/1.0-2.0		1.00 - 2.00	24/11/2022
27244301	GM5/0.0-1.0		0.00 - 1.00	22/11/2022
27244338	GM5/1.0-2.0		1.00 - 2.00	22/11/2022
27244372	GM6/0.0-1.0		0.00 - 1.00	24/11/2022
27244305	GM6/1.0-2.0		1.00 - 2.00	24/11/2022
27244323	GO5/0.0-1.0		0.00 - 1.00	25/11/2022
27244329	GO5/1.0-2.0		1.00 - 2.00	25/11/2022
27244360	GO6/0.0-1.0		0.00 - 1.00	23/11/2022
27244366	GO6/1.0-2.0		1.00 - 2.00	23/11/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

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	
	27244372		GM6/0.0-1.0				0.00 - 1.00		250g Amber Jar (ALE210)		S	
	27244338		GM5/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260)		S	
	27244301		GM5/0.0-1.0				0.00 - 1.00		250g Amber Jar (ALE210)		S	
	27244317		GL6/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260)		S	
	27244311		GL6/0.0-1.0				0.00 - 1.00		1kg TUB with Handle (ALE260)		S	
	27244346		GL5/1.0-2.0				1.00 - 2.00		250g Amber Jar (ALE210)		S	
27244342		GL5/0.0-1.0				0.00 - 1.00		1kg TUB with Handle (ALE260)		S		
27244356		GK5/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260)		S		
27244350		GK5/0.0-1.0				0.00 - 1.00		1kg TUB with Handle (ALE260)		S		
Anions by Kone (w)		All	NDPs: 0 Tests: 2									
CEN Readings		All	NDPs: 0 Tests: 2									
Chromium III		All	NDPs: 0 Tests: 2									
Coronene		All	NDPs: 0 Tests: 2									
Dissolved Metals by ICP-MS		All	NDPs: 0 Tests: 2									
Dissolved Organic/Inorganic Carbon		All	NDPs: 0 Tests: 2									
EPH by GCxGC-FID		All	NDPs: 0 Tests: 2									
EPH CWG GC (S)		All	NDPs: 0 Tests: 2									
Fluoride		All	NDPs: 0 Tests: 2									
GRO by GC-FID (S)		All	NDPs: 0 Tests: 2									
Hexavalent Chromium (s)		All	NDPs: 0 Tests: 2									
Loss on Ignition in soils		All	NDPs: 0 Tests: 2									
Mercury Dissolved		All	NDPs: 0 Tests: 2									
Metals in solid samples by OES		All	NDPs: 0 Tests: 2									
PAH 16 & 17 Calc		All	NDPs: 0 Tests: 2									



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend



Test



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

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	27244372		GM6/0.0-1.0				0.00 - 1.00		250g Amber Jar (ALE210)	S		
	27244338		GM5/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260)	S		
	27244301		GM5/0.0-1.0				0.00 - 1.00		250g Amber Jar (ALE210)	S		
	27244317		GL6/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260)	S		
	27244311		GL6/0.0-1.0				0.00 - 1.00		60g VOC (ALE215)	S		
PAH by GCMS	All	NDPs: 0 Tests: 2										
PCBs by GCMS	All	NDPs: 0 Tests: 2										
PFAS (Post Ox.) Solids	All	NDPs: 0 Tests: 5										
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 14										
PFAS Solids	All	NDPs: 0 Tests: 5										
pH	All	NDPs: 0 Tests: 2										
pH Value of Filtered Water	All	NDPs: 0 Tests: 2										
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2										
Sample description	All	NDPs: 0 Tests: 14										
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 2										
Total Organic Carbon	All	NDPs: 0 Tests: 2										
TPH CWG GC (S)	All	NDPs: 0 Tests: 2										
VOC MS (S)	All	NDPs: 0 Tests: 2										



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

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
27244350	GK5/0.0-1.0	0.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27244356	GK5/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27244342	GL5/0.0-1.0	0.00 - 1.00	Light Brown	Silt Loam	Stones	Vegetation
27244346	GL5/1.0-2.0	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27244311	GL6/0.0-1.0	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	None
27244317	GL6/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27244301	GM5/0.0-1.0	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	None
27244338	GM5/1.0-2.0	1.00 - 2.00	Dark Brown	Clay	Stones	Vegetation
27244372	GM6/0.0-1.0	0.00 - 1.00	Light Brown	Sandy Loam	Stones	Vegetation
27244305	GM6/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27244323	GO5/0.0-1.0	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27244329	GO5/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27244360	GO6/0.0-1.0	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	None
27244366	GO6/1.0-2.0	1.00 - 2.00	Dark 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: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend			Customer Sample Ref.	GK5/0.0-1.0	GK5/1.0-2.0	GL5/0.0-1.0	GL5/1.0-2.0	GL6/0.0-1.0	GL6/1.0-2.0
# 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							
Moisture Content Ratio (% of as received sample)	%	PM024	11	11	21	10	12	11	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	0.000564	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018					2.7		
Organic Carbon, Total	<0.2 %	TM132					0.493		
pH	1 pH Units	TM133					8.42		
Chromium, Hexavalent	<0.6 mg/kg	TM151					<0.6		
PCB congener 28	<0.003 mg/kg	TM168					<0.003		
PCB congener 52	<0.003 mg/kg	TM168					<0.003		
PCB congener 101	<0.003 mg/kg	TM168					<0.003		
PCB congener 118	<0.003 mg/kg	TM168					<0.003		
PCB congener 138	<0.003 mg/kg	TM168					<0.003		
PCB congener 153	<0.003 mg/kg	TM168					<0.003		
PCB congener 180	<0.003 mg/kg	TM168					<0.003		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Chromium, Trivalent	<0.9 mg/kg	TM181					9.97		
Antimony	<0.6 mg/kg	TM181					1.46		
Arsenic	<0.6 mg/kg	TM181					13.5		



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend			Customer Sample Ref.	GK5/0.0-1.0	GK5/1.0-2.0	GL5/0.0-1.0	GL5/1.0-2.0	GL6/0.0-1.0	GL6/1.0-2.0
# 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 1-4-9@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 1.00 Soil/Solid (S) 22/11/2022	1.00 - 2.00 Soil/Solid (S) 22/11/2022	0.00 - 1.00 Soil/Solid (S) 22/11/2022	1.00 - 2.00 Soil/Solid (S) 22/11/2022	0.00 - 1.00 Soil/Solid (S) 24/11/2022	1.00 - 2.00 Soil/Solid (S) 24/11/2022
Component	LOD/Units	Method							
Barium	<0.6 mg/kg	TM181						70.9	#
Cadmium	<0.02 mg/kg	TM181						1.75	M
Chromium	<0.9 mg/kg	TM181						9.97	M
Copper	<1.4 mg/kg	TM181						25.6	M
Lead	<0.7 mg/kg	TM181						21.4	M
Mercury	<0.1 mg/kg	TM181						<0.1	M
Molybdenum	<0.1 mg/kg	TM181						3.64	#
Nickel	<0.2 mg/kg	TM181						43.3	M
Selenium	<1 mg/kg	TM181						1.92	#
Zinc	<1.9 mg/kg	TM181						74.3	M
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003					<0.003	
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003					<0.003	
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002					<0.002	
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
Branched PFOS	<0.001 mg/kg	TM338	<0.001					<0.001	
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001					<0.001	
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001					<0.001	
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001					<0.001	
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001					<0.001	
Total PFOS	<0.001 mg/kg	TM338	<0.001					<0.001	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410						<10	
Coronene	<0.2 mg/kg	TM410						<0.2	
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415						<5	
PFBA (Post Ox.) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM428	<0.003					<0.003	



Superseded Report: 673970

Page 10 of 31



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend		Customer Sample Ref.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	GM5/0.0-1.0	GM5/1.0-2.0	GM6/0.0-1.0	GM6/1.0-2.0	GO5/0.0-1.0	GO5/1.0-2.0
#	ISO17025 accredited.			0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00
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.			22/11/2022	22/11/2022	24/11/2022	24/11/2022	25/11/2022	25/11/2022
diss.filt	Dissolved / filtered sample.			.	.	.	.	.	.
tot.unfilt	Total / unfiltered sample.			30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
*	Subcontracted - refer to subcontractor report for accreditation status.			221201-28	221201-28	221201-28	221201-28	221201-28	221201-28
**	% 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			27244301	27244338	27244372	27244305	27244323	27244329
(F)	Trigger breach confirmed								
1-4**@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	17	11	18	13	18	9.4	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.00056	<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.00353	<0.0005	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005	0.000559	<0.0005	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018					4.86	M	
Organic Carbon, Total	<0.2 %	TM132					0.772	M	
pH	1 pH Units	TM133					7.79	M	
Chromium, Hexavalent	<0.6 mg/kg	TM151					<0.6	M	
PCB congener 28	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 52	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 101	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 118	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 138	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 153	<0.003 mg/kg	TM168					<0.003	M	
PCB congener 180	<0.003 mg/kg	TM168					<0.003	M	
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Chromium, Trivalent	<0.9 mg/kg	TM181					28.5		
Antimony	<0.6 mg/kg	TM181					8.72	#	
Arsenic	<0.6 mg/kg	TM181					18.2	M	



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend			Customer Sample Ref.	GM5/0.0-1.0	GM5/1.0-2.0	GM6/0.0-1.0	GM6/1.0-2.0	GO5/0.0-1.0	GO5/1.0-2.0
# ISO17025 accredited. M MCERTS accredited. A Aqueous / settled sample. dis. fil. 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 1-4-9@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 1.00 Soil/Solid (S) 22/11/2022	1.00 - 2.00 Soil/Solid (S) 22/11/2022	0.00 - 1.00 Soil/Solid (S) 24/11/2022	1.00 - 2.00 Soil/Solid (S) 24/11/2022	0.00 - 1.00 Soil/Solid (S) 25/11/2022	1.00 - 2.00 Soil/Solid (S) 25/11/2022
Component	LOD/Units	Method							
Barium	<0.6 mg/kg	TM181						170	#
Cadmium	<0.02 mg/kg	TM181						3.59	M
Chromium	<0.9 mg/kg	TM181						28.5	M
Copper	<1.4 mg/kg	TM181						36.4	M
Lead	<0.7 mg/kg	TM181						49.1	M
Mercury	<0.1 mg/kg	TM181						<0.1	M
Molybdenum	<0.1 mg/kg	TM181						4	#
Nickel	<0.2 mg/kg	TM181						52.8	M
Selenium	<1 mg/kg	TM181						2.07	#
Zinc	<1.9 mg/kg	TM181						172	M
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338					<0.003	<0.003	
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338					<0.003	<0.003	
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338					<0.002	<0.002	
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
Branched PFOS	<0.001 mg/kg	TM338					<0.001	<0.001	
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338					<0.001	<0.001	
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338					<0.001	<0.001	
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338					<0.001	<0.001	
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338					<0.001	<0.001	
Total PFOS	<0.001 mg/kg	TM338					<0.001	<0.001	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410						<10	
Coronene	<0.2 mg/kg	TM410						<0.2	
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415						<5	
PFBA (Post Ox.) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM428					<0.003	<0.003	



CERTIFICATE OF ANALYSIS

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Results Legend		Customer Sample Ref.		GO6/0.0-1.0	GO6/1.0-2.0			
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 1.00 Soil/Solid (S) 23/11/2022 30/11/2022 221201-28 27244360	1.00 - 2.00 Soil/Solid (S) 23/11/2022 30/11/2022 221201-28 27244366				
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						
Moisture Content Ratio (% of as received sample)	%	PM024	15	12				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorododecanoic acid (PFDDA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005				
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005				
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338		<0.003				
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338		<0.003				
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338		<0.002				
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338		<0.001				
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338		<0.001				
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338		<0.001				
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001 mg/kg	TM338		<0.001				
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338		<0.001				
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001 mg/kg	TM338		<0.001				
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338		<0.001				
Linear PFOS(1763-23-1) Perfluoro-1-octanedisulfonate	<0.001 mg/kg	TM338		<0.001				
Branched PFOS	<0.001 mg/kg	TM338		<0.001				
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338		<0.001				
PFDDA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338		<0.001				
PFOSA (754-91-6) Perfluoro-octanedisulfonamide	<0.001 mg/kg	TM338		<0.001				



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

TPH CWG (S)

Results Legend		Customer Sample Ref.	GL6/0.0-1.0	GO5/0.0-1.0			
# 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 - 1.00 Soil/Solid (S) 24/11/2022 30/11/2022 221201-28 27244311	0.00 - 1.00 Soil/Solid (S) 25/11/2022 30/11/2022 221201-28 27244323			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	85.1	88.9			
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	1.23 #	4.46 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	<5			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10	<10			
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	2.11 #	1.55 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	1.64			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	<5			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10	<10			
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	<0.02			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.110	Natural Moisture Content (%)	22.6
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	81.5
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221201-28	
Lab Sample Number(s)	27244311	
Sampled Date	24-Nov-2022	
Customer Sample Ref.	GL6/0.0-1.0	
Depth (m)	0.00 - 1.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.493	3	5	6
Loss on Ignition (%)	2.7	-	-	10
Sum of BTEX (mg/kg)	<0.4	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00705	<0.0002	0.0705	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00159	<0.0003	0.0159	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00467	<0.003	0.0467	<0.03	0.5	10	30
Nickel	0.000402	<0.0004	0.00402	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.597	<0.5	5.97	<5	10	150	500
Sulphate (soluble)	6.4	<2	64	<20	1000	20000	50000
Total Dissolved Solids	93.3	<10	933	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	02-Dec-2022
pH (pH Units)	8.54
Conductivity (µS/cm)	127
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 14:46:09

14:45:47 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFASReport Number: 677597
Location: Dublin Airport

Superseded Report: 673970

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.102	Natural Moisture Content (%)	14.3
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	87.5
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221201-28	
Lab Sample Number(s)	27244323	
Sampled Date	25-Nov-2022	
Customer Sample Ref.	GO5/0.0-1.0	
Depth (m)	0.00 - 1.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.772	3	5	6
Loss on Ignition (%)	4.86	-	-	10
Sum of BTEX (mg/kg)	<0.4	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.79	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00678	<0.0002	0.0678	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000714	<0.0003	0.00714	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0228	<0.003	0.228	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	3.7	<2	37	<20	1000	20000	50000
Total Dissolved Solids	63.8	<10	638	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.49	<3	44.9	<30	500	800	1000

Leach Test Information

Date Prepared	02-Dec-2022
pH (pH Units)	8.45
Conductivity (µS/cm)	89
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 14:46:09

14:45:47 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS**Report Number:** 677597
Location: Dublin Airport**Superseded Report:** 673970

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990/BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM428	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221201-28
Client Ref.: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

Test Completion Dates

Lab Sample No(s)	27244350	27244356	27244342	27244346	27244311	27244317	27244301	27244338	27244372	27244305
Customer Sample Ref.	GK5/0.0-1.0	GK5/1.0-2.0	GL5/0.0-1.0	GL5/1.0-2.0	GL6/0.0-1.0	GL6/1.0-2.0	GM5/0.0-1.0	GM5/1.0-2.0	GM6/0.0-1.0	GM6/1.0-2.0
AGS Ref.										
Depth	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)					07-Dec-2022					
CEN 10:1 Leachate (1 Stage)					02-Dec-2022					
CEN Readings					07-Dec-2022					
Chromium III					06-Dec-2022					
Coronene					16-Dec-2022					
Dissolved Metals by ICP-MS					08-Dec-2022					
Dissolved Organic/Inorganic Carbon					06-Dec-2022					
EPH by GCxGC-FID					06-Dec-2022					
EPH CWG GC (S)					05-Dec-2022					
Fluoride					07-Dec-2022					
GRO by GC-FID (S)					02-Dec-2022					
Hexavalent Chromium (s)					06-Dec-2022					
Loss on Ignition in soils					06-Dec-2022					
Mercury Dissolved					07-Dec-2022					
Metals in solid samples by OES					05-Dec-2022					
Moisture at 105C					02-Dec-2022					
PAH 16 & 17 Calc					16-Dec-2022					
PAH by GCMS					05-Dec-2022					
PCBs by GCMS					12-Dec-2022					
PFAS (Post Ox.) Solids	12-Dec-2022				12-Dec-2022					12-Dec-2022
PFAS by LCMS on solids (S-PFCLMS02)	30-Dec-2022	06-Feb-2023	06-Feb-2023	30-Dec-2022	30-Dec-2022	06-Feb-2023	06-Feb-2023	30-Dec-2022	06-Feb-2023	30-Dec-2022
PFAS Solids	08-Dec-2022				08-Dec-2022					08-Dec-2022
pH					06-Dec-2022					
pH Value of Filtered Water					07-Dec-2022					
Phenols by HPLC (W)					07-Dec-2022					
Sample description	01-Dec-2022	09-Jan-2023	09-Jan-2023	01-Dec-2022	01-Dec-2022	09-Jan-2023	09-Jan-2023	01-Dec-2022	09-Jan-2023	01-Dec-2022
Total Dissolved Solids on Leachates					08-Dec-2022					
Total Organic Carbon					07-Dec-2022					
TPH CWG GC (S)					05-Dec-2022					
VOC MS (S)					02-Dec-2022					

Lab Sample No(s)	27244323	27244329	27244360	27244366
Customer Sample Ref.	G05/0.0-1.0	G05/1.0-2.0	G06/0.0-1.0	G06/1.0-2.0
AGS Ref.				
Depth	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	07-Dec-2022			
CEN 10:1 Leachate (1 Stage)	02-Dec-2022			
CEN Readings	07-Dec-2022			
Chromium III	06-Dec-2022			
Coronene	16-Dec-2022			
Dissolved Metals by ICP-MS	08-Dec-2022			
Dissolved Organic/Inorganic Carbon	06-Dec-2022			
EPH by GCxGC-FID	06-Dec-2022			
EPH CWG GC (S)	05-Dec-2022			
Fluoride	07-Dec-2022			
GRO by GC-FID (S)	02-Dec-2022			
Hexavalent Chromium (s)	06-Dec-2022			
Loss on Ignition in soils	05-Dec-2022			
Mercury Dissolved	07-Dec-2022			
Metals in solid samples by OES	05-Dec-2022			
Moisture at 105C	02-Dec-2022			
PAH 16 & 17 Calc	16-Dec-2022			
PAH by GCMS	05-Dec-2022			
PCBs by GCMS	12-Dec-2022			
PFAS (Post Ox.) Solids	12-Dec-2022			12-Dec-2022
PFAS by LCMS on solids (S-PFCLMS02)	30-Dec-2022	06-Feb-2023	06-Feb-2023	30-Dec-2022
PFAS Solids	08-Dec-2022			08-Dec-2022
pH	06-Dec-2022			
pH Value of Filtered Water	07-Dec-2022			
Phenols by HPLC (W)	07-Dec-2022			
Sample description	01-Dec-2022	09-Jan-2023	09-Jan-2023	01-Dec-2022
Total Dissolved Solids on Leachates	08-Dec-2022			
Total Organic Carbon	08-Dec-2022			
TPH CWG GC (S)	05-Dec-2022			
VOC MS (S)	02-Dec-2022			



CERTIFICATE OF ANALYSIS

Work Order	: PR22C4483	Issue Date	: 30-Dec-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221201-28	Page	: 1 of 4
Order number	: ----	Date Samples	: 07-Dec-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 07-Dec-2022 - 30-Dec-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

Sub-Matrix: SOLID			Client sample ID	27247391 GK5/0.0-1.0		27247390 GL5/1.0-2.0		27247419 GL6/0.0-1.0	
Laboratory sample ID				PR22C4483001		PR22C4483002		PR22C4483003	
Client sampling date / time				01-Dec-2022 11:50		01-Dec-2022 11:49		01-Dec-2022 11:53	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.000564	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	----	<0.00300	----	0.000564	± 30.0%
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCl	0.10	%	84.9	± 6.0%	93.6	± 6.0%	86.5	± 6.0%

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID
Client sampling date / time

Sub-Matrix: SOLID				Client sample ID		27248581 GM5/1.0-2.0		27247434 GM6/1.0-2.0		27247593 GO5/0.0-1.0	
				Laboratory sample ID		PR22C4483004		PR22C4483005		PR22C4483006	
				Client sampling date / time		01-Dec-2022 13:29		01-Dec-2022 11:55		01-Dec-2022 12:14	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	0.000560	± 30.0%	<0.000500	----		
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		



Sub-Matrix: SOLID				Client sample ID		27248581 GM5/1.0-2.0		27247434 GM6/1.0-2.0		27247593 GO5/0.0-1.0	
				Laboratory sample ID		PR22C4483004		PR22C4483005		PR22C4483006	
				Client sampling date / time		01-Dec-2022 13:29		01-Dec-2022 11:55		01-Dec-2022 12:14	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00353	± 30.0%	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	0.00409	± 30.0%	<0.00300	---	<0.00300	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.7	± 6.0%	75.2	± 6.0%	86.0	± 6.0%	86.0	± 6.0%

Sub-Matrix: SOLID				Client sample ID		27247398 GO6/1.0-2.0		----		----	
				Laboratory sample ID		PR22C4483007		----		----	
				Client sampling date / time		01-Dec-2022 11:51		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	---	----	---	----	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	----	---	----	---	----	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.0	± 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.

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

Work Order	: PR2302816	Issue Date	: 06-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221201-28	Page	: 1 of 4
Order number	: ----	Date Samples	: 12-Jan-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 12-Jan-2023 - 06-Feb-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

				27382826 GK5/1.0-2.0 PR2302816001 09-Jan-2023 13:35		27382104 GL5/0.0-1.0 PR2302816002 09-Jan-2023 09:51		27382291 GL6/1.0-2.0 PR2302816003 09-Jan-2023 10:28	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	<0.00300	---	<0.00300	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCl	0.10	%	88.1	± 5.0%	78.7	± 5.0%	86.5	± 5.0%

Sub-Matrix: SOLID

Client sample ID

Laboratory sample ID

Client sampling date / time

				27382097 GM5/0.0-1.0 PR2302816004 09-Jan-2023 09:48		27382827 GM6/0.0-1.0 PR2302816005 09-Jan-2023 13:35		27382720 GO5/1.0-2.0 PR2302816006 09-Jan-2023 12:03	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000559	± 30.0%	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---



Sub-Matrix: SOLID				Client sample ID		27382097 GM5/0.0-1.0		27382827 GM6/0.0-1.0		27382720 GO5/1.0-2.0	
				Laboratory sample ID		PR2302816004		PR2302816005		PR2302816006	
				Client sampling date / time		09-Jan-2023 09:48		09-Jan-2023 13:35		09-Jan-2023 12:03	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	0.00056	± 40.0%	<0.00300	---	<0.00300	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	80.5	± 5.0%	85.4	± 5.0%	80.7	± 5.0%		

Sub-Matrix: SOLID				Client sample ID		27382823 GO6/0.0-1.0		----		----	
				Laboratory sample ID		PR2302816007		----		----	
				Client sampling date / time		09-Jan-2023 13:34		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	----	----	----	----	----	----
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.6	± 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

<i>Analytical Methods</i>	<i>Method Descriptions</i>
<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.

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: 221201-28
Client Ref: DAA PFAS

Report Number: 677597
Location: Dublin Airport

Superseded Report: 673970

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 February 2023
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 221206-75
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 677631
Order Number: 28002977

This report has been revised and directly supersedes 674204 in its entirety.

We received 6 samples on Tuesday December 06, 2022 and 6 of these samples were scheduled for analysis which was completed on Monday February 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: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27270430	GJ6/0.1-1.0		0.10 - 1.00	30/11/2022
27270437	GJ6/1.0-2.0		1.00 - 2.00	30/11/2022
27270409	GK6/0.1-1.0		0.10 - 1.00	30/11/2022
27270415	GK6/1.0-2.0		1.00 - 2.00	30/11/2022
27270420	GN5/0.1-1.0		0.10 - 1.00	01/12/2022
27270425	GN5/1.0-2.0		1.00 - 2.00	01/12/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

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
	27270425		GN5/1.0-2.0				1.00 - 2.00		250g Amber Jar (ALE210)		S
	27270420		GN5/0.1-1.0				0.10 - 1.00		1kg TUB with Handle (ALE260) 60g VOC (ALE215)		S
	27270415		GK6/1.0-2.0				1.00 - 2.00		250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)		S
	27270409		GK6/0.1-1.0				0.10 - 1.00		1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)		S
	27270437		GJ6/1.0-2.0				1.00 - 2.00		1kg TUB with Handle (ALE260) 60g VOC (ALE215)		S
	27270430	GJ6/0.1-1.0					0.10 - 1.00		250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	S	
											S
Anions by Kone (w)	All	NDPs: 0 Tests: 2									
CEN Readings	All	NDPs: 0 Tests: 2		X						X	
Chromium III	All	NDPs: 0 Tests: 2								X	
Coronene	All	NDPs: 0 Tests: 2									X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2									X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2									X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2									X
EPH CWG GC (S)	All	NDPs: 0 Tests: 2									X
Fluoride	All	NDPs: 0 Tests: 2									X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2									X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2									X
Loss on Ignition in soils	All	NDPs: 0 Tests: 2									X
Mercury Dissolved	All	NDPs: 0 Tests: 2									X
Metals in solid samples by OES	All	NDPs: 0 Tests: 2									X
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2									X



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Results Legend



Test



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

			27270430		27270437		27270409		27270415		27270420		27270425
			GL6/0.1-1.0		GL6/1.0-2.0		GK6/0.1-1.0		GK6/1.0-2.0		GNS/0.1-1.0		GNS/1.0-2.0
			0.10 - 1.00		1.00 - 2.00		0.10 - 1.00		1.00 - 2.00		0.10 - 1.00		1.00 - 2.00
			1kg TUB with Handle (ALE210)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	250g Amber Jar (ALE210)
			S	S	S	S	S	S	S	S	S	S	S
PAH by GCMS	All	NDPs: 0 Tests: 2			X						X		
PCBs by GCMS	All	NDPs: 0 Tests: 2			X						X		
PFAS by LCMS (S-PFCLMS02-C)	All	NDPs: 0 Tests: 3		X				X		X			
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 3	X				X					X	
pH	All	NDPs: 0 Tests: 2			X						X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X						X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X						X			
Sample description	All	NDPs: 0 Tests: 6	X	X		X		X	X	X			X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 2		X						X			
Total Organic Carbon	All	NDPs: 0 Tests: 2			X						X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2			X						X		
VOC MS (S)	All	NDPs: 0 Tests: 2				X						X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

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
27270430	GJ6/0.1-1.0	0.10 - 1.00	Light Brown	Sandy Loam	Stones	None
27270437	GJ6/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27270409	GK6/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
27270415	GK6/1.0-2.0	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	None
27270420	GN5/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Silt Loam	Stones	None
27270425	GN5/1.0-2.0	1.00 - 2.00	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

SDG: 221206-75
Client Ref.: DAA PFASReport Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Results Legend		Customer Sample Ref.	GJ6/0.1-1.0	GJ6/1.0-2.0	GK6/0.1-1.0	GK6/1.0-2.0	GN5/0.1-1.0	GN5/1.0-2.0
#	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						
Moisture Content Ratio (% of as received sample)	%	PM024	18	13	12	11	19	10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB		0.000768		<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	0.000824		<0.0005			<0.0005
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB		0.000562		<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluorononanoic acid (PFNA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	0.00138		<0.0005			<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.00386		<0.0005			<0.0005
Perfluorotridecanoic acid (PFTTrDA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	0.00151		<0.0005			<0.0005
Perfluorotetradecanoic acid (PFTeDA)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorohexadecanoic acid (PFHxDA)*	mg/kg	SUB		<0.005		<0.005	<0.005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.00132		<0.0005			<0.0005
perfluorooctadecanoic acid (PFOcDA)*	mg/kg	SUB		<0.005		<0.005	<0.005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005		<0.0005			<0.0005
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.0286		0.000864			<0.0005
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.0025		<0.0005			<0.0005
Perfluoropentane sulfonic acid (PFPeS)*	mg/kg	SUB		<0.0005		<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB		0.0024		<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.00188		<0.0005			<0.0005



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFASReport Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Results Legend			Customer Sample Ref.	GJ6/0.1-1.0	GJ6/1.0-2.0	GK6/0.1-1.0	GK6/1.0-2.0	GN5/0.1-1.0	GN5/1.0-2.0
#	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							
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005			<0.0005			<0.0005
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB			0.00356		<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluorononane sulfonic acid (PFNS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluorododecane sulfonic acid (PFDoDS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluorooctane sulfonamidoacetic acid*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoacetic acid*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
7H-perfluoroheptanoic acid (HPFHpA)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	mg/kg	SUB			<0.0005		<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018			2.41			4.43	
					M			M	
Organic Carbon, Total	<0.2 %	TM132			0.512			0.8	
					M			M	
pH	1 pH Units	TM133			8.73			8.31	
					M			M	
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6			<0.6	
					M			M	
PCB congener 28	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 52	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 101	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 118	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 138	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 153	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
PCB congener 180	<0.003 mg/kg	TM168			<0.003			<0.003	
					M			M	
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021			<0.021	
Chromium, Trivalent	<0.9 mg/kg	TM181			6.57			12.1	

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFASReport Number: 677631
Location: Dublin Airport

Superseded Report: 674204

TPH CWG (S)

Results Legend		Customer Sample Ref.	GJ6/1 0-2.0	GNS/0. 1-1.0			
# 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	1.00 - 2.00 Soil/Solid (S) 30/11/2022 06/12/2022 221206-75 27270437	0.10 - 1.00 Soil/Solid (S) 01/12/2022 06/12/2022 221206-75 27270420			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	84.2	90.8			
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1 #	2.95 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	<5			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10	<10			
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1 #	<1 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	1.52 #	3.82 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	5.03			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10	<10			
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	<0.02			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFASReport Number: 677631
Location: Dublin Airport

Superseded Report: 674204

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.113

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Dublin Airport

Natural Moisture Content (%) 24.6

Dry Matter Content (%) 80.2

Case

SDG 221206-75

Lab Sample Number(s) 27270420

Sampled Date 01-Dec-2022

Customer Sample Ref. GN5/0.1-1.0

Depth (m) 0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%)	0.8
Loss on Ignition (%)	4.43
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.31
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00874	<0.0002	0.0874	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00225	<0.0003	0.0225	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00804	<0.003	0.0804	<0.03	0.5	10	30
Nickel	0.000924	<0.0004	0.00924	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00106	<0.001	0.0106	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.66	<0.5	6.6	<5	10	150	500
Sulphate (soluble)	12	<2	120	<20	1000	20000	50000
Total Dissolved Solids	100	<10	1000	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.29	<3	62.9	<30	500	800	1000

Leach Test Information

Date Prepared	07-Dec-2022
pH (pH Units)	8.29
Conductivity (µS/cm)	136
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 18:33:03

18:32:11 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFASReport Number: 677631
Location: Dublin Airport

Superseded Report: 674204

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.104	Natural Moisture Content (%)	14.3
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	87.5
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	221206-75	
Lab Sample Number(s)	27270437	
Sampled Date	30-Nov-2022	
Customer Sample Ref.	GJ6/1.0-2.0	
Depth (m)	1.00 - 2.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.512	3	5	6
Loss on Ignition (%)	2.41	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.73	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00748	<0.0002	0.0748	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000517	<0.0003	0.00517	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0193	<0.003	0.193	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	57.8	<10	578	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.51	<3	45.1	<30	500	800	1000

Leach Test Information

Date Prepared	07-Dec-2022
pH (pH Units)	8.27
Conductivity (µS/cm)	79
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 18:33:03

18:32:11 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990/BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221206-75
Client Ref.: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.

Depth

Type

27270430	27270437	27270409	27270415	27270420	27270425
GJ6/0.1-1.0	GJ6/1.0-2.0	GK6/0.1-1.0	GK6/1.0-2.0	GN5/0.1-1.0	GN5/1.0-2.0
0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	09-Dec-2022			09-Dec-2022	
CEN 10:1 Leachate (1 Stage)	07-Dec-2022			07-Dec-2022	
CEN Readings	12-Dec-2022			12-Dec-2022	
Chromium III	09-Dec-2022			09-Dec-2022	
Coronene	19-Dec-2022			19-Dec-2022	
Dissolved Metals by ICP-MS	12-Dec-2022			12-Dec-2022	
Dissolved Organic/Inorganic Carbon	10-Dec-2022			10-Dec-2022	
EPH by GCxGC-FID	09-Dec-2022			08-Dec-2022	
EPH CWG GC (S)	08-Dec-2022			08-Dec-2022	
Fluoride	09-Dec-2022			09-Dec-2022	
GRO by GC-FID (S)	09-Dec-2022			09-Dec-2022	
Hexavalent Chromium (s)	08-Dec-2022			08-Dec-2022	
Loss on Ignition in soils	12-Dec-2022			12-Dec-2022	
Mercury Dissolved	12-Dec-2022			09-Dec-2022	
Metals in solid samples by OES	09-Dec-2022			09-Dec-2022	
Moisture at 105C	07-Dec-2022			07-Dec-2022	
PAH 16 & 17 Calc	19-Dec-2022			19-Dec-2022	
PAH by GCMS	08-Dec-2022			12-Dec-2022	
PCBs by GCMS	12-Dec-2022			12-Dec-2022	
PFAS by LCMS (S-PFCLMS02-C)	04-Jan-2023		04-Jan-2023	04-Jan-2023	
PFAS by LCMS on solids (S-PFCLMS02)	06-Feb-2023	06-Feb-2023			06-Feb-2023
pH	07-Dec-2022			07-Dec-2022	
pH Value of Filtered Water	12-Dec-2022			12-Dec-2022	
Phenols by HPLC (W)	12-Dec-2022			12-Dec-2022	
Sample description	09-Jan-2023	07-Dec-2022	09-Jan-2023	07-Dec-2022	09-Jan-2023
Total Dissolved Solids on Leachates		12-Dec-2022		12-Dec-2022	
Total Organic Carbon		12-Dec-2022		12-Dec-2022	
TPH CWG GC (S)		09-Dec-2022		09-Dec-2022	
VOC MS (S)		09-Dec-2022		09-Dec-2022	



CERTIFICATE OF ANALYSIS

Work Order	: PR22C6983	Issue Date	: 04-Jan-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221206-75	Page	: 1 of 3
Order number	: ----	Date Samples	: 13-Dec-2022
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 13-Dec-2022 - 04-Jan-2023
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

				27271926 GI6/1.0-2.0 PR22C6983001 07-Dec-2022 07:27		27271957 GK6/1.0-2.0 PR22C6983002 07-Dec-2022 07:29		27271981 GN5/0.1-1.0 PR22C6983003 07-Dec-2022 07:31	
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	0.768	± 30.0%	<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	0.562	± 30.0%	<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 (PFTriDA)	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	2.40	± 30.0%	<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	3.56	± 30.0%	<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		27271926 GI6/1.0-2.0		27271957 GK6/1.0-2.0		27271981 GN5/0.1-1.0	
				Laboratory sample ID		PR22C6983001		PR22C6983002		PR22C6983003	
				Client sampling date / time		07-Dec-2022 07:27		07-Dec-2022 07:29		07-Dec-2022 07:31	
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	---	<0.500	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<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	---	<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	%	69.0	± 6.0%	71.8	± 6.0%	67.1	± 6.0%	67.1	± 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.

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.

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
221206-75	27270430	GI6/0.1-1.0	04/01/2023	Sample ID Change	GI6/0.1-1.0	GJ6/0.1-1.0	674183
	27270437	GI6/1.0-2.0	04/01/2023	Sample ID Change	GI6/1.0-2.0	GJ6/1.0-2.0	674183



CERTIFICATE OF ANALYSIS

Work Order	: PR2302817	Issue Date	: 06-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221206-75	Page	: 1 of 2
Order number	: ----	Date Samples	: 12-Jan-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 12-Jan-2023 - 06-Feb-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

				27382671 GJ6/0.1-1.0		27382737 GK6/0.1-1.0		27382670 GN5/1.0-2.0	
				PR2302817001		PR2302817002		PR2302817003	
				09-Jan-2023 11:54		09-Jan-2023 12:13		09-Jan-2023 11:53	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	0.000824	± 30.0%	<0.000500	----	<0.000500	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	0.00188	± 30.0%	<0.000500	----	<0.000500	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	0.00151	± 30.0%	<0.000500	----	<0.000500	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	0.00138	± 30.0%	<0.000500	----	<0.000500	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.00250	± 30.0%	<0.000500	----	<0.000500	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.00132	± 30.0%	<0.000500	----	<0.000500	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00386	± 30.0%	<0.000500	----	<0.000500	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.0286	± 30.0%	0.000864	± 30.0%	<0.000500	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.0419	± 40.0%	0.00086	± 40.0%	<0.00300	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	79.8	± 5.0%	86.2	± 5.0%	86.7	± 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: 221206-75
Client Ref: DAA PFAS

Report Number: 677631
Location: Dublin Airport

Superseded Report: 674204

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

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 February 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	221222-90
Your Reference:	40000208
Location:	DAA
Report No:	677496
Order Number:	28002977

This report has been revised and directly supersedes 677320 in its entirety.

We received 10 samples on Thursday December 22, 2022 and 10 of these samples were scheduled for analysis which was completed on Friday February 03, 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: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27353984	GM7		0.10 - 1.00	15/12/2022
27353985	GM7		1.00 - 2.00	15/12/2022
27353982	GM7D		0.10 - 1.00	15/12/2022
27353983	GM7D		1.00 - 2.00	15/12/2022
27353975	GN4		0.10 - 1.00	19/12/2022
27353976	GN4		1.00 - 2.00	19/12/2022
27353977	GN7		0.10 - 1.00	19/12/2022
27353979	GN7		1.00 - 2.00	19/12/2022
27353980	GO7		0.10 - 1.00	13/12/2022
27353981	GO7		1.00 - 2.00	13/12/2022

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

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

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	27353980		CO7				0.10 - 1.00		1 kg TUB with Handle (ALE260)		S	
	27353979		CN7				1.00 - 2.00		250g Amber jar (ALE210)		S	
	27353977		CN7				0.10 - 1.00		1 kg TUB with Handle (ALE260)		S	
	27353976		CN4				1.00 - 2.00		250g Amber jar (ALE210)		S	
	27353975		CN4				0.10 - 1.00		1 kg TUB with Handle (ALE260)		S	
	27353983		GM7D				1.00 - 2.00		250g Amber jar (ALE210)		S	
	27353982		GM7D				0.10 - 1.00		1 kg TUB with Handle (ALE260)		S	
	27353985		GM7				1.00 - 2.00		250g Amber jar (ALE210)		S	
	27353984		GM7				0.10 - 1.00		1 kg TUB with Handle (ALE260)		S	
Anions by Kone (w)	All		NDPs: 0 Tests: 2									
Asbestos ID in Solid Samples	All		NDPs: 0 Tests: 2									
CEN Readings	All		NDPs: 0 Tests: 2									
Chromium III	All		NDPs: 0 Tests: 2									
Coronene	All		NDPs: 0 Tests: 2									
Dissolved Metals by ICP-MS	All		NDPs: 0 Tests: 2									
Dissolved Organic/Inorganic Carbon	All		NDPs: 0 Tests: 2									
EPH by GCxGC-FID	All		NDPs: 0 Tests: 2									
EPH CWG GC (S)	All		NDPs: 0 Tests: 2									
Fluoride	All		NDPs: 0 Tests: 2									
GRO by GC-FID (S)	All		NDPs: 0 Tests: 2									
Hexavalent Chromium (s)	All		NDPs: 0 Tests: 2									
Loss on Ignition in soils	All		NDPs: 0 Tests: 2									
Mercury Dissolved	All		NDPs: 0 Tests: 2									
Metals in solid samples by OES	All		NDPs: 0 Tests: 2									



Superseded Report: 677320

Page 5 of 29



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

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
27353984	GM7	0.10 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
27353985	GM7	1.00 - 2.00	Dark Brown	Sandy Loam	Stones	Vegetation
27353982	GM7D	0.10 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27353983	GM7D	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27353975	GN4	0.10 - 1.00	Dark Brown	Sandy Clay	Stones	Vegetation
27353976	GN4	1.00 - 2.00	Dark Brown	Sandy Clay	Stones	Vegetation
27353977	GN7	0.10 - 1.00	Dark Brown	Sandy Clay	Stones	Vegetation
27353979	GN7	1.00 - 2.00	Dark Brown	Sandy Clay	Stones	Vegetation
27353980	GO7	0.10 - 1.00	Light Brown	Clay Loam	Stones	Vegetation
27353981	GO7	1.00 - 2.00	Dark 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: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Results Legend			Customer Sample Ref.	GM7	GM7	GM7D	GM7D	GN4	GN4
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 15/12/2022	0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 15/12/2022	0.10 - 1.00 Unspecified Solid (UNS) 19/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 19/12/2022
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)									
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	17	12	18	11	15	10	
Perfluorobutanoic acid (PFBA)*	µg/kg	SUB	0.735	<0.5	0.706	<0.5	<0.5	<0.5	
Perfluoropentanoic acid (PFPeA)*	µg/kg	SUB	2.08	1.42	1.66	<0.5	<0.5	<0.5	
Perfluorohexanoic acid (PFHxA)*	µg/kg	SUB	1.05	1.18	0.994	<0.5	<0.5	<0.5	
Perfluoroheptanoic acid (PFHpA)*	µg/kg	SUB	1.31	1.15	1.28	<0.5	<0.5	<0.5	
Perfluorooctanoic acid (PFOA)*	µg/kg	SUB	4.41	3.74	3.85	1.12	<0.5	<0.5	
Perfluorononanoic acid (PFNA)*	µg/kg	SUB	10	15.4	8.45	1.78	<0.5	<0.5	
Perfluorodecanoic acid (PFDA)*	µg/kg	SUB	1.09	<0.5	0.564	<0.5	<0.5	<0.5	
Perfluoroundecanoic acid (PFUnDA)*	µg/kg	SUB	4.72	1.1	2	<0.5	<0.5	<0.5	
Perfluorododecanoic acid (PFDoDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotridecanoic acid (PFTrDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorotetradecanoic acid (PFTeDA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexadecanoic acid (PFHxDA)*	µg/kg	SUB	<5	<5	<5	<5	<5	<5	
perfluorooctadecanoic acid (PFOcDA)*	µg/kg	SUB	<5	<5	<5	<5	<5	<5	
Perfluorobutane sulfonic acid (PFBS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluoropentane sulfonic acid (PFPeS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorohexane sulfonic acid (PFHxS)*	µg/kg	SUB	2.55	10	3	1.01	<0.5	<0.5	
Perfluoroheptane sulfonic acid (PFHpS)*	µg/kg	SUB	1.29	3.85	1.11	<0.5	<0.5	<0.5	
Perfluorooctane sulfonic acid (PFOS)*	µg/kg	SUB	99.1	118	40.4	7.56	0.887	<0.5	
Perfluorodecane sulfonic acid (PFDS)*	µg/kg	SUB	0.719	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorononane sulfonic acid (PFNS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorododecane sulfonic acid (PFDoDS)*	µg/kg	SUB	<0.5	<0.5	<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	<0.5	<0.5	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	µg/kg	SUB	<0.5	0.898	<0.5	<0.5	<0.5	<0.5	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	µg/kg	SUB	2.74	4.58	1.12	0.638	<0.5	<0.5	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamide (FOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamide (MeFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Ethyl perfluorooctane sulfonamidoethanol*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
N-Methyl perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Results Legend			Customer Sample Ref.		GM7	GM7	GM7D	GM7D	GN4	GN4
# 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		0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 15/12/2022	0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 15/12/2022	0.10 - 1.00 Unspecified Solid (UNS) 19/12/2022	1.00 - 2.00 Unspecified Solid (UNS) 19/12/2022
Component	LOD/Units	Method								
N-Ethyl perfluorooctane sulfonamidoacetic acid*	µg/kg	SUB			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7H-perfluoroheptanoic acid (HPFHpA)*	µg/kg	SUB			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoro-3 7-dimethyloctanoic acid (P37DMOA)*	µg/kg	SUB			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Loss on ignition	<0.7 %	TM018			4.63		5.46			
Organic Carbon, Total	<0.2 %	TM132			1.26		1.41			
pH	1 pH Units	TM133			8.44		8.33			
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6		<0.6			
PCB congener 28	<3 µg/kg	TM168			<3		<3			
PCB congener 52	<3 µg/kg	TM168			<3		<3			
PCB congener 101	<3 µg/kg	TM168			<3		<3			
PCB congener 118	<3 µg/kg	TM168			<3		<3			
PCB congener 138	<3 µg/kg	TM168			<3		<3			
PCB congener 153	<3 µg/kg	TM168			<3		<3			
PCB congener 180	<3 µg/kg	TM168			<3		<3			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168			<21		<21			
Chromium, Trivalent	<0.9 mg/kg	TM181			9.35		13.4			
Antimony	<0.6 mg/kg	TM181			1.15		1.46			
Arsenic	<0.6 mg/kg	TM181			14.2		15.6			
Barium	<0.6 mg/kg	TM181			119		99.1			
Cadmium	<0.02 mg/kg	TM181			1.97		1.81			
Chromium	<0.9 mg/kg	TM181			9.35		13.4			
Copper	<1.4 mg/kg	TM181			30.5		35.2			
Lead	<0.7 mg/kg	TM181			31.2		50.3			
Mercury	<0.1 mg/kg	TM181			<0.1		<0.1			
Molybdenum	<0.1 mg/kg	TM181			3.92		3.37			
Nickel	<0.2 mg/kg	TM181			49		38.1			
Selenium	<1 mg/kg	TM181			1.39		1.32			
Zinc	<1.9 mg/kg	TM181			88		121			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10		<10			
Coronene	<200 µg/kg	TM410			<200		<200			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415			<5		<5			



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Results Legend		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	GN7	GN7	GO7	GO7		
# ISO17025 accredited.			0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00		
M mCERTS accredited.			Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)		
aq Aqueous / settled sample.			19/12/2022	19/12/2022	13/12/2022	13/12/2022		
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						
Moisture Content Ratio (% of as received sample)	%	PM024	12	10	11	10		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB				<0.0005		
Perfluorobutanoic acid (PFBA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB				<0.0005		
Perfluoropentanoic acid (PFPeA)*	µg/kg	SUB	1.71	0.507	<0.5			
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB				<0.0005		
Perfluorohexanoic acid (PFHxA)*	µg/kg	SUB	1.26	<0.5	<0.5			
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB				<0.0005		
Perfluoroheptanoic acid (PFHpA)*	µg/kg	SUB	0.959	<0.5	<0.5			
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB				<0.0005		
Perfluorooctanoic acid (PFOA)*	µg/kg	SUB	0.756	0.989	<0.5			
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB				<0.0005		
Perfluorononanoic acid (PFNA)*	µg/kg	SUB	0.504	1.16	<0.5			
Perfluorodecanoic acid (PFDA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB				<0.0005		
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB				<0.0005		
Perfluoroundecanoic acid (PFUnDA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorododecanoic acid (PFDoDA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB				<0.0005		
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB				<0.0005		
Perfluorotridecanoic acid (PFTriDA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB				<0.0005		
Perfluorotetradecanoic acid (PFTeDA)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexadecanoic acid (PFHxDA)*	µg/kg	SUB	<5	<5	<5			
Perfluorononanoic acid (PFNA)*	mg/kg	SUB				<0.0005		
perfluorooctadecanoic acid (PFOcDA)*	µg/kg	SUB	<5	<5	<5			
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB				<0.0005		
Perfluorobutane sulfonic acid (PFBS)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB				<0.0005		
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB				<0.0005		
Perfluoropentane sulfonic acid (PFPeS)*	µg/kg	SUB	<0.5	<0.5	<0.5			
Perfluorohexane sulfonic acid (PFHxS)*	µg/kg	SUB	0.623	3.26	<0.5			
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB				<0.0005		

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208Report Number: 677496
Location: DAA

Superseded Report: 677320

TPH CWG (S)

Results Legend		Customer Sample Ref.	GM7	GM7D			
# 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	0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022	0.10 - 1.00 Unspecified Solid (UNS) 15/12/2022			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	84 @	84 @			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics >EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aromatics >EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aromatics >EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aromatics >EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2380 @	1750 @			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Aromatics >EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @			
Total Aromatics >EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000			
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089	<20 @	<20 @			
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089	<20 @	<20 @			
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089	<20 @	<20 @			
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089	<20 @	<20 @			
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089	<20 @	<20 @			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @			

SDG: 221222-90

Report Number: 677496

Superseded Report: 677320

Client Ref.: 40000208

Location: DAA

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

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	GM7 0.10 - 1.00 MISC_SOLID 15/12/2022 00:00:00 22/12/2022 09:40:00 221222-90 27353984 TM048	05/01/2022	Paul Poynton	N/A	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	GM7D 0.10 - 1.00 MISC_SOLID 15/12/2022 00:00:00 22/12/2022 09:40:00 221222-90 27353982 TM048	06/01/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208Report Number: 677496
Location: DAA

Superseded Report: 677320

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.108
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	DAA
Natural Moisture Content (%)	20.8
Dry Matter Content (%)	82.8

Case	
SDG	221222-90
Lab Sample Number(s)	27353982
Sampled Date	15-Dec-2022
Customer Sample Ref.	GM7D
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.41
Loss on Ignition (%)	5.46
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.33
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00604	<0.0002	0.0604	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00285	<0.0003	0.0285	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0103	<0.003	0.103	<0.03	0.5	10	30
Nickel	0.000719	<0.0004	0.00719	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.769	<0.5	7.69	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	96.9	<10	969	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.94	<3	39.4	<30	500	800	1000

Leach Test Information

Date Prepared	04-Jan-2023
pH (pH Units)	8.52
Conductivity (µS/cm)	134
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 10:09:47

10:09:23 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208Report Number: 677496
Location: DAA

Superseded Report: 677320

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	DAA
Natural Moisture Content (%)	19
Dry Matter Content (%)	84

Case	
SDG	221222-90
Lab Sample Number(s)	27353984
Sampled Date	15-Dec-2022
Customer Sample Ref.	GM7
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.26
Loss on Ignition (%)	4.63
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.44
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00948	<0.0002	0.0948	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0018	<0.001	0.018	<0.01	0.5	10	70
Copper	0.0034	<0.0003	0.034	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00776	<0.003	0.0776	<0.03	0.5	10	30
Nickel	0.000579	<0.0004	0.00579	<0.004	0.4	10	40
Lead	0.00058	<0.0002	0.0058	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.696	<0.5	6.96	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	88.5	<10	885	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.69	<3	46.9	<30	500	800	1000

Leach Test Information

Date Prepared	04-Jan-2023
pH (pH Units)	8.39
Conductivity (µS/cm)	123
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

06/02/2023 10:09:47

10:09:23 06/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 221222-90
Client Ref.: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	27353984	27353985	27353982	27353983	27353975	27353976	27353977	27353979	27353980	27353981
AGS Ref.	GM7	GM7	GM7D	GM7D	GN4	GN4	GN7	GN7	GO7	GO7
Depth	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
Type	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Anions by Kone (w)	05-Jan-2023		05-Jan-2023							
Asbestos ID in Solid Samples	05-Jan-2023		06-Jan-2023							
CEN 10:1 Leachate (1 Stage)	04-Jan-2023		04-Jan-2023							
CEN Readings	06-Jan-2023		06-Jan-2023							
Chromium III	09-Jan-2023		09-Jan-2023							
Coronene	06-Jan-2023		06-Jan-2023							
Dissolved Metals by ICP-MS	10-Jan-2023		10-Jan-2023							
Dissolved Organic/Inorganic Carbon	06-Jan-2023		06-Jan-2023							
EPH by GCxGC-FID	06-Jan-2023		06-Jan-2023							
EPH CWG GC (S)	05-Jan-2023		05-Jan-2023							
Fluoride	05-Jan-2023		05-Jan-2023							
GRO by GC-FID (S)	06-Jan-2023		06-Jan-2023							
Hexavalent Chromium (s)	05-Jan-2023		05-Jan-2023							
Loss on Ignition in soils	09-Jan-2023		09-Jan-2023							
Mercury Dissolved	09-Jan-2023		09-Jan-2023							
Metals in solid samples by OES	09-Jan-2023		09-Jan-2023							
Moisture at 105C	04-Jan-2023		04-Jan-2023							
PAH 16 & 17 Calc	06-Jan-2023		06-Jan-2023							
PAH by GCMS	06-Jan-2023		06-Jan-2023							
PCBs by GCMS	04-Jan-2023		04-Jan-2023							
PFAS by LCMS (S-PFCLMS02-C)	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	
PFAS by LCMS on solids (S-PFCLMS02)										03-Feb-2023
pH	04-Jan-2023		04-Jan-2023							
pH Value of Filtered Water	06-Jan-2023		06-Jan-2023							
Phenols by HPLC (W)	06-Jan-2023		06-Jan-2023							
Sample description	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	03-Jan-2023	09-Jan-2023
Total Dissolved Solids on Leachates	05-Jan-2023		05-Jan-2023							
Total Organic Carbon	10-Jan-2023		09-Jan-2023							
TPH CWG GC (S)	06-Jan-2023		06-Jan-2023							
VOC MS (S)	04-Jan-2023		04-Jan-2023							



CERTIFICATE OF ANALYSIS

Work Order	: PR2300529	Issue Date	: 01-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221222-90	Page	: 1 of 6
Order number	: ----	Date Samples	: 09-Jan-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 09-Jan-2023 - 01-Feb-2023
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

				27366721 07ABCD		27366747 GN4		27366764 GN4	
				PR2300529001		PR2300529002		PR2300529003	
				03-Jan-2023 12:05		03-Jan-2023 12:14		03-Jan-2023 12:17	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<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 (PFTriDA)	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	1.03	± 30.0%	0.887	± 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	---



Sub-Matrix: SOIL				Client sample ID		27366721 07ABCD		27366747 GN4		27366764 GN4	
				Laboratory sample ID		PR2300529001		PR2300529002		PR2300529003	
				Client sampling date / time		03-Jan-2023 12:05		03-Jan-2023 12:14		03-Jan-2023 12:17	
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	---	<0.500	---
7H-perfluoroheptanoic acid (HPFHpA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<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	---	<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	%	87.2	± 6.0%	81.4	± 6.0%	87.4	± 6.0%	87.4	± 6.0%

Sub-Matrix: SOIL				Client sample ID		27366724 GN7		27366726 GN7		27366757 M7	
				Laboratory sample ID		PR2300529004		PR2300529005		PR2300529006	
				Client sampling date / time		03-Jan-2023 12:06		03-Jan-2023 12:07		03-Jan-2023 12:16	
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	---	<0.500	---	0.735	± 30.0%	0.735	± 30.0%
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	1.71	± 30.0%	0.507	± 30.0%	2.08	± 30.0%	2.08	± 30.0%
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	1.26	± 30.0%	<0.500	---	1.05	± 30.0%	1.05	± 30.0%
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	0.959	± 30.0%	<0.500	---	1.31	± 30.0%	1.31	± 30.0%
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	0.756	± 30.0%	0.989	± 30.0%	4.41	± 30.0%	4.41	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	0.504	± 30.0%	1.16	± 30.0%	10.0	± 30.0%	10.0	± 30.0%
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.09	± 30.0%	1.09	± 30.0%
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	4.72	± 30.0%	4.72	± 30.0%
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 (PFTeDA)	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	0.623	± 30.0%	3.26	± 30.0%	2.55	± 30.0%	2.55	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	1.29	± 30.0%	1.29	± 30.0%
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	0.986	± 30.0%	2.38	± 30.0%	99.1	± 30.0%	99.1	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	0.719	± 30.0%	0.719	± 30.0%
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	---	2.74	± 30.0%	2.74	± 30.0%
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	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---	<0.500	---



Sub-Matrix: SOIL				Client sample ID		27366724 GN7		27366726 GN7		27366757 M7	
				Laboratory sample ID		PR2300529004		PR2300529005		PR2300529006	
				Client sampling date / time		03-Jan-2023 12:06		03-Jan-2023 12:07		03-Jan-2023 12:16	
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	%	86.9	± 6.0%	87.1	± 6.0%	83.8	± 6.0%		

Sub-Matrix: SOIL			Client sample ID		27366766 M7		27366720 M7D		27366725 M7D		
				Laboratory sample ID		PR2300529007		PR2300529008		PR2300529009	
Client sampling date / time				03-Jan-2023 12:18		03-Jan-2023 12:05		03-Jan-2023 12:06			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	0.706	± 30.0%	<0.500	----		
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.500	µg/kg DW	1.42	± 30.0%	1.66	± 30.0%	<0.500	----		
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.500	µg/kg DW	1.18	± 30.0%	0.994	± 30.0%	<0.500	----		
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.500	µg/kg DW	1.15	± 30.0%	1.28	± 30.0%	<0.500	----		
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.500	µg/kg DW	3.74	± 30.0%	3.85	± 30.0%	1.12	± 30.0%		
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.500	µg/kg DW	15.4	± 30.0%	8.45	± 30.0%	1.78	± 30.0%		
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	----	0.564	± 30.0%	<0.500	----		
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.500	µg/kg DW	1.10	± 30.0%	2.00	± 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	<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	10.0	± 30.0%	3.00	± 30.0%	1.01	± 30.0%		



Sub-Matrix: SOIL				Client sample ID		27366766 M7		27366720 M7D		27366725 M7D	
Laboratory sample ID				PR2300529007		PR2300529008		PR2300529009			
Client sampling date / time				03-Jan-2023 12:18		03-Jan-2023 12:05		03-Jan-2023 12:06			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.500	µg/kg DW	3.85	± 30.0%	1.11	± 30.0%	<0.500	---		
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.500	µg/kg DW	118	± 30.0%	40.4	± 30.0%	7.56	± 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	0.898	± 30.0%	<0.500	---	<0.500	---		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.500	µg/kg DW	4.58	± 30.0%	1.12	± 30.0%	0.638	± 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	---		
Perfluorooctane sulfonamidoacetic acid (FOSAA)	S-PFCLMS02	0.500	µg/kg DW	<0.500	---	<0.500	---	<0.500	---		
perfluorooctadecanoic acid (PFODCA)	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 (P37DMA)	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	%	82.7	± 6.0%	85.8	± 6.0%	87.3	± 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.

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

Work Order	: PR2302818	Issue Date	: 03-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 221222-90	Page	: 1 of 2
Order number	: ----	Date Samples	: 12-Jan-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 12-Jan-2023 - 03-Feb-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

27382834
07ABCD

Laboratory sample ID

PR2302818001

Client sampling date / time

09-Jan-2023 13:39

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	----	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.4	± 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 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.

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
221222-90	27353980	07ABCD	06/02/2023	Sample ID Change	07ABCD	GO7	677320
221222-90	27353981	07ABCD	06/02/2023	Sample ID Change	07ABCD	GO7	677320
221222-90	27353984	M7	06/02/2023	Sample ID Change	M7	GM7	677320
221222-90	27353985	M7	06/02/2023	Sample ID Change	M7	GM7	677320
221222-90	27353982	M7D	06/02/2023	Sample ID Change	M7D	GM7D	677320
221222-90	27353983	M7D	06/02/2023	Sample ID Change	M7D	GM7D	677320



CERTIFICATE OF ANALYSIS

SDG: 221222-90
Client Ref: 40000208

Report Number: 677496
Location: DAA

Superseded Report: 677320

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 09 February 2023
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 230114-36
Your Reference: DAA PFAS
Location: Dublin Airport
Report No: 678191
Order Number: 28002977

This report has been revised and directly supersedes 676147 in its entirety.

We received 8 samples on Friday January 13, 2023 and 8 of these samples were scheduled for analysis which was completed on Thursday February 09, 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: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27407888	G16		0.10 - 1.00	11/01/2023
27407889	G16		1.00 - 2.00	11/01/2023
27407886	GK-L7		0.10 - 1.00	11/01/2023
27407887	GK-L7		1.00 - 2.00	11/01/2023
27407890	PR01			10/01/2023
27407891	PR02A			10/01/2023
27407892	PR02B			10/01/2023
27407893	SP07			10/01/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

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	
	27407893		SP07							250g Amber Jar (ALE210)	S	
	27407892		PR02B							1kg TUB with Handle (ALE260)	S	
	27407891		PR02A							250g Amber Jar (ALE210)	S	
	27407890		PR01							1kg TUB with Handle (ALE260)	S	
	27407887		GK-L7							250g Amber Jar (ALE210)	S	
27407886		GK-L7							1kg TUB with Handle (ALE260)	S		
27407889		G16							250g Amber Jar (ALE210)	S		
27407888		G16							1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		
									250g Amber Jar (ALE210)	S		
									1kg TUB with Handle (ALE260)	S		

CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191

Superseded Report: 676147

Location: Dublin Airport

Results Legend



Test



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

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

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
27407888	G16	0.10 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27407889	G16	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27407886	GK-L7	0.10 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27407887	GK-L7	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27407890	PR01		Dark Brown	Silty Clay Loam	Stones	Vegetation
27407891	PR02A		Dark Brown	Sandy Clay Loam	Stones	Vegetation
27407892	PR02B		Dark Brown	Sandy Clay Loam	Stones	Vegetation
27407893	SP07		Dark Brown	Silty 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: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Results Legend		Customer Sample Ref.						
# ISO17025 accredited.			G16	G16	GK-L7	GK-L7	PR01	PR02A
M mCERTS accredited.		Depth (m)	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00		
aq Aqueous / settled sample.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
diss.filt Dissolved / filtered sample.		Date Sampled	11/01/2023	11/01/2023	11/01/2023	11/01/2023	10/01/2023	10/01/2023
tot.unfilt Total / unfiltered sample.		Sample Time						
* Subcontracted - refer to subcontractor report for accreditation status.		Date Received	13/01/2023	13/01/2023	13/01/2023	13/01/2023	13/01/2023	13/01/2023
** % 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		SDG Ref	230114-36	230114-36	230114-36	230114-36	230114-36	230114-36
(F) Trigger breach confirmed		Lab Sample No.(s)	27407888	27407889	27407886	27407887	27407890	27407891
1-4*§@ Sample deviation (see appendix)		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	20	17	19	13	21	14
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	0.000678	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	0.000567	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	0.00176	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.00229	0.000881	<0.0005	<0.0005	0.00101	<0.0005
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	0.00145	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.00245	<0.0005	<0.0005	<0.0005	0.000501	<0.0005
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.0159	0.00141	<0.0005	<0.0005	0.00343	<0.0005
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.00337	0.000582	0.000511	0.000561	0.000777	<0.0005
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.00158	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	0.000596	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Loss on ignition	<0.7 %	TM018					4.73	3.91
							M	M
Organic Carbon, Total	<0.2 %	TM132					1.11	1.53
							M	M
pH	1 pH Units	TM133					8.46	8.42
							M	M
Chromium, Hexavalent	<0.6 mg/kg	TM151					<0.6	<0.6
							M	M
PCB congener 28	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 52	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 101	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 118	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 138	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 153	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
PCB congener 180	<0.003 mg/kg	TM168					<0.003	<0.06
							M	M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021	<0.42
Chromium, Trivalent	<0.9 mg/kg	TM181					12.9	12.7
Antimony	<0.6 mg/kg	TM181					1.67	0.611
							#	#
Arsenic	<0.6 mg/kg	TM181					15.9	17.4
							M	M



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Results Legend		Customer Sample Ref.	G16	G16	GK-L7	GK-L7	PR01	PR02A
# 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 1-4-9@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.10 - 1.00 Soil/Solid (S) 11/01/2023 13/01/2023 230114-36 27407888	1.00 - 2.00 Soil/Solid (S) 11/01/2023 13/01/2023 230114-36 27407889	0.10 - 1.00 Soil/Solid (S) 11/01/2023 13/01/2023 230114-36 27407886	1.00 - 2.00 Soil/Solid (S) 11/01/2023 13/01/2023 230114-36 27407887	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407890	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407891
Component	LOD/Units	Method						
Barium	<0.6 mg/kg	TM181					117 #	122 #
Cadmium	<0.02 mg/kg	TM181					1.91 M	1.08 M
Chromium	<0.9 mg/kg	TM181					12.9 M	12.7 M
Copper	<1.4 mg/kg	TM181					32.4 M	21.7 M
Lead	<0.7 mg/kg	TM181					40.2 M	34.7 M
Mercury	<0.1 mg/kg	TM181					<0.1 M	<0.1 M
Molybdenum	<0.1 mg/kg	TM181					3.39 #	3.24 #
Nickel	<0.2 mg/kg	TM181					43.7 M	26.8 M
Selenium	<1 mg/kg	TM181					1.49 #	1.15 #
Zinc	<1.9 mg/kg	TM181					92 M	78.3 M
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	0.00154	<0.001
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	0.00153	<0.001	<0.001	<0.001	<0.001	<0.001
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	0.00304	<0.001	<0.001	<0.001	<0.001	<0.001
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001 mg/kg	TM338	0.00273	<0.001	0.00114	<0.001	<0.001	<0.001
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	0.00269	<0.001	<0.001	<0.001	<0.001	<0.001
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	0.00108	<0.001	<0.001	<0.001	<0.001	<0.001
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.001 mg/kg	TM338	0.0182	0.0016	<0.001	<0.001	0.00222	<0.001
Branched PFOS	<0.001 mg/kg	TM338	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total PFOS	<0.001 mg/kg	TM338	0.0208	0.0016	<0.001	<0.001	0.00222	<0.001
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10	<10
Coronene	<0.2 mg/kg	TM410					<0.2	<2
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415					<5	42.4



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Results Legend		Customer Sample Ref.	PR02B	SP07			
# ISO17025 accredited. M mCERES 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*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Soil/Solid (S) 10/01/2023	Soil/Solid (S) 10/01/2023			
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	13	15			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	0.00142			
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005			
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005			
Loss on ignition	<0.7 %	TM018	3 M	4.4 M			
Organic Carbon, Total	<0.2 %	TM132	0.634 M	0.627 M			
pH	1 pH Units	TM133	9.18 M	8.47 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M			
PCB congener 28	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 52	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 101	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 118	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 138	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 153	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
PCB congener 180	<0.003 mg/kg	TM168	<0.03 M	<0.015 M			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.21	<0.105			
Chromium, Trivalent	<0.9 mg/kg	TM181	8.33	11.4			
Antimony	<0.6 mg/kg	TM181	<0.6 #	1.17 #			
Arsenic	<0.6 mg/kg	TM181	26.4 M	14.2 M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Results Legend		Customer Sample Ref.	PR02B	SP07				
# 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)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407892	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407893				
Component	LOD/Units	Method						
Barium	<0.6 mg/kg	TM181	90.2	107	#	#		
Cadmium	<0.02 mg/kg	TM181	0.862	1.68	M	M		
Chromium	<0.9 mg/kg	TM181	8.33	11.4	M	M		
Copper	<1.4 mg/kg	TM181	16.3	27	M	M		
Lead	<0.7 mg/kg	TM181	23.5	34	M	M		
Mercury	<0.1 mg/kg	TM181	<0.1	<0.1	M	M		
Molybdenum	<0.1 mg/kg	TM181	1.29	2.97	#	#		
Nickel	<0.2 mg/kg	TM181	22.2	38.5	M	M		
Selenium	<1 mg/kg	TM181		1.18		#		
Zinc	<1.9 mg/kg	TM181	71.8	84.2	M	M		
PFBA (375-22-4) Perfluoro-n-butanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003				
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<0.003 mg/kg	TM338	<0.003	<0.003				
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<0.002 mg/kg	TM338	<0.002	<0.002				
PFBS (375-73-5) Perfluoro-1-butanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001				
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
PFHxS (355-46-4) Perfluoro-1-hexanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001				
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
PFHpS (375-92-8) Perfluoro-1-heptanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001				
PFDA (335-76-2) Perfluoro-n-decanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
Linear PFOS(1763-23-1) Perfluoro-1-octanedisulfonate	<0.001 mg/kg	TM338	<0.001	0.00162				
Branched PFOS	<0.001 mg/kg	TM338	<0.001	<0.001				
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<0.001 mg/kg	TM338	<0.001	<0.001				
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<0.001 mg/kg	TM338	<0.001	<0.001				
6:2-FTS (27619-97-2)	<0.001 mg/kg	TM338	<0.001	<0.001				
PFDS (335-73-3) Perfluoro-1-decanedisulfonate	<0.001 mg/kg	TM338	<0.001	<0.001				
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<0.001 mg/kg	TM338	<0.001	<0.001				
Total PFOS	<0.001 mg/kg	TM338	<0.001	0.00162				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<0.2 mg/kg	TM410	<0.2	<0.2				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	45.2	<5				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

TPH CWG (S)

Results Legend			Customer Sample Ref.		PR01	PR02A	PR02B	SP07		
# 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		Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407890	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407891	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407892	Soil/Solid (S) 10/01/2023 13/01/2023 230114-36 27407893		
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089	80.8	@	73.1	@	75.4	@	81.6	@
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	@	<0.01	@	<0.01	@	<0.01	@
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	@	0.0281	@	0.0219	@	<0.01	@
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	@	0.0246	@	0.0185	@	<0.01	@
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	@ #	<1	@ #	<1	@ #	<1	@ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	@ #	<1	@ #	1.4	@ #	<1	@ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	@ #	2.8	@ #	5.53	@ #	<1	@ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	4.27	@ #	16.2	@ #	33.6	@ #	1.89	@ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	@	16.6	@	25.3	@	<1	@
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	@	35.6	@	65.9	@	<5	@
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	11.3	@	237	@	264	@	<10	@
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	@	<0.01	@	<0.01	@	<0.01	@
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	@	<0.01	@	<0.01	@	<0.01	@
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	@	0.0164	@	0.0127	@	<0.01	@
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	@ #	<1	@ #	<1	@ #	<1	@ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	@ #	<1	@ #	<1	@ #	<1	@ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	@ #	3.11	@ #	4.91	@ #	<1	@ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	5.2	@ #	112	@ #	112	@ #	3.88	@ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	@	86.3	@	80.8	@	<1	@
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	@	31.4	@	28.6	@	<1	@
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	6.52	@	202	@	198	@	<5	@
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10	@	237	@	264	@	<10	@
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	@	<0.02	@	<0.02	@	<0.02	@
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	@	<0.02	@	<0.02	@	<0.02	@
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	@	<0.02	@	<0.02	@	<0.02	@
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	@	0.041	@	0.0312	@	<0.02	@
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	@	0.0562	@	0.045	@	<0.02	@
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	@	0.0527	@	<0.05	@	<0.05	@
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	@	<0.05	@	<0.05	@	<0.05	@
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	@	0.0527	@	<0.02	@	<0.02	@



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

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	PR01 SOLID 10/01/2023 00:00:00 13/01/2023 10:10:00 230114-36 27407890 TM048	07/02/2023	Paul Poynton	N/A	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	PR02A SOLID 10/01/2023 00:00:00 13/01/2023 10:10:00 230114-36 27407891 TM048	07/02/23	Eva Guerra	-	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	PR02B SOLID 10/01/2023 00:00:00 13/01/2023 10:10:00 230114-36 27407892 TM048	07/02/23	Eva Guerra	-	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	SP07 SOLID 10/01/2023 00:00:00 13/01/2023 10:10:00 230114-36 27407893 TM048	07/02/23	Eva Guerra	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.109	Natural Moisture Content (%)	22.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	81.7
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	230114-36	
Lab Sample Number(s)	27407890	
Sampled Date	10-Jan-2023	
Customer Sample Ref.	PR01	
Depth (m)		

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.11	3	5	6
Loss on Ignition (%)	4.73	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.46	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000507	<0.0005	0.00507	<0.005	0.5	2	25
Barium	0.00854	<0.0002	0.0854	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00118	<0.001	0.0118	<0.01	0.5	10	70
Copper	0.00365	<0.0003	0.0365	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0111	<0.003	0.111	<0.03	0.5	10	30
Nickel	0.00104	<0.0004	0.0104	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.0011	<0.001	0.011	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00241	<0.001	0.0241	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.567	<0.5	5.67	<5	10	150	500
Sulphate (soluble)	10.3	<2	103	<20	1000	20000	50000
Total Dissolved Solids	106	<10	1060	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.05	<3	50.5	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.33
Conductivity (µS/cm)	143
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

09/02/2023 16:12:57

16:12:26 09/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.104	Natural Moisture Content (%)	16
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86.2
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	230114-36	
Lab Sample Number(s)	27407891	
Sampled Date	10-Jan-2023	
Customer Sample Ref.	PR02A	
Depth (m)		

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.53	3	5	6
Loss on Ignition (%)	3.91	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.42	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	42.4	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00277	<0.0005	0.0277	<0.005	0.5	2	25
Barium	0.0148	<0.0002	0.148	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00478	<0.0003	0.0478	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00968	<0.003	0.0968	<0.03	0.5	10	30
Nickel	0.00157	<0.0004	0.0157	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00189	<0.001	0.0189	<0.01	0.06	0.7	5
Selenium	0.00136	<0.001	0.0136	<0.01	0.1	0.5	7
Zinc	0.00127	<0.001	0.0127	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.548	<0.5	5.48	<5	10	150	500
Sulphate (soluble)	25.5	<2	255	<20	1000	20000	50000
Total Dissolved Solids	111	<10	1110	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.62	<3	76.2	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.50
Conductivity (µS/cm)	161
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

09/02/2023 16:12:57

16:12:26 09/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)	17.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	85.1
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	230114-36	
Lab Sample Number(s)	27407892	
Sampled Date	10-Jan-2023	
Customer Sample Ref.	PR02B	
Depth (m)		

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.634	3	5	6
Loss on Ignition (%)	3	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.21	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	45.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.18	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0279	<0.0005	0.279	<0.005	0.5	2	25
Barium	0.00957	<0.0002	0.0957	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00208	<0.001	0.0208	<0.01	0.5	10	70
Copper	0.0126	<0.0003	0.126	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0132	<0.003	0.132	<0.03	0.5	10	30
Nickel	0.00315	<0.0004	0.0315	<0.004	0.4	10	40
Lead	0.000424	<0.0002	0.00424	<0.002	0.5	10	50
Antimony	0.00275	<0.001	0.0275	<0.01	0.06	0.7	5
Selenium	0.00459	<0.001	0.0459	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	2	<2	20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	30.2	<2	302	<20	1000	20000	50000
Total Dissolved Solids	95.4	<10	954	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.24	<3	92.4	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	9.82
Conductivity (µS/cm)	132
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

09/02/2023 16:12:57

16:12:26 09/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFASReport Number: 678191
Location: Dublin Airport

Superseded Report: 676147

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	19.8
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.5
Particle Size <4mm	>95%		

Case	
SDG	230114-36
Lab Sample Number(s)	27407893
Sampled Date	10-Jan-2023
Customer Sample Ref.	SP07
Depth (m)	

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.627
Loss on Ignition (%)	4.4
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.105
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.47
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000979	<0.0005	0.00979	<0.005	0.5	2	25
Barium	0.0115	<0.0002	0.115	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00273	<0.0003	0.0273	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0149	<0.003	0.149	<0.03	0.5	10	30
Nickel	0.000594	<0.0004	0.00594	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00141	<0.001	0.0141	<0.01	0.06	0.7	5
Selenium	0.00126	<0.001	0.0126	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.51	<0.5	5.1	<5	10	150	500
Sulphate (soluble)	12.9	<2	129	<20	1000	20000	50000
Total Dissolved Solids	93.7	<10	937	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.73	<3	37.3	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.59
Conductivity (µS/cm)	132
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

09/02/2023 16:12:57

16:12:26 09/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990:BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM338	PFAS In Solids	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230114-36
Client Ref.: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	27407888	27407889	27407886	27407887	27407890	27407891	27407892	27407893
	G16	G16	GK-L7	GK-L7	PR01	PR02A	PR02B	SP07
	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00				
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)					03-Feb-2023	03-Feb-2023	02-Feb-2023	03-Feb-2023
Asbestos ID in Solid Samples					07-Feb-2023	07-Feb-2023	07-Feb-2023	07-Feb-2023
CEN 10:1 Leachate (1 Stage)					01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023
CEN Readings					07-Feb-2023	03-Feb-2023	07-Feb-2023	03-Feb-2023
Chromium III					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Coronene					06-Feb-2023	03-Feb-2023	06-Feb-2023	06-Feb-2023
Dissolved Metals by ICP-MS					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Dissolved Organic/Inorganic Carbon					03-Feb-2023	03-Feb-2023	03-Feb-2023	03-Feb-2023
EPH by GCxGC-FID					03-Feb-2023	03-Feb-2023	03-Feb-2023	03-Feb-2023
EPH CWG GC (S)					06-Feb-2023	07-Feb-2023	03-Feb-2023	07-Feb-2023
Fluoride					02-Feb-2023	02-Feb-2023	02-Feb-2023	02-Feb-2023
GRO by GC-FID (S)					01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023
Hexavalent Chromium (s)					03-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023
Loss on Ignition in soils					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Mercury Dissolved					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Metals in solid samples by OES					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Moisture at 105C					31-Jan-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023
PAH 16 & 17 Calc					06-Feb-2023	03-Feb-2023	06-Feb-2023	06-Feb-2023
PAH by GCMS					03-Feb-2023	03-Feb-2023	03-Feb-2023	03-Feb-2023
PCBs by GCMS					06-Feb-2023	03-Feb-2023	06-Feb-2023	06-Feb-2023
PFAS by LCMS on solids (S-PFCLMS02)	09-Feb-2023	09-Feb-2023	09-Feb-2023	09-Feb-2023	09-Feb-2023	09-Feb-2023	09-Feb-2023	09-Feb-2023
PFAS Solids	24-Jan-2023	24-Jan-2023	24-Jan-2023	24-Jan-2023	24-Jan-2023	24-Jan-2023	24-Jan-2023	24-Jan-2023
pH					02-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023
pH Value of Filtered Water					03-Feb-2023	03-Feb-2023	03-Feb-2023	03-Feb-2023
Phenols by HPLC (W)					06-Feb-2023	06-Feb-2023	06-Feb-2023	06-Feb-2023
Sample description	20-Jan-2023	20-Jan-2023	20-Jan-2023	20-Jan-2023	20-Jan-2023	20-Jan-2023	20-Jan-2023	20-Jan-2023
Total Dissolved Solids on Leachates					06-Feb-2023	06-Feb-2023	02-Feb-2023	02-Feb-2023
Total Organic Carbon					03-Feb-2023	03-Feb-2023	03-Feb-2023	03-Feb-2023
TPH CWG GC (S)					06-Feb-2023	07-Feb-2023	03-Feb-2023	07-Feb-2023
VOC MS (S)					02-Feb-2023	02-Feb-2023	02-Feb-2023	02-Feb-2023



CERTIFICATE OF ANALYSIS

Work Order	: PR2309409	Issue Date	: 09-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230114-36	Page	: 1 of 2
Order number	: ----	Date Samples	: 03-Feb-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 03-Feb-2023 - 09-Feb-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)



CERTIFICATE OF ANALYSIS

Work Order	: PR2308937	Issue Date	: 09-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230114-36	Page	: 1 of 3
Order number	: ----	Date Samples	: 03-Feb-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 03-Feb-2023 - 09-Feb-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

				27479358 GK-L7		27479365 GK-L7		27479257 PR01	
				PR2308937001		PR2308937002		PR2308937003	
				30-Jan-2023 09:57		30-Jan-2023 09:58		30-Jan-2023 09:45	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.000561	± 30.0%	0.000511	± 30.0%	0.000777	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	0.000501	± 30.0%
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	0.00101	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	0.00343	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.00056	± 40.0%	0.00051	± 40.0%	0.00572	± 40.0%
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.3	± 5.0%	84.8	± 5.0%	77.5	± 5.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID

Client sampling date / time

				27479241 PR02A		27479161 PR02B		27479186 SP07	
				PR2308937004		PR2308937005		PR2308937006	
				30-Jan-2023 09:43		30-Jan-2023 09:35		30-Jan-2023 09:38	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---



Sub-Matrix: SOIL				Client sample ID		27479241 PR02A		27479161 PR02B		27479186 SP07	
				Laboratory sample ID		PR2308937004		PR2308937005		PR2308937006	
				Client sampling date / time		30-Jan-2023 09:43		30-Jan-2023 09:35		30-Jan-2023 09:38	
Parameter		Method	LOR	Unit	Result	MU	Result	MU	Result	MU	
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.00142	± 30.0%	
Perfluorodecane sulfonic acid (PFDS)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorooctane sulfonamide (FOSA)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Sum of 12 PFAS (M1)		S-PFCLMS02	0.00300	mg/kg DW	<0.00300	----	<0.00300	----	0.00142	± 40.0%	
Physical Parameters											
Dry matter @ 105°C		S-DRY-GRCI	0.10	%	79.2	± 5.0%	83.8	± 5.0%	81.7	± 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: 230114-36
Client Ref: DAA PFAS

Report Number: 678191
Location: Dublin Airport

Superseded Report: 676147

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

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 February 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	230125-103
Your Reference:	DAA PFAS
Location:	Dublin Airport
Report No:	679959
Order Number:	28002977

This report has been revised and directly supersedes 679570 in its entirety.

We received 36 samples on Wednesday January 25, 2023 and 36 of these samples were scheduled for analysis which was completed on Wednesday February 22, 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: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27458477	G7B		0.30 - 0.50	18/01/2023
27458476	G7B		0.60	18/01/2023
27457889	GD6		0.30 - 1.00	23/01/2023
27457892	GD6		1.00 - 2.00	23/01/2023
27457903	GD7		0.40 - 1.40	23/01/2023
27457904	GD7		1.40 - 2.40	23/01/2023
27458481	GE6		0.10 - 1.00	13/01/2023
27458480	GE6		1.00 - 2.00	13/01/2023
27458478	GE7		0.10 - 1.00	12/01/2023
27458479	GE7		1.00 - 2.00	12/01/2023
27458468	GF6		0.10 - 1.00	18/01/2023
27458469	GF6		1.00 - 2.00	18/01/2023
27458473	GF7		0.10 - 1.00	17/01/2023
27458472	GF7		1.00 - 2.00	17/01/2023
27457893	GG6		0.30 - 1.00	23/01/2023
27457895	GG6		1.00 - 2.00	20/01/2023
27458471	GG7		0.10 - 1.00	18/01/2023
27458475	GG7		1.00 - 2.00	18/01/2023
27458470	GH6		0.10 - 1.00	12/01/2023
27458467	GH6		1.00 - 2.00	12/01/2023
27458050	GJ3		0.00 - 1.00	24/01/2023
27458051	GJ3		1.00 - 2.00	24/01/2023
27457906	GK3		0.00 - 1.00	23/01/2023
27457905	GK3		1.00 - 2.00	23/01/2023
27458465	GL3		0.00 - 1.00	18/01/2023
27458466	GL3		1.00 - 2.00	18/01/2023
27458047	GL4		0.80 - 1.80	23/01/2023
27458048	GL4		1.80 - 2.80	23/01/2023
27457897	GP6		0.20 - 1.00	20/01/2023
27457898	GP6		1.00 - 2.00	20/01/2023
27457901	GP7		0.20 - 1.00	20/01/2023
27457899	GP7		1.00 - 2.00	20/01/2023
27457896	GQ6		0.20 - 1.00	20/01/2023
27457894	GQ6		1.00 - 2.00	20/01/2023
27457900	GQ7		0.30 - 1.00	20/01/2023
27457902	GQ7		1.00 - 2.00	20/01/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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

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
	27458478		GE7		0.10 - 1.00	500gTUB	S
	27458480		GE6		1.00 - 2.00	250g Glass jar	S
	27458481		GE6		0.10 - 1.00	250g Glass jar	S
	27457904		CD7		1.40 - 2.40	250g Glass jar	S
	27457903		CD7		0.40 - 1.40	60g VOC (ALE215)	S
27457892		GD6		1.00 - 2.00	250g Amber jar (ALE210)	S	
27457889		GD6		0.30 - 1.00	1kg TUB with Handle (ALE260)	S	
27458477		G7B		0.30 - 0.50	250g Amber jar (ALE210)	S	
27458476		G7B		0.60	1kg TUB with Handle (ALE260)	S	
					250g Amber jar (ALE210)	S	
					1kg TUB with Handle (ALE260)	S	
					250g Amber jar (ALE210)	S	
					60g VOC (ALE215)	S	
					250g Amber jar (ALE210)	S	
					1kg TUB with Handle (ALE260)	S	
					250g Amber jar (ALE210)	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	
					500gTUB	S	
					60g VOC (ALE215)	S	
					250g Glass jar	S	

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend



Test



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	
	27458478	27458480	27458481	27458480	27458477	27458476	27457889	27457892	27457903	27457904	27457903	27457904
	CE7	CE6	CE6	CE6	G7B	G7B	GD6	GD6	CD7	CD7	CD7	CD7
	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.40 - 2.40	0.30 - 0.50	0.60	0.30 - 1.00	1.00 - 2.00	0.40 - 1.40	1.40 - 2.40	1.40 - 2.40	1.40 - 2.40
	500gTUB	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar	250g Glass jar
	S	S	S	S	S	S	S	S	S	S	S	S
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 9										
PAH by GCMS	All	NDPs: 0 Tests: 9										
PCBs by GCMS	All	NDPs: 0 Tests: 9										
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 34										
pH	All	NDPs: 0 Tests: 9										
pH Value of Filtered Water	All	NDPs: 0 Tests: 9										
Phenols by HPLC (W)	All	NDPs: 0 Tests: 9										
Sample description	All	NDPs: 0 Tests: 35										
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 9										
Total Organic Carbon	All	NDPs: 0 Tests: 9										
TPH CWG GC (S)	All	NDPs: 0 Tests: 9										
VOC MS (S)	All	NDPs: 0 Tests: 9										



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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
	27458048		CL4		1.80 - 2.80	1kg TUB with Handle (ALE260)	S
	27458047		CL4		0.80 - 1.80	250g Amber Jar (ALE210)	S
	27458466		CL3		1.00 - 2.00	1kg TUB with Handle (ALE260)	S
	27458465		CL3		0.00 - 1.00	1kg TUB with Handle (ALE260)	S
	27457905		GK3		1.00 - 2.00	250g Amber Jar (ALE210)	S
27457906		GK3		0.00 - 1.00	1kg TUB with Handle (ALE260)	S	
27458051		GJ3		1.00 - 2.00	1kg TUB with Handle (ALE260)	S	
27458050		GJ3		0.00 - 1.00	1kg TUB with Handle (ALE260)	S	
27458467		GH6		1.00 - 2.00	250g Amber Jar (ALE210)	S	
27458470		GH6		0.10 - 1.00	250g Amber Jar (ALE210)	S	
Anions by Kone (w)	All	NDPs: 0 Tests: 9					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 9					
CEN Readings	All	NDPs: 0 Tests: 9					
Chromium III	All	NDPs: 0 Tests: 9					
Coronene	All	NDPs: 0 Tests: 9					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 9					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 9					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 9					
EPH CWG GC (S)	All	NDPs: 0 Tests: 9					
Fluoride	All	NDPs: 0 Tests: 9					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 9					
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 9					
Loss on Ignition in soils	All	NDPs: 0 Tests: 9					
Mercury Dissolved	All	NDPs: 0 Tests: 9					
Metals in solid samples by OES	All	NDPs: 0 Tests: 9					



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Lab Sample No(s)									
X Test N No Determination Possible			Customer Sample Reference									
Sample Types -			AGS Reference									
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			Depth (m)									
			Container									
			Sample Type									
			27458048	27458047	27458466	27458465	27457905	27457906	27458051	27458050	27458467	27458470
			CL4	CL4	CL3	CL3	CK3	CK3	CL3	CL3	GH6	GH6
			1.80 - 2.80	0.80 - 1.80	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.00 - 1.00	1.00 - 2.00	0.10 - 1.00
			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
			S	S	S	S	S	S	S	S	S	S
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 9	X						X			
PAH by GCMS	All	NDPs: 0 Tests: 9	X						X			
PCBs by GCMS	All	NDPs: 0 Tests: 9	X						X			
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 34						X			X	X
pH	All	NDPs: 0 Tests: 9	X						X			
pH Value of Filtered Water	All	NDPs: 0 Tests: 9							X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 9							X			
Sample description	All	NDPs: 0 Tests: 35	X					X		X	X	X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 9							X			
Total Organic Carbon	All	NDPs: 0 Tests: 9	X						X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 9	X						X			
VOC MS (S)	All	NDPs: 0 Tests: 9							X			

27457902	CQ7		1.00 - 2.00	250g Amber Jar (ALE210)	S									X					
27457900	CQ7		0.30 - 1.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X					X				
27457894	CQ6		1.00 - 2.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X		X				X			
27457896	CQ6		0.20 - 1.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X				X			X		
27457899	GP7		1.00 - 2.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X					X				
27457901	GP7		0.20 - 1.00	1kg TUB with Handle (ALE260) 60g VOC (ALE215)	S					X									
				250g Amber Jar (ALE210)	S		X				X						X		
27457898	GP6		1.00 - 2.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X		X				X			
27457897	GP6		0.20 - 1.00	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X					X				
27458048	CL4		1.80 - 2.80	1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210)	S					X						X			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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
27458476	G7B	0.60	Dark Brown	Silty Clay	Stones	None
27458477	G7B	0.30 - 0.50	Light Brown	Gravel	Vegetation	Stones
27457889	GD6	0.30 - 1.00	Light Brown	Clay Loam	Stones	Vegetation
27457892	GD6	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27457903	GD7	0.40 - 1.40	Light Brown	Clay Loam	Stones	Vegetation
27457904	GD7	1.40 - 2.40	Light Brown	Clay Loam	Stones	Vegetation
27458480	GE6	1.00 - 2.00	Dark Brown	Sandy Clay	Stones	Vegetation
27458481	GE6	0.10 - 1.00	Dark Brown	Sandy Clay	Stones	Vegetation
27458478	GE7	0.10 - 1.00	Dark Brown	Sandy Clay	Stones	Vegetation
27458479	GE7	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27458468	GF6	0.10 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458469	GF6	1.00 - 2.00	Light Brown	Clay Loam	Stones	Vegetation
27458472	GF7	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27458473	GF7	0.10 - 1.00	Light Brown	Sandy Clay Loam	Stones	None
27457893	GG6	0.30 - 1.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
27457895	GG6	1.00 - 2.00	Dark Brown	Clay Loam	Stones	Vegetation
27458471	GG7	0.10 - 1.00	Light Brown	Sandy Clay Loam	Stones	None
27458475	GG7	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458467	GH6	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458470	GH6	0.10 - 1.00	Dark Brown	Loamy Sand	Stones	Vegetation
27458050	GJ3	0.00 - 1.00	Dark Brown	Sandy Clay	Stones	None
27458051	GJ3	1.00 - 2.00	Light Brown	Clay Loam	Stones	Vegetation
27457905	GK3	1.00 - 2.00	Light Brown	Clay Loam	Stones	Vegetation
27457906	GK3	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458465	GL3	0.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458466	GL3	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27458047	GL4	0.80 - 1.80	Dark Brown	Sandy Clay	Stones	None
27458048	GL4	1.80 - 2.80	Dark Brown	Sandy Clay	Stones	None
27457897	GP6	0.20 - 1.00	Light Brown	Loamy Sand	Stones	Vegetation
27457898	GP6	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27457899	GP7	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	None
27457901	GP7	0.20 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27457894	GQ6	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27457896	GQ6	0.20 - 1.00	Dark Brown	Sandy Clay Loam	Stones	None
27457900	GQ7	0.30 - 1.00	Dark Brown	Sandy Clay	Stones	Vegetation
27457902	GQ7	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.	G7B 0.30 - 0.50 Unspecified Solid (UNS) 18/01/2023 25/01/2023 230125-103 27458477	G7B 0.60 Unspecified Solid (UNS) 18/01/2023 25/01/2023 230125-103 27458476	GD6 0.30 - 1.00 Unspecified Solid (UNS) 23/01/2023 25/01/2023 230125-103 27457889	GD6 1.00 - 2.00 Unspecified Solid (UNS) 23/01/2023 25/01/2023 230125-103 27457892	GD7 0.40 - 1.40 Unspecified Solid (UNS) 23/01/2023 25/01/2023 230125-103 27457903	GD7 1.40 - 2.40 Unspecified Solid (UNS) 23/01/2023 25/01/2023 230125-103 27457904
# 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							
Moisture Content Ratio (% of as received sample)	%	PM024	9	16	12	10	10	9.2	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	0.000692	0.000826	0.000768	0.00079	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.00384	<0.0005	0.0011	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.0097	0.00213	0.000536	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.000994	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018	2.25					2.52	
Organic Carbon, Total	<0.2 %	TM132	0.264					0.57	
pH	1 pH Units	TM133	11.3					8.87	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6					<0.6	
PCB congener 28	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 52	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 101	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 118	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 138	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 153	<0.003 mg/kg	TM168	<0.003					<0.003	
PCB congener 180	<0.003 mg/kg	TM168	<0.003					<0.003	
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021					<0.021	
Chromium, Trivalent	<0.9 mg/kg	TM181	15.2					6.16	
Antimony	<0.6 mg/kg	TM181	<0.6					0.898	
Arsenic	<0.6 mg/kg	TM181	14					12.2	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.	GE6	GE6	GE7	GE7	GF6	GF6
# 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	0.10 - 1.00 Unspecified Solid (UNS) 13/01/2023		1.00 - 2.00 Unspecified Solid (UNS) 13/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 12/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 12/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 18/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 18/01/2023	
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	11	7.8	9	9.3	11	10	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	0.000765	0.000844	0.000734	0.000792	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.000555	0.000542	<0.0005	<0.0005	<0.0005	0.00052	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	0.000559	<0.0005	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.000541	0.00321	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018	2.22						
Organic Carbon, Total	<0.2 %	TM132	0.367						
pH	1 pH Units	TM133	9.48						
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6						
PCB congener 28	<0.003 mg/kg	TM168	<0.003						
PCB congener 52	<0.003 mg/kg	TM168	<0.003						
PCB congener 101	<0.003 mg/kg	TM168	<0.003						
PCB congener 118	<0.003 mg/kg	TM168	<0.003						
PCB congener 138	<0.003 mg/kg	TM168	<0.003						
PCB congener 153	<0.003 mg/kg	TM168	<0.003						
PCB congener 180	<0.003 mg/kg	TM168	<0.003						
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021						
Chromium, Trivalent	<0.9 mg/kg	TM181	6.33						
Antimony	<0.6 mg/kg	TM181	0.786						
Arsenic	<0.6 mg/kg	TM181	11.6						



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.	GF7	GF7	GG6	GG6	GG7	GG7
# 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)	0.10 - 1.00	1.00 - 2.00	0.30 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	
		Sample Type	Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)	Unspecified Solid (UNS)	
		Date Sampled	17/01/2023	17/01/2023	23/01/2023	20/01/2023	18/01/2023	18/01/2023	
		Sample Time							
		Date Received	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	
		SDG Ref	230125-103	230125-103	230125-103	230125-103	230125-103	230125-103	
		Lab Sample No.(s)	27458473	27458472	27457893	27457895	27458471	27458475	
		AGS Reference							
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	11	9.8	13	11	11	8.8	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	0.00064	0.000767	0.000827	0.000793	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	0.0012	0.000549	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005	0.000562	<0.0005	<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	0.000562	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	0.000972	<0.0005	<0.0005	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005	0.00372	0.00104	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	0.000642	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018	1.72			2.64			
Organic Carbon, Total	<0.2 %	TM132	0.579			0.519			
pH	1 pH Units	TM133	8.73			8.7			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6			<0.6			
PCB congener 28	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 52	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 101	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 118	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 138	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 153	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 180	<0.003 mg/kg	TM168	<0.003			<0.003			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021			<0.021			
Chromium, Trivalent	<0.9 mg/kg	TM181	4.75			10.1			
Antimony	<0.6 mg/kg	TM181	0.907			1.05			
Arsenic	<0.6 mg/kg	TM181	11.4			12.4			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.	GH6	GH6	GJ3	GJ3	GK3	GK3
# 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)	0.10 - 1.00								
Sample Type	Unspecified Solid (UNS)								
Date Sampled	12/01/2023								
Sample Time									
Date Received	25/01/2023								
SDG Ref	230125-103								
Lab Sample No.(s)	27458470								
AGS Reference									
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	17	13	14	12	17	12	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	0.00128	<0.0005			<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	0.00128	<0.0005			<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	0.00442	0.00129			<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.00237	0.00129			<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	0.00259	0.000813			<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.00807	0.000629			<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.00947	0.000739			<0.0005	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.0114	0.00292			<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.0036	0.000938			<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005			<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018	4.34			2.96			
Organic Carbon, Total	<0.2 %	TM132	0.937			0.559			
pH	1 pH Units	TM133	8.32			8.65			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6			<0.6			
PCB congener 28	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 52	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 101	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 118	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 138	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 153	<0.003 mg/kg	TM168	<0.003			<0.003			
PCB congener 180	<0.003 mg/kg	TM168	<0.003			<0.003			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021			<0.021			
Chromium, Trivalent	<0.9 mg/kg	TM181	11.2			10.7			
Antimony	<0.6 mg/kg	TM181	0.927			1.16			
Arsenic	<0.6 mg/kg	TM181	14.9			12.6			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.	GL3	GL3	GL4	GL4	GP6	GP6
# ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference								
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)									
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	13	13	14	15	14	19	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	0.000732	0.000762	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Loss on ignition	<0.7 %	TM018	2.91						
Organic Carbon, Total	<0.2 %	TM132	0.612						
pH	1 pH Units	TM133	8.37						
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6						
PCB congener 28	<0.003 mg/kg	TM168	<0.015						
PCB congener 52	<0.003 mg/kg	TM168	<0.015						
PCB congener 101	<0.003 mg/kg	TM168	<0.015						
PCB congener 118	<0.003 mg/kg	TM168	<0.015						
PCB congener 138	<0.003 mg/kg	TM168	<0.015						
PCB congener 153	<0.003 mg/kg	TM168	<0.015						
PCB congener 180	<0.003 mg/kg	TM168	<0.015						
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.105						
Chromium, Trivalent	<0.9 mg/kg	TM181	16.7						
Antimony	<0.6 mg/kg	TM181	<0.6						
Arsenic	<0.6 mg/kg	TM181	43.1						



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Results Legend			Customer Sample Ref.					
# 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					
			GP7	GP7	GQ6	GQ6	GQ7	GQ7
			0.20 - 1.00 Unspecified Solid (UNS) 20/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 20/01/2023	0.20 - 1.00 Unspecified Solid (UNS) 20/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 20/01/2023	0.30 - 1.00 Unspecified Solid (UNS) 20/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 20/01/2023
			25/01/2023 230125-103 27457901	25/01/2023 230125-103 27457899	25/01/2023 230125-103 27457896	25/01/2023 230125-103 27457894	25/01/2023 230125-103 27457900	25/01/2023 230125-103 27457902
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	18	12	14	14	15	10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	0.000979	0.0018	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	0.00355	0.0019	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	0.00954	0.00691	<0.0005	<0.0005	0.00176	<0.0005
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	0.00121	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	0.000519	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Loss on ignition	<0.7 %	TM018	5.1					
Organic Carbon, Total	<0.2 %	TM132	0.582					
pH	1 pH Units	TM133	8.53					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6					
PCB congener 28	<0.003 mg/kg	TM168	<0.003					
PCB congener 52	<0.003 mg/kg	TM168	<0.003					
PCB congener 101	<0.003 mg/kg	TM168	<0.003					
PCB congener 118	<0.003 mg/kg	TM168	<0.003					
PCB congener 138	<0.003 mg/kg	TM168	<0.003					
PCB congener 153	<0.003 mg/kg	TM168	<0.003					
PCB congener 180	<0.003 mg/kg	TM168	<0.003					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021					
Chromium, Trivalent	<0.9 mg/kg	TM181	10.3					
Antimony	<0.6 mg/kg	TM181	1.31					
Arsenic	<0.6 mg/kg	TM181	14.7					



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

TPH CWG (S)

Results Legend			Customer Sample Ref.		G7B	GD7	GE6	GF7	GG6	GH6
# ISO17025 accredited.	M mCERTS accredited.	aq Aqueous / settled sample.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.30 - 0.50 Unspecified Solid (UNS) 18/01/2023	1.40 - 2.40 Unspecified Solid (UNS) 23/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 13/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 17/01/2023	1.00 - 2.00 Unspecified Solid (UNS) 20/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 12/01/2023
diss.filt Dissolved / filtered sample.	tot.unfilt Total / unfiltered sample.	* Subcontracted - refer to subcontractor report for accreditation status.			25/01/2023 230125-103 27458477	25/01/2023 230125-103 27457904	25/01/2023 230125-103 27458481	25/01/2023 230125-103 27458473	25/01/2023 230125-103 27457895	25/01/2023 230125-103 27458470
** % 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								
GRO Surrogate % recovery**	%	TM089			104 3	36 4	101 @	124 @	76.1	95.2 2
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089			0.571 3	<0.01 4	<0.01 @	0.0381 @	<0.01	<0.01 2
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089			25.4 3	<0.01 4	<0.01 @	0.239 @	0.0549	<0.01 2
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089			794 3	<0.01 4	<0.01 @	5.1 @	0.125	<0.01 2
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414			605 3	<1 4	<1 @	4.15 @	<1	<1 @
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414			248 3	1.94 4	<1 @	3.4 @	<1	<1 @
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414			10.8 3	1.82 4	<1 @	<1 @	<1	<1 @
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414			7.2 3	1.33 4	<1 @	<1 @	<1	1.73 @
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414			<1 3	<1 4	<1 @	<1 @	<1	<1 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414			871 3	5.42 4	<5 @	7.6 @	<5	<5 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414			1060 3	<10 4	<10 @	<10 @	<10	<10 @
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089			<0.2 3	<0.01 4	<0.01 @	<0.01 @	<0.01	<0.01 2
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089			<0.2 3	<0.01 4	<0.01 @	<0.01 @	<0.01	<0.01 2
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089			529 3	<0.01 4	<0.01 @	3.4 @	0.084	<0.01 2
Aromatics >EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414			113 3	<1 4	<1 @	<1 @	<1	<1 @
Aromatics >EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414			73.9 3	<1 4	<1 @	<1 @	<1	<1 @
Aromatics >EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414			<1 3	<1 4	<1 @	<1 @	<1	<1 @
Aromatics >EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414			3.12 3	<1 4	<1 @	<1 @	1.11	5.2 @
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414			<1 3	<1 4	<1 @	<1 @	<1	1.17 @
Aromatics >EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414			<1 3	<1 4	<1 @	<1 @	<1	<1 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414			192 3	<5 4	<5 @	<5 @	<5	6.79 @
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414			2410 3	<10 4	<10 @	18.7 @	<10	<10 @
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089			0.571 3	<0.02 4	<0.02 @	0.0381 @	<0.02	<0.02 2
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089			1.66 3	<0.02 4	<0.02 @	0.0381 @	0.0347	<0.02 2
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089			23.7 3	<0.02 4	<0.02 @	0.2 @	<0.02	<0.02 2
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089			1320 3	<0.02 4	<0.02 @	8.5 @	0.208	<0.02 2
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089			4170 3	<0.02 4	<0.02 @	20.9 @	0.329	<0.02 2
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089			820 3	<0.05 4	<0.05 @	5.37 @	0.18	<0.05 2
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089			529 3	<0.05 4	<0.05 @	3.4 @	0.084	<0.05 2
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089			1350 3	<0.02 4	<0.02 @	8.77 @	0.264	<0.02 2



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

TPH CWG (S)

Results Legend			Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
#	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									
GRO Surrogate % recovery**	%	TM089	96.9	93.5	88.8						
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01						
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	0.0134						
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01	0.0122						
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	13.4	<1						
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	3.01	<1						
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	17.3	<5						
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	<10	57.4	<10						
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01						
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01						
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01						
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1	<1						
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	1.54	22.9	1.09						
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	17.2	<1						
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	5.86	<1						
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	<5	40.1	<5						
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	<10	57.4	<10						
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05						
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05						
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02						



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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	G7B 0.30 - 0.50 MISC_SOLID 18/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458477 TM048	07/02/2023	Paul Poynton	N/A	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	GD7 1.40 - 2.40 MISC_SOLID 23/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27457904 TM048	08/02/23	Eva Guerra	-	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	GE6 0.10 - 1.00 MISC_SOLID 13/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458481 TM048	08/02/2023	Emily Anderton	-	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	GF7 0.10 - 1.00 MISC_SOLID 17/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458473 TM048	08/02/23	Eva Guerra	-	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	GG6 1.00 - 2.00 MISC_SOLID 20/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27457895 TM048	08/02/23	Eva Guerra	-	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	GH6 0.10 - 1.00 MISC_SOLID 12/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458470 TM048	07/02/2023	Paul Poynton	N/A	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	GJ3 1.00 - 2.00 MISC_SOLID 24/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458051 TM048	08/02/23	Eva Guerra	-	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	GL3 0.00 - 1.00 MISC_SOLID 18/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27458465 TM048	08/02/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 230125-103

Report Number: 679959

Superseded Report: 679570

Client Ref.: DAA PFAS

Location: Dublin Airport

Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	GP7 0.20 - 1.00 MISC_SOLID 20/01/2023 00:00:00 25/01/2023 09:55:00 230125-103 27457901 TM048	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
		08/02/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.101
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	12.4
Dry Matter Content (%)	89

Case	
SDG	230125-103
Lab Sample Number(s)	27457894
Sampled Date	20-Jan-2023
Customer Sample Ref.	GQ6
Depth (m)	1.00 - 2.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg) (EH_2D_AL)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000806	<0.0005	0.00806	<0.005	0.5	2	25
Barium	0.0183	<0.0002	0.183	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00253	<0.0003	0.0253	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0208	<0.003	0.208	<0.03	0.5	10	30
Nickel	0.000891	<0.0004	0.00891	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.559	<0.5	5.59	<5	10	150	500
Sulphate (soluble)	19.2	<2	192	<20	1000	20000	50000
Total Dissolved Solids	110	<10	1100	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.24	<3	42.4	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.41
Conductivity (µS/cm)	154
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.110
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	21.6
Dry Matter Content (%)	82.2

Case	
SDG	230125-103
Lab Sample Number(s)	27457901
Sampled Date	20-Jan-2023
Customer Sample Ref.	GP7
Depth (m)	0.20 - 1.00

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.582
Loss on Ignition (%)	5.1
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.53
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00452	<0.0002	0.0452	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00211	<0.0003	0.0211	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.006	<0.003	0.06	<0.03	0.5	10	30
Nickel	0.000484	<0.0004	0.00484	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00329	<0.001	0.0329	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	3.2	<2	32	<20	1000	20000	50000
Total Dissolved Solids	86.7	<10	867	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.72	<3	37.2	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.24
Conductivity (µS/cm)	118
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.101
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	12.5
Dry Matter Content (%)	88.9

Case	
SDG	230125-103
Lab Sample Number(s)	27457904
Sampled Date	23-Jan-2023
Customer Sample Ref.	GD7
Depth (m)	1.40 - 2.40

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.57
Loss on Ignition (%)	2.52
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.87
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0272	<0.0002	0.272	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000612	<0.0003	0.00612	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0475	<0.003	0.475	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00132	<0.001	0.0132	<0.01	0.06	0.7	5
Selenium	0.0131	<0.001	0.131	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	2.1	<2	21	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	7.4	<2	74	<20	1000	20000	50000
Total Dissolved Solids	68.9	<10	689	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.61
Conductivity (µS/cm)	99
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.102
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	13.3
Dry Matter Content (%)	88.3

Case	
SDG	230125-103
Lab Sample Number(s)	27458051
Sampled Date	24-Jan-2023
Customer Sample Ref.	GJ3
Depth (m)	1.00 - 2.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.559
Loss on Ignition (%)	2.96
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.65
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00849	<0.0002	0.0849	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000789	<0.0003	0.00789	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0258	<0.003	0.258	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	67.3	<10	673	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.64
Conductivity (µS/cm)	98
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	14.9
Dry Matter Content (%)	87

Case	
SDG	230125-103
Lab Sample Number(s)	27458465
Sampled Date	18-Jan-2023
Customer Sample Ref.	GL3
Depth (m)	0.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.612
Loss on Ignition (%)	2.91
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.105
Mineral Oil (mg/kg) (EH_2D_AL)	23.7
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.37
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00654	<0.0005	0.0654	<0.005	0.5	2	25
Barium	0.0135	<0.0002	0.135	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00117	<0.001	0.0117	<0.01	0.5	10	70
Copper	0.00818	<0.0003	0.0818	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00585	<0.003	0.0585	<0.03	0.5	10	30
Nickel	0.0023	<0.0004	0.023	<0.004	0.4	10	40
Lead	0.000234	<0.0002	0.00234	<0.002	0.5	10	50
Antimony	0.00196	<0.001	0.0196	<0.01	0.06	0.7	5
Selenium	0.00154	<0.001	0.0154	<0.01	0.1	0.5	7
Zinc	0.00178	<0.001	0.0178	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	21.5	<2	215	<20	1000	20000	50000
Total Dissolved Solids	117	<10	1170	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.99	<3	79.9	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.51
Conductivity (µS/cm)	155
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.111
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	23.9
Dry Matter Content (%)	80.7

Case	
SDG	230125-103
Lab Sample Number(s)	27458470
Sampled Date	12-Jan-2023
Customer Sample Ref.	GH6
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.937
Loss on Ignition (%)	4.34
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.32
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00551	<0.0002	0.0551	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00335	<0.0003	0.0335	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00535	<0.003	0.0535	<0.03	0.5	10	30
Nickel	0.000658	<0.0004	0.00658	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.678	<0.5	6.78	<5	10	150	500
Sulphate (soluble)	2.2	<2	22	<20	1000	20000	50000
Total Dissolved Solids	97.8	<10	978	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.53	<3	55.3	<30	500	800	1000

Leach Test Information

Date Prepared	01-Feb-2023
pH (pH Units)	8.24
Conductivity (µS/cm)	134
Volume Leachant (Litres)	0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.100
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	11.7
Dry Matter Content (%)	89.6

Case	
SDG	230125-103
Lab Sample Number(s)	27458473
Sampled Date	17-Jan-2023
Customer Sample Ref.	GF7
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.579
Loss on Ignition (%)	1.72
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	49.3
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.73
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00122	<0.0005	0.0122	<0.005	0.5	2	25
Barium	0.0138	<0.0002	0.138	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00124	<0.0003	0.0124	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0436	<0.003	0.436	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00158	<0.001	0.0158	<0.01	0.06	0.7	5
Selenium	0.00195	<0.001	0.0195	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.2	<2	22	<20	1000	20000	50000
Total Dissolved Solids	53.1	<10	531	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.29	<3	32.9	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.92
Conductivity (µS/cm)	85
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.099
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	10.3
Dry Matter Content (%)	90.7

Case	
SDG	230125-103
Lab Sample Number(s)	27458477
Sampled Date	18-Jan-2023
Customer Sample Ref.	G7B
Depth (m)	0.30 - 0.50

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.264
Loss on Ignition (%)	2.25
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	1120
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	11.3
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00158	<0.0005	0.0158	<0.005	0.5	2	25
Barium	0.0186	<0.0002	0.186	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00694	<0.001	0.0694	<0.01	0.5	10	70
Copper	0.00952	<0.0003	0.0952	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00684	<0.003	0.0684	<0.03	0.5	10	30
Nickel	0.00141	<0.0004	0.0141	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00261	<0.001	0.0261	<0.01	0.06	0.7	5
Selenium	0.00352	<0.001	0.0352	<0.01	0.1	0.5	7
Zinc	0.0021	<0.001	0.021	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	20.3	<2	203	<20	1000	20000	50000
Total Dissolved Solids	300	<10	3000	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	30-Jan-2023
pH (pH Units)	11.49
Conductivity (µS/cm)	447
Volume Leachant (Litres)	0.891

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFASReport Number: 679959
Location: Dublin Airport

Superseded Report: 679570

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.101
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Dublin Airport
Natural Moisture Content (%)	12
Dry Matter Content (%)	89.3

Case	
SDG	230125-103
Lab Sample Number(s)	27458481
Sampled Date	13-Jan-2023
Customer Sample Ref.	GE6
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.367
Loss on Ignition (%)	2.22
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	9.48
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0055	<0.0002	0.055	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00128	<0.0003	0.0128	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0381	<0.003	0.381	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	7	<2	70	<20	1000	20000	50000
Total Dissolved Solids	56.7	<10	567	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.78	<3	37.8	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.17
Conductivity (µS/cm)	78
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

24/02/2023 19:20:25

19:19:39 24/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB	Subcontracted Test
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	The Determination of Total Dissolved Solids in Water
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Test Completion Dates

Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	27458476	27458477	27457889	27457892	27457903	27457904	27458480	27458481	27458478	27458479
	G7B	G7B	GD6	GD6	GD7	GD7	GE6	GE6	GE7	GE7
	0.60	0.30 - 0.50	0.30 - 1.00	1.00 - 2.00	0.40 - 1.40	1.40 - 2.40	1.00 - 2.00	0.10 - 1.00	0.10 - 1.00	1.00 - 2.00
	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Anions by Kone (w)		01-Feb-2023				03-Feb-2023		06-Feb-2023		
Asbestos ID in Solid Samples		07-Feb-2023				08-Feb-2023		08-Feb-2023		
CEN 10:1 Leachate (1 Stage)		31-Jan-2023				01-Feb-2023		02-Feb-2023		
CEN Readings		02-Feb-2023				03-Feb-2023		06-Feb-2023		
Chromium III		02-Feb-2023				06-Feb-2023		06-Feb-2023		
Coronene		02-Feb-2023				06-Feb-2023		06-Feb-2023		
Dissolved Metals by ICP-MS		02-Feb-2023				06-Feb-2023		07-Feb-2023		
Dissolved Organic/Inorganic Carbon		02-Feb-2023				03-Feb-2023		05-Feb-2023		
EPH by GCxGC-FID		03-Feb-2023				06-Feb-2023		06-Feb-2023		
EPH CWG GC (S)		02-Feb-2023				03-Feb-2023		06-Feb-2023		
Fluoride		02-Feb-2023				03-Feb-2023		06-Feb-2023		
GRO by GC-FID (S)		01-Feb-2023				03-Feb-2023		01-Feb-2023		
Hexavalent Chromium (s)		01-Feb-2023				03-Feb-2023		01-Feb-2023		
Loss on Ignition in soils		02-Feb-2023				07-Feb-2023		07-Feb-2023		
Mercury Dissolved		03-Feb-2023				06-Feb-2023		06-Feb-2023		
Metals in solid samples by OES		02-Feb-2023				06-Feb-2023		06-Feb-2023		
Moisture at 105C		30-Jan-2023				31-Jan-2023		31-Jan-2023		
PAH 16 & 17 Calc		03-Feb-2023				07-Feb-2023		07-Feb-2023		
PAH by GCMS		03-Feb-2023				07-Feb-2023		07-Feb-2023		
PCBs by GCMS		03-Feb-2023				06-Feb-2023		06-Feb-2023		
PFAS by LCMS on solids (S-PFCLMS02)	22-Feb-2023	15-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023
pH		31-Jan-2023				01-Feb-2023		01-Feb-2023		
pH Value of Filtered Water		02-Feb-2023				03-Feb-2023		07-Feb-2023		
Phenols by HPLC (W)		03-Feb-2023				07-Feb-2023		07-Feb-2023		
Sample description	01-Feb-2023	30-Jan-2023	01-Feb-2023	01-Feb-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023
Total Dissolved Solids on Leachates		02-Feb-2023				06-Feb-2023		06-Feb-2023		
Total Organic Carbon		02-Feb-2023				06-Feb-2023		06-Feb-2023		
TPH CWG GC (S)		02-Feb-2023				03-Feb-2023		06-Feb-2023		
VOC MS (S)		31-Jan-2023				02-Feb-2023		06-Feb-2023		

Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	27458468	27458469	27458472	27458473	27457893	27457895	27458471	27458475	27458467	27458470
	GF6	GF6	GF7	GF7	GG6	GG6	GG7	GG7	GH6	GH6
	0.10 - 1.00	1.00 - 2.00	1.00 - 2.00	0.10 - 1.00	0.30 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	1.00 - 2.00	0.10 - 1.00
	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Anions by Kone (w)				02-Feb-2023						06-Feb-2023
Asbestos ID in Solid Samples				08-Feb-2023		08-Feb-2023				07-Feb-2023
CEN 10:1 Leachate (1 Stage)				01-Feb-2023						02-Feb-2023
CEN Readings				06-Feb-2023						06-Feb-2023
Chromium III				06-Feb-2023		07-Feb-2023				06-Feb-2023
Coronene				06-Feb-2023		06-Feb-2023				06-Feb-2023
Dissolved Metals by ICP-MS				06-Feb-2023						07-Feb-2023
Dissolved Organic/Inorganic Carbon				03-Feb-2023						05-Feb-2023
EPH by GCxGC-FID				06-Feb-2023		06-Feb-2023				06-Feb-2023
EPH CWG GC (S)				06-Feb-2023		06-Feb-2023				03-Feb-2023
Fluoride				03-Feb-2023						06-Feb-2023
GRO by GC-FID (S)				01-Feb-2023		03-Feb-2023				01-Feb-2023
Hexavalent Chromium (s)				01-Feb-2023		03-Feb-2023				01-Feb-2023
Loss on Ignition in soils				07-Feb-2023		06-Feb-2023				07-Feb-2023
Mercury Dissolved				06-Feb-2023						06-Feb-2023
Metals in solid samples by OES				06-Feb-2023		07-Feb-2023				06-Feb-2023
Moisture at 105C				31-Jan-2023						01-Feb-2023
PAH 16 & 17 Calc				06-Feb-2023		07-Feb-2023				07-Feb-2023
PAH by GCMS				07-Feb-2023		07-Feb-2023				07-Feb-2023
PCBs by GCMS				06-Feb-2023		06-Feb-2023				06-Feb-2023
PFAS by LCMS on solids (S-PFCLMS02)	08-Feb-2023	08-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	08-Feb-2023	08-Feb-2023	08-Feb-2023	22-Feb-2023
pH				01-Feb-2023		02-Feb-2023				01-Feb-2023
pH Value of Filtered Water				03-Feb-2023						07-Feb-2023
Phenols by HPLC (W)				07-Feb-2023						07-Feb-2023
Sample description	31-Jan-2023	30-Jan-2023	30-Jan-2023	30-Jan-2023	31-Jan-2023	01-Feb-2023	30-Jan-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023
Total Dissolved Solids on Leachates				02-Feb-2023						06-Feb-2023
Total Organic Carbon				06-Feb-2023		06-Feb-2023				06-Feb-2023
TPH CWG GC (S)				06-Feb-2023		06-Feb-2023				03-Feb-2023
VOC MS (S)				06-Feb-2023		03-Feb-2023				06-Feb-2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230125-103
Client Ref.: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	27458050	27458051	27457905	27457906	27458465	27458466	27458047	27458048	27457897	27457898
	GJ3	GJ3	GK3	GK3	GL3	GL3	GL4	GL4	GP6	GP6
	0.00 - 1.00	1.00 - 2.00	1.00 - 2.00	0.00 - 1.00	0.00 - 1.00	1.00 - 2.00	0.80 - 1.80	1.80 - 2.80	0.20 - 1.00	1.00 - 2.00
	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Anions by Kone (w)		03-Feb-2023			02-Feb-2023					
Asbestos ID in Solid Samples		08-Feb-2023			08-Feb-2023					
CEN 10:1 Leachate (1 Stage)		01-Feb-2023			31-Jan-2023					
CEN Readings		03-Feb-2023			02-Feb-2023					
Chromium III		07-Feb-2023			02-Feb-2023					
Coronene		06-Feb-2023			02-Feb-2023					
Dissolved Metals by ICP-MS		06-Feb-2023			02-Feb-2023					
Dissolved Organic/Inorganic Carbon		03-Feb-2023			02-Feb-2023					
EPH by GCxGC-FID		06-Feb-2023			03-Feb-2023					
EPH CWG GC (S)		06-Feb-2023			03-Feb-2023					
Fluoride		03-Feb-2023			02-Feb-2023					
GRO by GC-FID (S)		03-Feb-2023			02-Feb-2023					
Hexavalent Chromium (s)		03-Feb-2023			01-Feb-2023					
Loss on Ignition in soils		06-Feb-2023			02-Feb-2023					
Mercury Dissolved		06-Feb-2023			03-Feb-2023					
Metals in solid samples by OES		07-Feb-2023			02-Feb-2023					
Moisture at 105C		31-Jan-2023			02-Feb-2023					
PAH 16 & 17 Calc		07-Feb-2023			02-Feb-2023					
PAH by GCMS		07-Feb-2023			02-Feb-2023					
PCBs by GCMS		06-Feb-2023			03-Feb-2023					
PFAS by LCMS on solids (S-PFCLMS02)			13-Feb-2023	13-Feb-2023	08-Feb-2023	08-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023
pH		01-Feb-2023			31-Jan-2023					
pH Value of Filtered Water		03-Feb-2023			02-Feb-2023					
Phenols by HPLC (W)		06-Feb-2023			03-Feb-2023					
Sample description	01-Feb-2023	31-Jan-2023	31-Jan-2023	31-Jan-2023	30-Jan-2023	30-Jan-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023	01-Feb-2023
Total Dissolved Solids on Leachates		02-Feb-2023			02-Feb-2023					
Total Organic Carbon		06-Feb-2023			02-Feb-2023					
TPH CWG GC (S)		06-Feb-2023			03-Feb-2023					
VOC MS (S)		02-Feb-2023			31-Jan-2023					

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	27457899	27457901	27457894	27457896	27457900	27457902
	GP7	GP7	GQ6	GQ6	GQ7	GQ7
	1.00 - 2.00	0.20 - 1.00	1.00 - 2.00	0.20 - 1.00	0.30 - 1.00	1.00 - 2.00
	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Anions by Kone (w)		06-Feb-2023	02-Feb-2023			
Asbestos ID in Solid Samples		08-Feb-2023				
CEN 10:1 Leachate (1 Stage)		02-Feb-2023	01-Feb-2023			
CEN Readings		06-Feb-2023	03-Feb-2023			
Chromium III		06-Feb-2023				
Coronene		06-Feb-2023				
Dissolved Metals by ICP-MS		07-Feb-2023	06-Feb-2023			
Dissolved Organic/Inorganic Carbon		05-Feb-2023	03-Feb-2023			
EPH by GCxGC-FID		06-Feb-2023				
EPH CWG GC (S)		06-Feb-2023				
Fluoride		06-Feb-2023	03-Feb-2023			
GRO by GC-FID (S)		01-Feb-2023				
Hexavalent Chromium (s)		01-Feb-2023				
Loss on Ignition in soils		07-Feb-2023				
Mercury Dissolved		06-Feb-2023	06-Feb-2023			
Metals in solid samples by OES		06-Feb-2023				
Moisture at 105C		31-Jan-2023	31-Jan-2023			
PAH 16 & 17 Calc		07-Feb-2023				
PAH by GCMS		07-Feb-2023				
PCBs by GCMS		06-Feb-2023				
PFAS by LCMS on solids (S-PFCLMS02)	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023	13-Feb-2023
pH		01-Feb-2023				
pH Value of Filtered Water		07-Feb-2023	03-Feb-2023			
Phenols by HPLC (W)		07-Feb-2023	06-Feb-2023			
Sample description	01-Feb-2023	31-Jan-2023	01-Feb-2023	01-Feb-2023	31-Jan-2023	31-Jan-2023
Total Dissolved Solids on Leachates		06-Feb-2023	02-Feb-2023			
Total Organic Carbon		06-Feb-2023				
TPH CWG GC (S)		06-Feb-2023				
VOC MS (S)		02-Feb-2023				



CERTIFICATE OF ANALYSIS

Work Order	: PR2308936	Issue Date	: 08-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230125-103	Page	: 1 of 4
Order number	: ----	Date Samples	: 03-Feb-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 04-Feb-2023 - 08-Feb-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

				27479443 GF6		27479368 GG7		27479419 GL3	
				PR2308936001		PR2308936002		PR2308936003	
				30-Jan-2023 10:09		30-Jan-2023 09:58		30-Jan-2023 10:06	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	<0.00300	---	<0.00300	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	86.4	± 5.0%	86.2	± 5.0%	83.8	± 5.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID

Client sampling date / time

				27479426 GL3		27485930 GF6		27485873 GG7	
				PR2308936004		PR2308936005		PR2308936006	
				30-Jan-2023 10:07		30-Jan-2023 10:07		30-Jan-2023 10:07	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000520	± 30.0%	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---



Sub-Matrix: SOIL				Client sample ID		27479426 GL3		27485930 GF6		27485873 GG7	
				Laboratory sample ID		PR2308936004		PR2308936005		PR2308936006	
				Client sampling date / time		30-Jan-2023 10:07		30-Jan-2023 10:07		30-Jan-2023 10:07	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	0.00052	± 40.0%	<0.00300	---	<0.00300	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.5	± 5.0%	89.2	± 5.0%	89.4	± 5.0%	89.4	± 5.0%

Sub-Matrix: SOIL				Client sample ID		27485913 GH6		----		----	
				Laboratory sample ID		PR2308936007		----		----	
				Client sampling date / time		30-Jan-2023 10:07		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	0.000938	± 30.0%	----	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	0.000813	± 30.0%	----	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	0.00129	± 30.0%	----	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	0.00292	± 30.0%	----	----	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.000629	± 30.0%	----	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00129	± 30.0%	----	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.000739	± 30.0%	----	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.00862	± 40.0%	----	----	----	----	----	----
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.1	± 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

Work Order	: PR2309864	Issue Date	: 13-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230125-103	Page	: 1 of 8
Order number	: ----	Date Samples	: 06-Feb-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 07-Feb-2023 - 13-Feb-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

				27486843 GD6		27486863 GD6		27486727 GD7	
				PR2309864001		PR2309864002		PR2309864003	
				23-Jan-2023 00:00		23-Jan-2023 00:00		23-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000994	± 30.0%	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00384	± 30.0%	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00970	± 30.0%	0.00213	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.000692	± 30.0%	0.000826	± 30.0%	0.000768	± 30.0%
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.3	± 5.0%	90.2	± 5.0%	87.6	± 5.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID

Client sampling date / time

				27486744 GD7		27487178 GE6		27487210 GE6	
				PR2309864004		PR2309864005		PR2309864006	
				23-Jan-2023 00:00		13-Jan-2023 00:00		13-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000541	± 30.0%	0.00321	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00110	± 30.0%	0.000555	± 30.0%	0.000542	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---



Sub-Matrix: SOIL				Client sample ID		27486744 GD7		27487178 GE6		27487210 GE6	
				Laboratory sample ID		PR2309864004		PR2309864005		PR2309864006	
				Client sampling date / time		23-Jan-2023 00:00		13-Jan-2023 00:00		13-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.000536	± 30.0%	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.000790	± 30.0%	0.000765	± 30.0%	0.000844	± 30.0%	0.000844	± 30.0%
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.3	± 5.0%	89.0	± 5.0%	89.4	± 5.0%	89.4	± 5.0%

Sub-Matrix: SOIL				Client sample ID		27490546 GE7		27490526 GE7		27486813 GF7	
				Laboratory sample ID		PR2309864007		PR2309864008		PR2309864009	
				Client sampling date / time		12-Jan-2023 00:00		12-Jan-2023 00:00		17-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000559	± 30.0%	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.000734	± 30.0%	0.000792	± 30.0%	0.000640	± 30.0%	0.000640	± 30.0%
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.6	± 5.0%	88.6	± 5.0%	94.8	± 5.0%	94.8	± 5.0%

Sub-Matrix: SOIL				Client sample ID		27486799 GF7		27490109 GG6		27490131 GG6	
				Laboratory sample ID		PR2309864010		PR2309864011		PR2309864012	
				Client sampling date / time		17-Jan-2023 00:00		23-Jan-2023 00:00		20-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU



Sub-Matrix: SOIL				Client sample ID		27486799 GF7		27490109 GG6		27490131 GG6	
				Laboratory sample ID		PR2309864010		PR2309864011		PR2309864012	
				Client sampling date / time		17-Jan-2023 00:00		23-Jan-2023 00:00		20-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000642	± 30.0%	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000562	± 30.0%	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00120	± 30.0%	0.000549	± 30.0%	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00372	± 30.0%	0.00104	± 30.0%	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.00120	± 30.0%	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000562	± 30.0%	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	0.000972	± 30.0%	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.000767	± 30.0%	0.000827	± 30.0%	0.000793	± 30.0%	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	89.7	± 5.0%	86.0	± 5.0%	87.3	± 5.0%	<0.000500	---

Sub-Matrix: SOIL				Client sample ID		27490753 GL4		27487092 GL4		27490662 GL6	
				Laboratory sample ID		PR2309864015		PR2309864016		PR2309864017	
				Client sampling date / time		23-Jan-2023 00:00		23-Jan-2023 00:00		24-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	0.000670	± 30.0%
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	0.00123	± 30.0%
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	0.000937	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	0.00491	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	0.000799	± 30.0%



Sub-Matrix: SOIL				Client sample ID		27490753		27487092		27490662	
						GL4		GL4		GL6	
				Laboratory sample ID		PR2309864015		PR2309864016		PR2309864017	
Client sampling date / time		23-Jan-2023 00:00				23-Jan-2023 00:00		24-Jan-2023 00:00			
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Perfluorinated Compounds - Continued											
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	0.000732	± 30.0%	0.000762	± 30.0%	0.00112	± 30.0%		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----		
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	85.7	± 5.0%	84.1	± 5.0%	89.8	± 5.0%		

Sub-Matrix: SOIL			Client sample ID		27489261 GP6		27489260 GP6		27487150 GP7	
			Laboratory sample ID		PR2309864018		PR2309864019		PR2309864020	
			Client sampling date / time		20-Jan-2023 00:00		20-Jan-2023 00:00		20-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.000519	± 30.0%	
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.00121	± 30.0%	
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.00355	± 30.0%	
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.000979	± 30.0%	
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	0.00954	± 30.0%	
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----	
Physical Parameters										
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.2	± 5.0%	80.2	± 5.0%	80.2	± 5.0%	

Sub-Matrix: SOIL			Client sample ID		27489789		27490117		27486814	
					GP7		GQ6		GQ6	
					PR2309864021		PR2309864022		PR2309864023	
			Laboratory sample ID							
			Client sampling date / time		20-Jan-2023 00:00		20-Jan-2023 00:00		20-Jan-2023 00:00	
Parameter		Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)		S-PFCLMS02	0.000500	mg/kg DW	<0.000500	----	<0.000500	----	<0.000500	----



Sub-Matrix: SOIL				Client sample ID		27489789 GP7		27490117 GQ6		27486814 GQ6	
				Laboratory sample ID		PR2309864021		PR2309864022		PR2309864023	
				Client sampling date / time		20-Jan-2023 00:00		20-Jan-2023 00:00		20-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	0.00190	± 30.0%	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	0.00180	± 30.0%	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.00691	± 30.0%	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.9	± 5.0%	83.1	± 5.0%	91.0	± 5.0%		

Sub-Matrix: SOIL				Client sample ID		27489792 GQ7		27487184 GQ7		27490993 GK3	
				Laboratory sample ID		PR2309864024		PR2309864025		PR2309864026	
				Client sampling date / time		20-Jan-2023 00:00		20-Jan-2023 00:00		23-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	0.00176	± 30.0%	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---



Sub-Matrix: SOIL				Client sample ID		27489792 GQ7		27487184 GQ7		27490993 GK3	
				Laboratory sample ID		PR2309864024		PR2309864025		PR2309864026	
				Client sampling date / time		20-Jan-2023 00:00		20-Jan-2023 00:00		23-Jan-2023 00:00	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	<0.000500	---	<0.000500	---	<0.000500	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	88.0	± 5.0%	87.0	± 5.0%	81.9	± 5.0%		

Sub-Matrix: SOIL				Client sample ID		27491022 GK3		----		----	
				Laboratory sample ID		PR2309864027		----		----	
				Client sampling date / time		23-Jan-2023 00:00		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----	----	----
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	87.0	± 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	



Analytical Methods	Method Descriptions
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

Work Order	: PR2310381	Issue Date	: 14-Feb-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230125-103	Page	: 1 of 2
Order number	: ----	Date Samples	: 07-Feb-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 07-Feb-2023 - 14-Feb-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

27496905
G7B

Laboratory sample ID

PR2310381001

Client sampling date / time

02-Feb-2023 08:57

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.000500	mg/kg DW	<0.000500	---	----	----	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	----	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	90.8	± 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

Work Order	: PR2314210	Issue Date	: 21-Feb-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	: euhdnsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230125-103	Page	: 1 of 2
Order number	: 230125-103	Date Samples Received	: 07-Feb-2023
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 15-Feb-2023 - 21-Feb-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

				27493393		27493411		----	
				PR2314210001		PR2314210002		----	
				18-Jan-2023 00:00		12-Jan-2023 00:00		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00128	± 30.0%	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00360	± 30.0%	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00259	± 30.0%	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00442	± 30.0%	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.0114	± 30.0%	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00807	± 30.0%	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00128	± 30.0%	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00237	± 30.0%	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	0.00947	± 30.0%	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	----	<0.00050	----	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.2	± 5.0%	80.8	± 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.

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
230125-103	27458052	GL6	24/02/2023	Sample SDG Change	230125-103	230224-101	679570



CERTIFICATE OF ANALYSIS

SDG: 230125-103
Client Ref: DAA PFAS

Report Number: 679959
Location: Dublin Airport

Superseded Report: 679570

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

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 February 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	230127-88
Your Reference:	DAA PFAS
Location:	Dublin Airport
Report No:	677858
Order Number:	28002977

We received 5 samples on Friday January 27, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday February 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: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
Location: Dublin Airport

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27469999	GI4		0.10 - 1.00	25/01/2023
27470000	GI4		1.00 - 2.00	25/01/2023
27469994	GI7		0.10 - 1.00	25/01/2023
27469998	GJ5		0.50 - 1.00	25/01/2023
27469995	GO4		0.00 - 1.00	25/01/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
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

Results Legend	Lab Sample No(s)		27469999		27470000		27469994	
	Customer Sample Reference		G14		G14		G17	
	AGS Reference							
	Depth (m)		0.10 - 1.00		1.00 - 2.00		0.10 - 1.00	
	Container		250g Amber Jar (ALE210)	500g TUB	60g VOC (ALE215)	Kone Cup	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
	Sample Type		S	S	S	S	S	S
Anions by Kone (w)	All	NDPs: 2 Tests: 2		X		N	X	N
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X			X	
CEN Readings	All	NDPs: 2 Tests: 2		X		N	X	N
Chromium III	All	NDPs: 0 Tests: 2	X				X	
Coronene	All	NDPs: 0 Tests: 2	X				X	
Dissolved Metals by ICP-MS	All	NDPs: 2 Tests: 2		X		N	X	N
Dissolved Organic/Inorganic Carbon	All	NDPs: 2 Tests: 2		X		N	X	N
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2	X				X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2	X				X	
Fluoride	All	NDPs: 2 Tests: 2		X		N	X	N
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3	X				X	X
Loss on Ignition in soils	All	NDPs: 0 Tests: 2	X				X	
Mercury Dissolved	All	NDPs: 2 Tests: 2		X		N	X	N
Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X				X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
Location: Dublin Airport

Superseded Report:

Results Legend



Test


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

PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2	X					X		
PAH by GCMS	All	NDPs: 0 Tests: 2	X					X		
PCBs by GCMS	All	NDPs: 0 Tests: 2	X					X		
pH	All	NDPs: 0 Tests: 3	X				X	X		
pH Value of Filtered Water	All	NDPs: 2 Tests: 2		X		N		X		N
Phenols by HPLC (W)	All	NDPs: 2 Tests: 2		X		N		X		N
Sample description	All	NDPs: 0 Tests: 3	X				X	X		
Total Dissolved Solids on Leachates	All	NDPs: 2 Tests: 2		X		N		X		N
Total Organic Carbon	All	NDPs: 0 Tests: 2	X					X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X					X		
VOC MS (S)	All	NDPs: 0 Tests: 2			X				X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27469999	GI4	0.10 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
27469994	GI7	0.10 - 1.00	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

SDG: 230127-88
Client Ref.: DAA PFASReport Number: 677858
Location: Dublin Airport

Superseded Report:

Results Legend		Customer Sample Ref.	GI4	GI7			
# 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	0.10 - 1.00 Unspecified Solid (UNS) 25/01/2023	0.10 - 1.00 Unspecified Solid (UNS) 25/01/2023			
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	20	18			
Loss on ignition	<0.7 %	TM018	6.09	5.35			
Organic Carbon, Total	<0.2 %	TM132	1.44	1.23			
pH	1 pH Units	TM133	8.08	8.32			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6			
PCB congener 28	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 52	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 101	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 118	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 138	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 153	<0.003 mg/kg	TM168	<0.015	<0.003			
PCB congener 180	<0.003 mg/kg	TM168	<0.015	<0.003			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.105	<0.021			
Chromium, Trivalent	<0.9 mg/kg	TM181	17.9	13.3			
Antimony	<0.6 mg/kg	TM181	1.16	1.51			
Arsenic	<0.6 mg/kg	TM181	16	13.9			
Barium	<0.6 mg/kg	TM181	160	101			
Cadmium	<0.02 mg/kg	TM181	1.5	2.16			
Chromium	<0.9 mg/kg	TM181	17.9	13.3			
Copper	<1.4 mg/kg	TM181	28.3	29.4			
Lead	<0.7 mg/kg	TM181	37.4	38			
Mercury	<0.1 mg/kg	TM181	<0.1	<0.1			
Molybdenum	<0.1 mg/kg	TM181	2.91	3.64			
Nickel	<0.2 mg/kg	TM181	37	42.3			
Selenium	<1 mg/kg	TM181	2.01				
Zinc	<1.9 mg/kg	TM181	89.9	90.4			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10			
Coronene	<0.2 mg/kg	TM410	<0.2	<0.2			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	60	<5			



CERTIFICATE OF ANALYSIS

SDG: 230127-88
Client Ref.: DAA PFASReport Number: 677858
Location: Dublin Airport

Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	GI4	GI7			
# 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	0.10 - 1.00 Unspecified Solid (UNS) 25/01/2023 27/01/2023 230127-88 27469999	0.10 - 1.00 Unspecified Solid (UNS) 25/01/2023 27/01/2023 230127-88 27469994			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	84.8	90			
Aliphatics >C5-C6 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C6-C8 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C8-C10 (HS_1D_AL)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1 mg/kg	TM414	<1	<1			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1 mg/kg	TM414	18.8	4.49			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1 mg/kg	TM414	28.7	<1			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5 mg/kg	TM414	47.7	<5			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10 mg/kg	TM414	122	14.5			
Aromatics >EC5-EC7 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC7-EC8 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics >EC8-EC10 (HS_1D_AR)	<0.01 mg/kg	TM089	<0.01	<0.01			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1 mg/kg	TM414	<1	<1			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1 mg/kg	TM414	1.15	<1			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1 mg/kg	TM414	44.5	8.89			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	28.7	<1			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1 mg/kg	TM414	11.6	<1			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5 mg/kg	TM414	74.3	9.95			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10 mg/kg	TM414	122	<10			
GRO >C5-C6 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C6-C7 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C7-C8 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C8-C10 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
GRO >C10-C12 (HS_1D)	<0.02 mg/kg	TM089	<0.02	<0.02			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<0.05 mg/kg	TM089	<0.05	<0.05			
GRO >C5-C10 (HS_1D_TOTAL)	<0.02 mg/kg	TM089	<0.02	<0.02			



CERTIFICATE OF ANALYSIS

SDG: 230127-88
Client Ref.: DAA PFASReport Number: 677858
Location: Dublin Airport

Superseded Report:

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	GI4 0.10 - 1.00 MISC_SOLID 25/01/2023 00:00:00 27/01/2023 10:05:00 230127-88 27469999 TM048	08/02/23	Eva Guerra	-	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	GI7 0.10 - 1.00 MISC_SOLID 25/01/2023 00:00:00 27/01/2023 10:05:00 230127-88 27469994 TM048	08/02/23	Eva Guerra	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFASReport Number: 677858
Location: Dublin Airport

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	16.6
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	85.8
Particle Size <4mm	>95%		

Case	
SDG	230127-88
Lab Sample Number(s)	27469994
Sampled Date	25-Jan-2023
Customer Sample Ref.	GI7
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.23
Loss on Ignition (%)	5.35
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.32
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0076	<0.0002	0.076	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0017	<0.0003	0.017	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00897	<0.003	0.0897	<0.03	0.5	10	30
Nickel	0.000479	<0.0004	0.00479	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.642	<0.5	6.42	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	89.8	<10	898	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.39
Conductivity (µS/cm)	132
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

08/02/2023 11:20:40

11:20:28 08/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFASReport Number: 677858
Location: Dublin Airport

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Dublin Airport
Mass Sample taken (kg)	0.114	Natural Moisture Content (%)	25.8
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	79.5
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	230127-88	
Lab Sample Number(s)	27469999	
Sampled Date	25-Jan-2023	
Customer Sample Ref.	GI4	
Depth (m)	0.10 - 1.00	

Solid Waste Analysis	Result	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.44	3	5	6
Loss on Ignition (%)	6.09	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.105	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	60	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.08	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00143	<0.0005	0.0143	<0.005	0.5	2	25
Barium	0.0112	<0.0002	0.112	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00616	<0.0003	0.0616	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00577	<0.003	0.0577	<0.03	0.5	10	30
Nickel	0.0014	<0.0004	0.014	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.0012	<0.001	0.012	<0.01	0.06	0.7	5
Selenium	0.00145	<0.001	0.0145	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.672	<0.5	6.72	<5	10	150	500
Sulphate (soluble)	22	<2	220	<20	1000	20000	50000
Total Dissolved Solids	123	<10	1230	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	8.04	<3	80.4	<30	500	800	1000

Leach Test Information

Date Prepared	31-Jan-2023
pH (pH Units)	8.37
Conductivity (µS/cm)	180
Volume Leachant (Litres)	0.876

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

08/02/2023 11:20:40

11:20:28 08/02/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
Location: Dublin Airport

Superseded Report:

Notification of NDPs (No determination possible)

Date Received : 27/01/2023 11:35:19

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
27470000	GI4	1.00 - 2.00	Anions by Kone (w)	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Fluoride	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Phenols by HPLC (W)	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Dissolved Organic/Inorganic Carbon	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Mercury Dissolved	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Total Dissolved Solids on Leachates	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	Dissolved Metals by ICP-MS	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Anions by Kone (w)	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Fluoride	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Phenols by HPLC (W)	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Dissolved Organic/Inorganic Carbon	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Mercury Dissolved	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Total Dissolved Solids on Leachates	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	Dissolved Metals by ICP-MS	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	CEN 10:1 Leachate (1 Stage)	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	CEN Readings	Insufficient sample supplied
27470000	GI4	1.00 - 2.00	pH Value of Filtered Water	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	CEN 10:1 Leachate (1 Stage)	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	CEN Readings	Insufficient sample supplied
27469994	GI7	0.10 - 1.00	pH Value of Filtered Water	Insufficient sample supplied



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
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
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230127-88
Client Ref.: DAA PFAS

Report Number: 677858
Location: Dublin Airport

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27469999	27470000	27469994
Customer Sample Ref.	G14	G14	G17
AGS Ref.			
Depth	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00
Type	Unspecified So	Unspecified So	Unspecified So

Anions by Kone (w)	03-Feb-2023		03-Feb-2023
Asbestos ID in Solid Samples	08-Feb-2023		08-Feb-2023
CEN 10:1 Leachate (1 Stage)	01-Feb-2023		01-Feb-2023
CEN Readings	07-Feb-2023		03-Feb-2023
Chromium III	06-Feb-2023		07-Feb-2023
Coronene	06-Feb-2023		06-Feb-2023
Dissolved Metals by ICP-MS	06-Feb-2023		06-Feb-2023
Dissolved Organic/Inorganic Carbon	03-Feb-2023		03-Feb-2023
EPH by GCxGC-FID	06-Feb-2023		06-Feb-2023
EPH CWG GC (S)	03-Feb-2023		06-Feb-2023
Fluoride	03-Feb-2023		03-Feb-2023
GRO by GC-FID (S)	03-Feb-2023		03-Feb-2023
Hexavalent Chromium (s)	03-Feb-2023		03-Feb-2023
Loss on Ignition in soils	06-Feb-2023		06-Feb-2023
Mercury Dissolved	06-Feb-2023		06-Feb-2023
Metals in solid samples by OES	06-Feb-2023		07-Feb-2023
Moisture at 105C	31-Jan-2023	31-Jan-2023	31-Jan-2023
PAH 16 & 17 Calc	07-Feb-2023		07-Feb-2023
PAH by GCMS	07-Feb-2023		07-Feb-2023
PCBs by GCMS	06-Feb-2023		06-Feb-2023
pH	01-Feb-2023	01-Feb-2023	01-Feb-2023
pH Value of Filtered Water	03-Feb-2023		03-Feb-2023
Phenols by HPLC (W)	07-Feb-2023		07-Feb-2023
Sample description	31-Jan-2023	31-Jan-2023	31-Jan-2023
Total Dissolved Solids on Leachates	02-Feb-2023		06-Feb-2023
Total Organic Carbon	06-Feb-2023		06-Feb-2023
TPH CWG GC (S)	03-Feb-2023		06-Feb-2023
VOC MS (S)	02-Feb-2023		02-Feb-2023



CERTIFICATE OF ANALYSIS

SDG: 230127-88
Client Ref: DAA PFAS

Report Number: 677858
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

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	31 March 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	230315-106
Your Reference:	40000208
Location:	DAA
Report No:	684281
Order Number:	28002977

We received 5 samples on Wednesday March 15, 2023 and 5 of these samples were scheduled for analysis which was completed on Friday March 31, 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: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27685373	40000208		0.10 - 1.00	13/03/2023
27685375	40000208 GG5		1.00 - 2.00	13/03/2023
27685377	40000208 GH5		0.10 - 1.00	13/03/2023
27685379	40000208 GH5		1.00 - 2.00	13/03/2023
27685372	SP CONCRETE			13/03/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

Superseded Report:

Results Legend



Test


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

27685373

27685375

27685377

27685379

27685372

40000208
GG5

40000208
GG5

40000208
GH5

40000208
GH5

SP CONCRETE

0.10 - 1.00

1.00 - 2.00

0.10 - 1.00

1.00 - 2.00

250g Amber Jar
(ALE210)

400g Tub (ALE214)

250g Amber Jar
(ALE210)

400g Tub (ALE214)

250g Amber Jar
(ALE210)

400g Tub (ALE214)

400g Tub (ALE214)

1kg TUB with
Handle (ALE260)

60g VOC (ALE215)

S

S

S

S

S

S

S

S

S

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Asbestos ID in Solid Samples

All

NDPs: 0
Tests: 1

X

CEN Readings

All

NDPs: 0
Tests: 1

X

Chromium III

All

NDPs: 0
Tests: 1

X

Coronene

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X

Dissolved Organic/Inorganic Carbon

All

NDPs: 0
Tests: 1

X

EPH by GCxGC-FID

All

NDPs: 0
Tests: 1

X

EPH CWG GC (S)

All

NDPs: 0
Tests: 1

X

Fluoride

All

NDPs: 0
Tests: 1

X

GRO by GC-FID (S)

All

NDPs: 0
Tests: 1

X

Hexavalent Chromium (s)

All

NDPs: 0
Tests: 1

X

Loss on Ignition in soils

All

NDPs: 0
Tests: 1

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Metals in solid samples by OES

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

Superseded Report:

Results Legend



Test


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	27685372	27685379	27685377	27685375	27685373
						SP CONCRETE	40000208 GH5	40000208 GH5	40000208 GG5	40000208 GG5
						1kg TUB with Handle (ALE260)	60g VOC (ALE215)	400g Tub (ALE214)	250g Amber Jar (ALE210)	400g Tub (ALE214)
						S	S	S	S	S
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1						X		
PAH by GCMS	All	NDPs: 0 Tests: 1						X		
PCBs by GCMS	All	NDPs: 0 Tests: 1						X		
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 5						X	X	X
pH	All	NDPs: 0 Tests: 1						X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1						X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1						X		
Sample description	All	NDPs: 0 Tests: 5						X	X	X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 1						X		
Total Organic Carbon	All	NDPs: 0 Tests: 1						X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1						X		
VOC MS (S)	All	NDPs: 0 Tests: 1						X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27685373	40000208 GG5	0.10 - 1.00	Dark Brown	Sand	Stones	None
27685375	40000208 GG5	1.00 - 2.00	Dark Brown	Clay Loam	Stones	Vegetation
27685377	40000208 GH5	0.10 - 1.00	Dark Brown	Sandy Clay Loam	Stones	None
27685379	40000208 GH5	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27685372	SP CONCRETE		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: 230315-106
Client Ref.: 40000208Report Number: 684281
Location: DAA

Superseded Report:

Results Legend		Customer Sample Ref.		40000208 GG5	40000208 GG5	40000208 GH5	40000208 GH5	SP CONCRETE	
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference							
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)									
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	9.6	17	17	15	9		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	0.00053		
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorododecanoic acid (PFDoDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB	<0.0005	0.00071	<0.0005	<0.0005	<0.0005		
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB	<0.0005	0.0009	<0.0005	<0.0005	<0.0005		
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB	<0.0005	0.00053	<0.0005	<0.0005	<0.0005		
Perfluorononanoic acid (PFNA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB	<0.0005	0.00092	0.00094	<0.0005	0.00056		
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB	<0.0005	0.00096	<0.0005	<0.0005	<0.0005		
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB	<0.0005	0.00071	<0.0005	<0.0005	<0.0005		
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Loss on ignition	<0.7 %	TM018				3			
Organic Carbon, Total	<0.2 %	TM132				0.578			
pH	1 pH Units	TM133				8.79			
Chromium, Hexavalent	<0.6 mg/kg	TM151				<0.6			
PCB congener 28	<3 µg/kg	TM168				<15			
PCB congener 52	<3 µg/kg	TM168				<15			
PCB congener 101	<3 µg/kg	TM168				<15			
PCB congener 118	<3 µg/kg	TM168				<15			
PCB congener 138	<3 µg/kg	TM168				<15			
PCB congener 153	<3 µg/kg	TM168				<15			
PCB congener 180	<3 µg/kg	TM168				<15			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168				<105			
Chromium, Trivalent	<0.9 mg/kg	TM181				8.28			
Antimony	<0.6 mg/kg	TM181				<0.6			
Arsenic	<0.6 mg/kg	TM181				11.2			



Superseded Report:

Page 7 of 18

SDG: 230315-106

Report Number: 684281

Superseded Report:

Client Ref.: 40000208

Location: DAA

PAH by GCMS

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 230315-106
Client Ref.: 40000208Report Number: 684281
Location: DAA

Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.					
# 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	40000208 GH5 1.00 - 2.00 Unspecified Solid (UNS) 13/03/2023 15/03/2023 230315-106 27685379				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	119				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	4400				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	7440				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	11800				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	20800				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	5640				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	3230				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	8960				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	20800				
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089	<20				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20				

SDG: 230315-106

Report Number: 684281

Superseded Report:

Client Ref.: 40000208

Location: DAA

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 230315-106
Client Ref.: 40000208Report Number: 684281
Location: DAA

Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERIS 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.	40000208 GH5	23/03/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 2.00										
Sample Type	MISC_SOLID										
Date Sampled	13/03/2023 00:00:00										
Date Received	15/03/2023 10:40:00										
SDG	230315-106										
Original Sample	27685379										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208Report Number: 684281
Location: DAA

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.100

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

DAA

Natural Moisture Content (%) 11.6

Dry Matter Content (%) 89.6

Case

SDG 230315-106

Lab Sample Number(s) 27685379

Sampled Date 13-Mar-2023

Customer Sample Ref. 40000208 GH5

Depth (m) 1.00 - 2.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%) 0.578

Loss on Ignition (%) 3

Sum of BTEX (mg/kg) -

Sum of 7 PCBs (mg/kg) <0.105

Mineral Oil (mg/kg) (EH_2D_AL) <5

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 8.79

ANC to pH 6 (mol/kg) -

ANC to pH 4 (mol/kg) -

Eluate Analysis

C₂Concⁿ in 10:1 eluate (mg/l)A₂10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00295	<0.0005	0.0295	<0.005	0.5	2	25
Barium	0.00543	<0.0002	0.0543	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00215	<0.0003	0.0215	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0379	<0.003	0.379	<0.03	0.5	10	30
Nickel	0.0013	<0.0004	0.013	<0.004	0.4	10	40
Lead	0.000217	<0.0002	0.00217	<0.002	0.5	10	50
Antimony	0.0019	<0.001	0.019	<0.01	0.06	0.7	5
Selenium	0.0124	<0.001	0.124	<0.01	0.1	0.5	7
Zinc	0.00317	<0.001	0.0317	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.612	<0.5	6.12	<5	10	150	500
Sulphate (soluble)	14.6	<2	146	<20	1000	20000	50000
Total Dissolved Solids	64.4	<10	644	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.71	<3	67.1	<30	500	800	1000

Leach Test Information

Date Prepared 16-Mar-2023
pH (pH Units) 9.37
Conductivity (µS/cm) 92
Volume Leachant (Litres) 0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

31/03/2023 13:41:30

13:41:13 31/03/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

Superseded Report:

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB	Subcontracted Test
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	The Determination of Total Dissolved Solids in Water
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230315-106
Client Ref.: 40000208

Report Number: 684281
Location: DAA

Superseded Report:

Test Completion Dates

Lab Sample No(s)	27685373	27685375	27685377	27685379	27685372
Customer Sample Ref.	40000208 GG5	40000208 GG5	40000208 GH5	40000208 GH5	SP CONCRETE
AGS Ref.					
Depth	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00	
Type	Unspecified So	Unspecified So	Unspecified So	Unspecified So	Unspecified So
Anions by Kone (w)				18-Mar-2023	
Asbestos ID in Solid Samples				23-Mar-2023	
CEN 10:1 Leachate (1 Stage)				16-Mar-2023	
CEN Readings				20-Mar-2023	
Chromium III				20-Mar-2023	
Coronene				22-Mar-2023	
Dissolved Metals by ICP-MS				21-Mar-2023	
Dissolved Organic/Inorganic Carbon				18-Mar-2023	
EPH by GCxGC-FID				17-Mar-2023	
EPH CWG GC (S)				20-Mar-2023	
Fluoride				18-Mar-2023	
GRO by GC-FID (S)				20-Mar-2023	
Hexavalent Chromium (s)				16-Mar-2023	
Loss on Ignition in soils				20-Mar-2023	
Mercury Dissolved				20-Mar-2023	
Metals in solid samples by OES				21-Mar-2023	
Moisture at 105C				16-Mar-2023	
PAH 16 & 17 Calc				22-Mar-2023	
PAH by GCMS				20-Mar-2023	
PCBs by GCMS				20-Mar-2023	
PFAS by LCMS on solids (S-PFCLMS02)	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023
pH				20-Mar-2023	
pH Value of Filtered Water				20-Mar-2023	
Phenols by HPLC (W)				20-Mar-2023	
Sample description	15-Mar-2023	15-Mar-2023	15-Mar-2023	15-Mar-2023	15-Mar-2023
Total Dissolved Solids on Leachates				22-Mar-2023	
Total Organic Carbon				20-Mar-2023	
TPH CWG GC (S)				20-Mar-2023	
VOC MS (S)				20-Mar-2023	



CERTIFICATE OF ANALYSIS

Work Order	: PR2327721	Issue Date	: 31-Mar-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230315-106	Page	: 1 of 3
Order number	: ----	Date Samples	: 20-Mar-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-Mar-2023 - 31-Mar-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

				27685953 40000208 GG5		27685932 40000208 GG5		27686169 40000208 GH5	
				PR2327721001		PR2327721002		PR2327721003	
				15-Mar-2023 13:06		15-Mar-2023 13:05		15-Mar-2023 13:27	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00071	± 30.0%	<0.00050	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00053	± 30.0%	<0.00050	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00071	± 30.0%	<0.00050	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00096	± 30.0%	<0.00050	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00090	± 30.0%	<0.00050	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00092	± 30.0%	0.00094	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	0.00473	± 40.0%	0.00094	± 40.0%
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	89.7	± 5.0%	83.0	± 5.0%	85.1	± 5.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID

Client sampling date / time

				27686186 40000208 GH5		27686161 SP CONCRETE		----	
				PR2327721004		PR2327721005		----	
				15-Mar-2023 13:29		15-Mar-2023 13:26		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----



Sub-Matrix: SOIL				Client sample ID		27686186 40000208 GH5	27686161 SP CONCRETE	----	
				Laboratory sample ID		PR2327721004	PR2327721005	----	
				Client sampling date / time		15-Mar-2023 13:29	15-Mar-2023 13:26	----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued									
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00056	± 30.0%	----	----
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	0.00053	± 30.0%	----	----
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	----	----
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	0.00056	± 40.0%	----	----
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	82.8	± 5.0%	89.7	± 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: 230315-106
Client Ref: 40000208

Report Number: 684281
Location: DAA

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.



WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation:	31 March 2023
Customer:	WSP Ireland Consulting Limited
Sample Delivery Group (SDG):	230316-71
Your Reference:	DAA PFAS
Location:	Dublin Airport
Report No:	684282
Order Number:	28002977

This report has been revised and directly supersedes 682599 in its entirety.

We received 3 samples on Thursday March 16, 2023 and 3 of these samples were scheduled for analysis which was completed on Friday March 31, 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: 230316-71
Client Ref.: DAA PFAS

Report Number: 684282
Location: Dublin Airport

Superseded Report: 682599

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27690681	GI5/0.1-1.0		0.10 - 1.00	15/03/2023
27690687	GI5/1.0-2.0		1.00 - 2.00	15/03/2023
27690691	GI5/1.0-2.0D		1.00 - 2.00	15/03/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230316-71

Report Number: 684282

Superseded Report: 682599

Client Ref.: DAA PFAS

Location: Dublin Airport

Results Legend



Test



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

27690681

27690687

27690691

G15/0-1-1.0

G15/1-0-2.0

G15/1-0-2.0D

0.10 - 1.00

1.00 - 2.00

1.00 - 2.00

1kg TUB with
Handle (ALE260)

1kg TUB with
Handle (ALE210)

250g Amber Jar
(ALE260)

1kg TUB with
Handle (ALE210)

250g Amber Jar
(ALE260)

1kg TUB with
Handle (ALE260)

S

S

S

S

S

PFAS by LCMS on solids (S-PFCLMS02)

All

NDPs: 0
Tests: 3

X

X

X

Sample description

All

NDPs: 0
Tests: 3

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230316-71
Client Ref.: DAA PFAS

Report Number: 684282
Location: Dublin Airport

Superseded Report: 682599

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
27690681	GI5/0.1-1.0	0.10 - 1.00	Light Brown	Sandy Loam	Stones	None
27690687	GI5/1.0-2.0	1.00 - 2.00	Light Brown	Sandy Clay Loam	Stones	None
27690691	GI5/1.0-2.0D	1.00 - 2.00	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.

SDG: 230316-71
Client Ref.: DAA PFAS

Report Number: 684282

Superseded Report: 682599

Client Ref.: DAA PFAS

Location: Dublin Airport

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 230316-71

Report Number: 684282

Superseded Report: 682599

Client Ref.: DAA PFAS

Location: Dublin Airport

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: 230316-71
Client Ref.: DAA PFAS

Report Number: 684282
Location: Dublin Airport

Superseded Report: 682599

Test Completion Dates

Lab Sample No(s)	27690681	27690687	27690691
Customer Sample Ref.	GIS/0.1-1.0	GIS/1.0-2.0	GIS/1.0-2.0D
AGS Ref.			
Depth	0.10 - 1.00	1.00 - 2.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS by LCMS on solids (S-PFCLMS02)	31-Mar-2023	31-Mar-2023	31-Mar-2023
Sample description	17-Mar-2023	17-Mar-2023	17-Mar-2023



CERTIFICATE OF ANALYSIS

Work Order	: PR2328146	Issue Date	: 31-Mar-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230316-71	Page	: 1 of 3
Order number	: ----	Date Samples	: 20-Mar-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 21-Mar-2023 - 31-Mar-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

				27698362 GI5/0.1-1.0		27698348 GI5/1.0-2.0		27698359 GI5/1.0-2.0D	
				PR2328146001		PR2328146002		PR2328146003	
				17-Mar-2023 11:54		17-Mar-2023 11:51		17-Mar-2023 11:53	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	0.00062	± 30.0%	<0.00050	---	<0.00050	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	0.00055	± 30.0%	<0.00050	---	<0.00050	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	0.00105	± 30.0%	<0.00050	---	<0.00050	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	0.00162	± 30.0%	<0.00050	---	<0.00050	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	0.00471	± 40.0%	<0.00300	---	<0.00300	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	77.6	± 5.0%	88.5	± 5.0%	85.1	± 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: 230316-71
Client Ref: DAA PFAS

Report Number: 684282
Location: Dublin Airport

Superseded Report: 682599

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
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP Ireland Consulting Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
W91 TD0P

Attention: Lukas Pajank

CERTIFICATE OF ANALYSIS

Date of report Generation: 11 April 2023
Customer: WSP Ireland Consulting Limited
Sample Delivery Group (SDG): 230321-71
Your Reference: 40000208
Location: DAA
Report No: 685056
Order Number: 28002977

This report has been revised and directly supersedes 683840 in its entirety.

We received 4 samples on Tuesday March 21, 2023 and 4 of these samples were scheduled for analysis which was completed on Tuesday April 11, 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: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27662123	GE5/0.1-1.0		0.10 - 1.00	06/03/2023
27662124	GE5/1.0-2.0		1.00 - 2.00	06/03/2023
27662121	GF5/0.1-1.0		0.10 - 1.00	06/03/2023
27662122	GF5/1.0-2.0		1.00 - 2.00	06/03/2023

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

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

			27662123	27662124	27662121	27662122
			GES/0, 1-1.0	GES/1, 0-2.0	GFS/0, 1-1.0	GFS/1, 0-2.0
			0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)
			S	S	S	S
Anions by Kone (w)	All	NDPs: 0 Tests: 1			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X	X		
CEN Readings	All	NDPs: 0 Tests: 1		X		
Chromium III	All	NDPs: 0 Tests: 1			X	
Coronene	All	NDPs: 0 Tests: 1			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
Fluoride	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 1			X	
Mercury Dissolved	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

Results Legend



Test


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

			27662123	27662124	27662121	27662122
			GE50.1-1.0	GE51.0-2.0	GF50.1-1.0	GF51.0-2.0
			0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)
			S	S	S	S
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1			X	
PAH by GCMS	All	NDPs: 0 Tests: 1			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1			X	
PFAS by LCMS on solids (S-PFCLMS02)	All	NDPs: 0 Tests: 4	X	X	X	X
pH	All	NDPs: 0 Tests: 1			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 4	X	X	X	X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

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
27662123	GE5/0.1-1.0	0.10 - 1.00	Dark Brown	Silty Clay Loam	Crushed Brick	Stones
27662124	GE5/1.0-2.0	1.00 - 2.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
27662121	GF5/0.1-1.0	0.10 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27662122	GF5/1.0-2.0	1.00 - 2.00	Dark Brown	Sandy Clay Loam	Vegetation	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: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

Results Legend			Customer Sample Ref.		GE5/0.1-1.0	GE5/1.0-2.0	GF5/0.1-1.0	GF5/1.0-2.0		
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00		
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.				06/03/2023	06/03/2023	06/03/2023	06/03/2023		
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.				21/03/2023	21/03/2023	21/03/2023	21/03/2023		
*	Subcontracted - refer to subcontractor report for accreditation status.				230321-71	230321-71	230321-71	230321-71		
**	% 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				27662123	27662124	27662121	27662122		
(F)	Trigger breach confirmed									
1-4**@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024			14	17	15	13		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)*	mg/kg	SUB			0.00089	<0.0005	<0.0005	<0.0005		
Perfluorobutane sulfonic acid (PFBS)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorobutanoic acid (PFBA)*	mg/kg	SUB			0.00076	<0.0005	0.0005	<0.0005		
Perfluorodecane sulfonic acid (PFDS)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorodecanoic acid (PFDA)*	mg/kg	SUB			0.00255	<0.0005	0.0006	<0.0005		
Perfluorododecanoic acid (PFDDA)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
Perfluoroheptane sulfonic acid (PFHpS)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
Perfluoroheptanoic acid (PFHpA)*	mg/kg	SUB			0.00257	0.00067	0.00111	<0.0005		
Perfluorohexane sulfonic acid (PFHxS)*	mg/kg	SUB			0.00164	0.00056	0.00068	<0.0005		
Perfluorohexanoic acid (PFHxA)*	mg/kg	SUB			0.0014	<0.0005	0.00063	<0.0005		
Perfluorononanoic acid (PFNA)*	mg/kg	SUB			0.00954	0.00069	0.00467	0.00061		
Perfluorooctane sulfonamide (FOSA)*	mg/kg	SUB			<0.0005	<0.0005	<0.0005	<0.0005		
Perfluorooctane sulfonic acid (PFOS)*	mg/kg	SUB			0.0137	0.00094	0.00769	0.00091		
Perfluorooctanoic acid (PFOA)*	mg/kg	SUB			0.00833	0.0015	0.00376	0.00066		
Perfluoropentanoic acid (PFPeA)*	mg/kg	SUB			0.00157	<0.0005	0.00098	<0.0005		
Perfluoroundecanoic acid (PFUnDA)*	mg/kg	SUB			0.00156	<0.0005	<0.0005	<0.0005		
Loss on ignition	<0.7 %	TM018					4.37			
Organic Carbon, Total	<0.2 %	TM132					0.648			
pH	1 pH Units	TM133					8.54			
Chromium, Hexavalent	<0.6 mg/kg	TM151					<0.6			
PCB congener 28	<3 µg/kg	TM168					<3			
PCB congener 52	<3 µg/kg	TM168					<3			
PCB congener 101	<3 µg/kg	TM168					<3			
PCB congener 118	<3 µg/kg	TM168					<3			
PCB congener 138	<3 µg/kg	TM168					<3			
PCB congener 153	<3 µg/kg	TM168					<3			
PCB congener 180	<3 µg/kg	TM168					<3			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168					<21			
Chromium, Trivalent	<0.9 mg/kg	TM181					6.2			
Antimony	<0.6 mg/kg	TM181					0.956			
Arsenic	<0.6 mg/kg	TM181					13.1			

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 230321-71
Client Ref.: 40000208Report Number: 685056
Location: DAA

Superseded Report: 683840

TPH CWG (S)

Results Legend		Customer Sample Ref.	GF5/0.1-1.0				
# 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	0.10 - 1.00 Soil/Solid (S) 06/03/2023 21/03/2023 230321-71 27662121				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	122				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	#			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	#			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	#			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	#			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	#			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	#			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	#			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	#			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000				
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089	<20				
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089	<20				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20				



CERTIFICATE OF ANALYSIS

SDG: 230321-71
Client Ref.: 40000208Report Number: 685056
Location: DAA

Superseded Report: 683840

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	GE5/0.1-1.0 0.10 - 1.00 SOLID 06/03/2023 00:00:00 21/03/2023 14:30:00 230321-71 27662123 TM048	27/03/2023	Emily Anderton	-	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	GF5/0.1-1.0 0.10 - 1.00 SOLID 06/03/2023 00:00:00 21/03/2023 14:30:00 230321-71 27662121 TM048	20/03/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208Report Number: 685056
Location: DAA

Superseded Report: 683840

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	DAA
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	20.6
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	82.9
Particle Size <4mm	>95%		

Case	
SDG	230321-71
Lab Sample Number(s)	27662121
Sampled Date	06-Mar-2023
Customer Sample Ref.	GF5/0.1-1.0
Depth (m)	0.10 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.648
Loss on Ignition (%)	4.37
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	12.4
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.54
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00844	<0.0002	0.0844	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00104	<0.0003	0.0104	<0.003	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0171	<0.003	0.171	<0.03	0.5	10	30
Nickel	0.00115	<0.0004	0.0115	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.634	<0.5	6.34	<5	10	150	500
Sulphate (soluble)	7.1	<2	71	<20	1000	20000	50000
Total Dissolved Solids	87.3	<10	873	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.59	<3	45.9	<30	500	800	1000

Leach Test Information

Date Prepared	23-Mar-2023
pH (pH Units)	8.59
Conductivity (µS/cm)	124
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

11/04/2023 12:03:49

12:03:29 11/04/2023



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB	Subcontracted Test
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	The Determination of Total Dissolved Solids in Water
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 230321-71
Client Ref.: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

Test Completion Dates

Lab Sample No(s)	27662123	27662124	27662121	27662122
Customer Sample Ref.	GE5/0.1-1.0	GE5/1.0-2.0	GF5/0.1-1.0	GF5/1.0-2.0
AGS Ref.				
Depth	0.10 - 1.00	1.00 - 2.00	0.10 - 1.00	1.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)			27-Mar-2023	
Asbestos ID in Solid Samples	27-Mar-2023		20-Mar-2023	
CEN 10:1 Leachate (1 Stage)			23-Mar-2023	
CEN Readings			26-Mar-2023	
Chromium III			15-Mar-2023	
Coronene			15-Mar-2023	
Dissolved Metals by ICP-MS			28-Mar-2023	
Dissolved Organic/Inorganic Carbon			28-Mar-2023	
EPH by GCxGC-FID			16-Mar-2023	
EPH CWG GC (S)			16-Mar-2023	
Fluoride			27-Mar-2023	
GRO by GC-FID (S)			13-Mar-2023	
Hexavalent Chromium (s)			13-Mar-2023	
Loss on Ignition in soils			15-Mar-2023	
Mercury Dissolved			27-Mar-2023	
Metals in solid samples by OES			15-Mar-2023	
Moisture at 105C			23-Mar-2023	
PAH 16 & 17 Calc			15-Mar-2023	
PAH by GCMS			15-Mar-2023	
PCBs by GCMS			16-Mar-2023	
PFAS by LCMS on solids (S-PFCLMS02)	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023
pH			15-Mar-2023	
pH Value of Filtered Water			26-Mar-2023	
Phenols by HPLC (W)			28-Mar-2023	
Sample description	11-Mar-2023	12-Mar-2023	12-Mar-2023	11-Mar-2023
Total Dissolved Solids on Leachates			28-Mar-2023	
Total Organic Carbon			15-Mar-2023	
TPH CWG GC (S)			16-Mar-2023	
VOC MS (S)			13-Mar-2023	



CERTIFICATE OF ANALYSIS

Work Order	: PR2327063	Issue Date	: 31-Mar-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230309-111	Page	: 1 of 3
Order number	: ----	Date Samples	: 17-Mar-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 17-Mar-2023 - 31-Mar-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	27671347 GE5/0.1-1.0		27671324 GE5/1.0-2.0		27671033 GF5/0.1-1.0	
				PR2327063001	11-Mar-2023 12:50	PR2327063002	11-Mar-2023 12:46	PR2327063003	11-Mar-2023 11:56
Result	MU	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	0.00076	± 30.0%	<0.00050	---	0.00050	± 30.0%
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	0.00157	± 30.0%	<0.00050	---	0.00098	± 30.0%
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	0.00140	± 30.0%	<0.00050	---	0.00063	± 30.0%
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	0.00257	± 30.0%	0.00067	± 30.0%	0.00111	± 30.0%
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.00050	mg/kg DW	0.00833	± 30.0%	0.00150	± 30.0%	0.00376	± 30.0%
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	0.00954	± 30.0%	0.00069	± 30.0%	0.00467	± 30.0%
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	0.00255	± 30.0%	<0.00050	---	0.00060	± 30.0%
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	0.00156	± 30.0%	<0.00050	---	<0.00050	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	0.00164	± 30.0%	0.00056	± 30.0%	0.00068	± 30.0%
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	0.0137	± 30.0%	0.00094	± 30.0%	0.00769	± 30.0%
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	0.00089	± 30.0%	<0.00050	---	<0.00050	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	79.3	± 5.0%	83.2	± 5.0%	80.5	± 5.0%

Sub-Matrix: SOIL

Client sample ID

Laboratory sample ID

Client sampling date / time

Parameter	Method	LOR	Unit	27671293 GF5/1.0-2.0		27671348 LOC2/0.1-1.0		27671340 LOC2/1.0-2.0	
				PR2327063004	11-Mar-2023 12:40	PR2327063005	11-Mar-2023 12:50	PR2327063006	11-Mar-2023 12:49
Result	MU	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctanoic acid (PFOA)	S-PFCLMS02	0.00050	mg/kg DW	0.00066	± 30.0%	<0.00050	---	<0.00050	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	0.00061	± 30.0%	<0.00050	---	<0.00050	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---



Sub-Matrix: SOIL				Client sample ID		27671293 GF5/1.0-2.0		27671348 LOC2/0.1-1.0		27671340 LOC2/1.0-2.0	
				Laboratory sample ID		PR2327063004		PR2327063005		PR2327063006	
				Client sampling date / time		11-Mar-2023 12:40		11-Mar-2023 12:50		11-Mar-2023 12:49	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds - Continued											
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	0.00091	± 30.0%	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---	<0.00050	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---	<0.00050	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---	<0.00050	---
Physical Parameters											
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	85.8	± 5.0%	84.5	± 5.0%	85.4	± 5.0%	85.4	± 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

Work Order	: PR2327243	Issue Date	: 31-Mar-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	: euhdnsbconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 230309-111	Page	: 1 of 3
Order number	: ----	Date Samples	: 17-Mar-2023
		Received	
		Quote number	: PR2022ALSEC-GB0002 (CZ-256-18-0022)
Site	: ----	Date of test	: 17-Mar-2023 - 31-Mar-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

				27672210 LOC3/0.1-1.0 PR2327243001 12-Mar-2023 05:52		27672208 LOC3/1.0-2.0 PR2327243002 12-Mar-2023 05:49		27672209 SP101 PR2327243003 12-Mar-2023 05:50	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoropentanoic acid (PFPeA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexanoic acid (PFHxA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroheptanoic acid (PFHpA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorononanoic acid (PFNA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorodecanoic acid (PFDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroundecanoic acid (PFUnDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorododecanoic acid (PFDoDA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorobutane sulfonic acid (PFBS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorohexane sulfonic acid (PFHxS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluoroheptane sulfonic acid (PFHpS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonic acid (PFOS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorodecane sulfonic acid (PFDS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Perfluorooctane sulfonamide (FOSA)	S-PFCLMS02	0.00050	mg/kg DW	<0.00050	---	<0.00050	---	<0.00050	---
Sum of 12 PFAS (M1)	S-PFCLMS02	0.00300	mg/kg DW	<0.00300	---	<0.00300	---	<0.00300	---
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	83.2	± 5.0%	92.7	± 5.0%	83.7	± 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: 230321-71
Client Ref: 40000208

Report Number: 685056
Location: DAA

Superseded Report: 683840

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.

Analytical report

WSP
Trevor Montague
WSP Ireland Consulting Limited
Trinity House, Charleston Road
D06C8X4 DUBLIN 6

Page 1 of 11

Your Project name : WSP Golder Dublin Airport Authority
Your Project number : WSP_40000208
SGS report number : 13808687, version: 1.

Rotterdam, 01.02.2023

Dear Mr./Mrs,

Attached you find the results of the laboratory tests carried out for your project WSP_40000208. The tests were carried out according to your order. The reported results relate exclusively to the samples tested and as received by SGS. The sample description, sample date (if provided) and project description were adopted from your order. SGS is not responsible for the data provided by the customer.

All tests were carried out by SGS Environmental Analytics, Steenhouwerstraat 15, Rotterdam, Netherlands. Tests outsourced are marked in the report.

This certificate contains inclusive attachments 11 pages. In case of a version number of '2' or higher all former versions of the certificate are invalid. All attachments are inextricably part of this certificate. Only reproduction of the whole report is allowed.

In case of questions and/or remarks related to this certificate, for example in case of information required about measurement uncertainty of the analytical methods, please contact our Customer Support department.

As of September 1st, 2022 SGS Environmental Analytics B.V. has merged with SGS Nederland B.V. and trades under the name SGS Environmental Analytics. All SGS Environmental Analytics B.V. recognitions will remain in force and are/will be transferred to SGS Nederland B.V.

Yours faithfully,



René Eugster
Operations Manager Rotterdam

Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description						
001	Soil	DAAGJ3						
002	Soil	DAAGJ3						
003	Soil	DAAGJ4						
004	Soil	DAAGJ4						
005	Soil	DAAGK4						
Analysis	Unit	Q	001	002	003	004	005	
sample pretreatment		Q	Yes	Yes	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	84.3	86.0	84.0	88.1	79.4	
<i>PER- AND POLYFLUOROALKYL SUBSTANCES</i>								
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	0.1	<0.1	<0.1	<0.1	0.2	
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	0.2	
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	0.1	
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	0.3	
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
sum PFOA	µg/kgdm		<0.2	<0.2	<0.2	<0.2	0.3	
PFNA (perfluorononanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFDoDA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFTriDA (perfluorotridecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFHxDA (perfluorohexadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFODA (perfluorooctadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFBS (perfluorobutane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFPeS (perfluoropentane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFHxS (perfluorohexane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	1.3	
PFHpS (perfluoroheptane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1	
PFOS linear (perfluorooctane sulfonic acid)	µg/kgdm	Q	<0.1	0.5	<0.1	<0.1	0.3	
PFOS branched (perfluorooctane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	0.5	
sum PFOS	µg/kgdm		<0.2	0.5	<0.2	<0.2	0.8	

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description						
001	Soil	DAAGJ3						
002	Soil	DAAGJ3						
003	Soil	DAAGJ4						
004	Soil	DAAGJ4						
005	Soil	DAAGK4						

Analysis	Unit	Q	001	002	003	004	005
PFDS (perfluorodecane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
4:2 FTS (4:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS (6:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS (8:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
10:2 FTS (10:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFOSA (perfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
MeFOSA (N-methylperfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description
006	Soil	DAAGK4
007	Soil	DAAGB6
008	Soil	DAAGB5
009	Soil	DAAGC6
010	Soil	DAAGB6

Analysis	Unit	Q	006	007	008	009	010
sample pretreatment		Q	Yes	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	85.4	85.6	81.0	85.6	79.2
<i>PER- AND POLYFLUOROALKYL SUBSTANCES</i>							
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	<0.1	0.1	1.7	0.1	1.2
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	<0.1	0.6	4.7	0.7	3.1
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	<0.1	0.6	2.6	1.2	1.6
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	<0.1	0.7	3.0	2.3	1.9
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	1.6	5.9	1.4	4.8
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sum PFOA	µg/kgdm		<0.2	1.6	5.9	1.4	4.8
PFNA (perfluorononanoic acid)	µg/kgdm	Q	<0.1	1.7	9.4	0.4	5.6
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	<0.1	<0.1	4.2	<0.1	2.5
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	<0.1	<0.1	17	<0.1	4.3
PFDoDA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.4	<0.1	0.2
PFTTrDA (perfluorotridecanoic acid)	µg/kgdm	Q	<0.1	<0.1	2.9	<0.1	0.6
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFHxDA (perfluorohexadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFODA (perfluorooctadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFBS (perfluorobutane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	0.1	0.1	<0.1
PFPeS (perfluoropentane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	0.2	0.2	0.1
PFHxS (perfluorohexane sulfonic acid)	µg/kgdm	Q	0.2	2.4	5.5	4.2	4.3
PFHpS (perfluoroheptane sulfonic acid)	µg/kgdm	Q	<0.1	0.3	2.4	0.1	1.3
PFOS linear (perfluorooctane sulfonic acid)	µg/kgdm	Q	0.1	15	310	0.5	280
PFOS branched (perfluorooctane sulfonic acid)	µg/kgdm	Q	<0.1	6.6	36	0.6	60
sum PFOS	µg/kgdm		<0.2	22	350	1.1	340

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description
006	Soil	DAAGK4
007	Soil	DAAGB6
008	Soil	DAAGB5
009	Soil	DAAGC6
010	Soil	DAAGB6

Analysis	Unit	Q	006	007	008	009	010
PFDS (perfluorodecane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	4.7	<0.1	1.3
4:2 FTS (4:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS (6:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	0.2	0.9	1.6	0.9
8:2 FTS (8:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	0.2	3.7	0.2	3.5
10:2 FTS (10:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	1.9	<0.1	1.5
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFOSA (perfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	0.2	<0.1	0.2
MeFOSA (N-methylperfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description
011	Soil	DAAGB5
012	Soil	DAAGC6
013	Soil	DAAGC7
014	Soil	DAAGC7

Analysis	Unit	Q	011	012	013	014
sample pretreatment		Q	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	82.5	81.3	86.0	89.4
<i>PER- AND POLYFLUOROALKYL SUBSTANCES</i>						
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	0.6	<0.1	<0.1	<0.1
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	2.3	0.3	0.2	<0.1
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	1.7	0.6	0.5	0.1
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	1.9	1.2	0.2	<0.1
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	4.9	1.7	1.2	0.3
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.1	<0.1
sum PFOA	µg/kgdm		4.9	1.7	1.3	0.3
PFNA (perfluorononanoic acid)	µg/kgdm	Q	19	1.2	2.3	0.2
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	1.1	<0.1	<0.1	<0.1
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	4.7	<0.1	0.2	<0.1
PFDoDA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFTTrDA (perfluorotridecanoic acid)	µg/kgdm	Q	0.4	<0.1	<0.1	<0.1
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFHxDA (perfluorohexadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFODA (perfluorooctadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFBS (perfluorobutane sulfonic acid)	µg/kgdm	Q	<0.1	0.2	0.1	<0.1
PFPeS (perfluoropentane sulfonic acid)	µg/kgdm	Q	0.2	0.1	0.2	<0.1
PFHxS (perfluorohexane sulfonic acid)	µg/kgdm	Q	5.6	4.7	7.3	2.0
PFHpS (perfluoroheptane sulfonic acid)	µg/kgdm	Q	3.1	0.3	0.7	<0.1
PFOS linear (perfluorooctane sulfonic acid)	µg/kgdm	Q	190	3.0	8.8	1.2
PFOS branched (perfluorooctane sulfonic acid)	µg/kgdm	Q	140	2.2	4.7	0.7
sum PFOS	µg/kgdm		330	5.2	14	1.9

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Code	Sample type	Sample description
011	Soil	DAAGB5
012	Soil	DAAGC6
013	Soil	DAAGC7
014	Soil	DAAGC7

Analysis	Unit	Q	011	012	013	014
PFDS (perfluorodecane sulfonic acid)	µg/kgdm	Q	1.1	<0.1	<0.1	<0.1
4:2 FTS (4:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
6:2 FTS (6:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	0.9	0.9	0.5	0.2
8:2 FTS (8:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	0.8	0.6	0.3	0.2
10:2 FTS (10:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	0.2	0.4	0.3	0.1
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFOSA (perfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
MeFOSA (N-methylperfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Analyses	Sample type	Relation to standard
sample pretreatment	Soil	Soil: NEN-EN 16179. Soil (AS3000): AS3000 and NEN-EN 16179
dry weight	Soil	Soil: NEN-EN 15934. Soil (AS3000): AS3010-2 and NEN-EN 15934
PFBA (perfluorobutanoic acid)	Soil	In house method
PFPeA (perfluoropentanoic acid)	Soil	Ditto
PFHxA (perfluorohexanoic acid)	Soil	Ditto
PFHpA (perfluoroheptanoic acid)	Soil	Ditto
PFOA linear (perfluorooctanoic acid)	Soil	Ditto
PFOA branched (perfluorooctanoic acid)	Soil	Ditto
sum PFOA	Soil	Ditto
PFNA (perfluorononanoic acid)	Soil	Ditto
PFDA (perfluorodecanoic acid)	Soil	Ditto
PFUnDA (perfluoroundecanoic acid)	Soil	Ditto
PFDoDA (perfluorododecanoic acid)	Soil	Ditto
PFTTrDA (perfluorotridecanoic acid)	Soil	Ditto
PFTeDA (perfluorotetradecanoic acid)	Soil	Ditto
PFHxDA (perfluorohexadecanoic acid)	Soil	Ditto
PFODA (perfluorooctadecanoic acid)	Soil	Ditto
PFBS (perfluorobutane sulfonic acid)	Soil	Ditto
PFPeS (perfluoropentane sulfonic acid)	Soil	Ditto
PFHxS (perfluorohexane sulfonic acid)	Soil	Ditto
PFHpS (perfluoroheptane sulfonic acid)	Soil	Ditto
PFOS linear (perfluorooctane sulfonic acid)	Soil	Ditto
PFOS branched (perfluorooctane sulfonic acid)	Soil	Ditto
sum PFOS	Soil	Ditto
PFDS (perfluorodecane sulfonic acid)	Soil	Ditto
4:2 FTS (4:2 fluorotelomer sulfonic acid)	Soil	Ditto
6:2 FTS (6:2 fluorotelomer sulfonic acid)	Soil	Ditto
8:2 FTS (8:2 fluorotelomer sulfonic acid)	Soil	Ditto
10:2 FTS (10:2 fluorotelomer sulfonic acid)	Soil	Ditto
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	Soil	Ditto
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	Soil	Ditto

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Analyses	Sample type	Relation to standard
PFOSA (perfluorooctanesulfonamide)	Soil	Ditto
MeFOSA (N-methylperfluorooctanesulfonamide)	Soil	Ditto
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	Ditto

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
sample pretreatment	Soil	-		-	-	-
dry weight	Soil	-		1 %	3.1 %	7.6 %
PFBA (perfluorobutanoic acid)	Soil	0.1 µg/kgdm	375-22-4	-2.08 %	5.5 %	12 %
PFPeA (perfluoropentanoic acid)	Soil	0.1 µg/kgdm	2706-90-3	-5.4 %	7.7 %	19 %
PFHxA (perfluorohexanoic acid)	Soil	0.1 µg/kgdm	307-24-4	0 %	5.4 %	11 %
PFHpA (perfluoroheptanoic acid)	Soil	0.1 µg/kgdm	375-85-9	-2.5 %	8.1 %	17 %
PFOA linear (perfluorooctanoic acid)	Soil	0.1 µg/kgdm	335-67-1	6.8 %	6.6 %	19 %
PFOA branched (perfluorooctanoic acid)	Soil	0.1 µg/kgdm		6.8 %	16 %	35 %
sum PFOA	Soil	0.1 µg/kgdm	-	7 %	7.9 %	21 %
PFNA (perfluorononanoic acid)	Soil	0.1 µg/kgdm	375-95-1	1.2 %	6.2 %	13 %
PFDA (perfluorodecanoic acid)	Soil	0.1 µg/kgdm	335-76-2	-1.98 %	5.3 %	11 %
PFUnDA (perfluoroundecanoic acid)	Soil	0.1 µg/kgdm	2058-94-8	-9.5 %	5.9 %	22 %
PFDoDA (perfluorododecanoic acid)	Soil	0.1 µg/kgdm	307-55-1	-4.68 %	7.8 %	18 %
PFTTrDA (perfluorotridecanoic acid)	Soil	0.1 µg/kgdm	72629-94-8	-10.3 %	11 %	30 %
PFTeDA (perfluorotetradecanoic acid)	Soil	0.1 µg/kgdm	376-06-7	-6.7 %	7.4 %	20 %
PFHxDA (perfluorohexadecanoic acid)	Soil	0.1 µg/kgdm	67905-19-5	-5.88 %	4.1 %	14 %
PFODA (perfluorooctadecanoic acid)	Soil	0.1 µg/kgdm	16517-11-6	-14.9 %	9.2 %	35 %
PFBS (perfluorobutane sulfonic acid)	Soil	0.1 µg/kgdm	375-73-5	-8.38 %	14 %	32 %
PFPeS (perfluoropentane sulfonic acid)	Soil	0.1 µg/kgdm	2706-91-4	-5.08 %	8.4 %	20 %
PFHxS (perfluorohexane sulfonic acid)	Soil	0.1 µg/kgdm	355-46-4	0.6 %	9 %	18 %
PFHpS (perfluoroheptane sulfonic acid)	Soil	0.1 µg/kgdm	375-92-8	-2.88 %	9 %	19 %
PFOS linear (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm	1763-23-1	-9.98 %	11 %	21 %
PFOS branched (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm		-0.1 %	17 %	32 %
sum PFOS	Soil	0.1 µg/kgdm		0 %	11 %	22 %
PFDS (perfluorodecane sulfonic acid)	Soil	0.1 µg/kgdm	335-77-3	-8.58 %	9 %	25 %
4:2 FTS (4:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	757124-72-4	-4.1 %	9 %	20 %
6:2 FTS (6:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	27619-97-2	4.8 %	12 %	27 %
8:2 FTS (8:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	39108-34-4	3.2 %	9.8 %	21 %
10:2 FTS (10:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	120226-60-0	9 %	10 %	27 %
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2355-31-9	-3.9 %	4.2 %	12 %

Initials :



Analytical report

WSP

Trevor Montague

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808687 - 1

Order date 27.01.2023

Starting date 27.01.2023

Report date 01.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2991-50-6	-3 %	8.7 %	18 %
PFOSA (perfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	754-91-6	-4.2 %	4.9 %	13 %
MeFOSA (N-methylperfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	31506-32-8	-6.3 %	5.3 %	17 %
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	0.1 µg/kgdm	678-41-1	-3.48 %	6.2 %	14 %

The expressed extended measurement uncertainty (U) is the uncertainty at 95% reliability. More information regarding the expressed figures is given in the factsheet measurement uncertainty.

Sample	Barcode	Reception date	Sampling date	Container
001	X1381385	25.01.2023	24.01.2023	ALC201
002	X1381389	25.01.2023	24.01.2023	ALC201
003	X1381384	25.01.2023	24.01.2023	ALC201
004	X1381729	25.01.2023	24.01.2023	ALC201
005	X1381724	25.01.2023	24.01.2023	ALC201
006	X1381718	25.01.2023	24.01.2023	ALC201
007	X1381719	25.01.2023	24.01.2023	ALC201
008	X1381396	25.01.2023	24.01.2023	ALC201
009	X1381727	25.01.2023	24.01.2023	ALC201
010	X1381728	25.01.2023	24.01.2023	ALC201
011	X1381390	25.01.2023	24.01.2023	ALC201
012	X1381723	25.01.2023	24.01.2023	ALC201
013	X1381725	25.01.2023	24.01.2023	ALC201
014	X1381721	25.01.2023	24.01.2023	ALC201

Initials :



Analytical report

SGS Environmental Analytics

Steenhouwerstraat 15 · 3194 AG Rotterdam Tel.:
+31 (0)10 231 47 00 · Fax: +31 (0)10 416 30 34
www.sgs.com/analytics-nl



WSP
TM Montague
WSP Ireland Consulting Limited
Trinity House, Charleston Road
D06C8X4 DUBLIN 6

Page 1 of 11

Your Project name : WSP Golder Dublin Airport Authority
Your Project number : WSP_40000208

SGS report number : 13808688, version: 1.

Rotterdam, 15.02.2023

Dear Mr./Mrs,

Attached you find the results of the laboratory tests carried out for your project WSP_40000208. The tests were carried out according to your order. The reported results relate exclusively to the samples tested and as received by SGS. The sample description, sample date (if provided) and project description were adopted from your order. SGS is not responsible for the data provided by the customer.

All tests were carried out by SGS Environmental Analytics, Steenhouwerstraat 15, Rotterdam, Netherlands. Tests outsourced are marked in the report.

This certificate contains inclusive attachments 11 pages. In case of a version number of '2' or higher all former versions of the certificate are invalid. All attachments are inextricably part of this certificate. Only reproduction of the whole report is allowed.

In case of questions and/or remarks related to this certificate, for example in case of information required about measurement uncertainty of the analytical methods, please contact our Customer Support department.

As of September 1st, 2022 SGS Environmental Analytics B.V. has merged with SGS Nederland B.V. and trades under the name SGS Environmental Analytics. All SGS Environmental Analytics B.V. recognitions will remain in force and are/will be transferred to SGS Nederland B.V.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'R. Eugster', with a long horizontal stroke extending to the right.

René Eugster
Operations Manager Rotterdam



Analytical report

WSP
Montague Trevor
Project name
27.01.2023

WSP Golder Dublin Airport Authority Order date

Project number WSP_40000208

Starting date 09.02.2023
Report number 13808688 - 1

Report date 15.02.2023

Code	Sample type	Sample description	Depth
001	Soil	DAA/GH7	0 - 1m
002	Soil	DAA/GH7	1 - 2m
003	Soil	DAA/GI7	0 - 1m
004	Soil	DAA/GI7	1 - 2m
005	Soil	DAA/GJ7	0 - 1m

Analysis	Unit	Q	001	002	003	004	005
grinding sample material	-					Yes	
sample pretreatment		Q	Yes	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	82.3	83.7	83.3	87.9	82.6
<i>PER- AND POLYFLUOROALKYL SUBSTANCES</i>							
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	0.2	<0.1	1.2	0.1	0.2
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	0.5	0.3	4.5	1.1	0.7
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	0.5	0.4	3.0	0.9	0.5
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	0.8	0.4	3.8	0.6	0.4
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	2.9	0.9	4.6	0.3	0.8
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sum PFOA	µg/kgdm		2.9	0.9	4.6	0.3	0.8
PFNA (perfluorononanoic acid)	µg/kgdm	Q	2.6	0.8	2.6	<0.1	0.6
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	0.4	<0.1	0.2	<0.1	<0.1
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	0.3	<0.1	<0.1	<0.1	<0.1
PFDoDA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFTTrDA (perfluorotridecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Analytical report

WSP

Montague Trevor

PFHxDA µg/kgdm
<0.1 <0.1

Q <0.1 <0.1 <0.1

(perfluorohexadecanoic acid)

PFODA	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
(perfluorooctadecanoic acid)							
PFBS (perfluorobutane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFPeS (perfluoropentane sulfonic acid)	µg/kgdm	Q	0.1	<0.1	0.1	<0.1	<0.1
PFHxS (perfluorohexane sulfonic acid)	µg/kgdm	Q	1.8	1.2	3.7	0.9	1.0
PFHpS (perfluoroheptane sulfonic acid)	µg/kgdm	Q	0.3	0.1	0.2	<0.1	<0.1
PFOS linear (perfluorooctane sulfonic acid)	µg/kgdm	Q	7.0	2.1	14	0.3	4.6

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13808688 - 1

Order date 27.01.2023
Starting date 09.02.2023
Report date 15.02.2023

Code	Sample type	Sample description	Depth
001	Soil	DAA/GH7	0 - 1m
002	Soil	DAA/GH7	1 - 2m
003	Soil	DAA/GI7	0 - 1m
004	Soil	DAA/GI7	1 - 2m
005	Soil	DAA/GJ7	0 - 1m

Analysis	Unit	Q	001	002	003	004	005
PFOS branched (perfluorooctane sulfonic acid)	µg/kgdm	Q	4.0	1.4	3.4	0.2	1.8
sum PFOS	µg/kgdm		11	3.5	17	0.5	6.4
PFDS (perfluorodecane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
4:2 FTS (4:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS (6:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	0.1	<0.1	<0.1
8:2 FTS (8:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	0.4	<0.1	0.2	<0.1	0.1
10:2 FTS (10:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
MePFOSAA (N-methylperfluorooctane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Analytical report

WSP
Montague Trevor
sulfonamidoacetic acid)

EtPFOSAA (N- <0.1	µg/kgdm <0.1	Q	<0.1	<0.1	<0.1	<0.1

ethylperfluorooctane

sulfonamidoacetic acid)

PFOSA	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

(perfluorooctanesulfonamide)

MeFOSA (N-	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

methylperfluorooctanesulfon

amide)

8:2 DiPAP (8:2	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

polyfluoroalkyl phosphate

diester)

Project name	WSP Golder Dublin Airport Authority	Order date	27.01.2023
Project number	WSP_40000208	Starting date	09.02.2023
Report number	13808688 - 1	Report date	15.02.2023

Code	Sample type	Sample description	Depth
006	Soil	DAA/GJ7	1 - 2m
007	Soil	DAA/GO4	0 - 1m
008	Soil	DAA/GO4	1 - 2m
009	Soil	DAA/GJ5	0.5 - 1m
010	Soil	DAA/GJ5	1 - 2m

Analysis	Unit	Q	006	007	008	009	010
grinding sample material	-				Yes	Yes	
sample pretreatment		Q	Yes	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	88.4	77.4	87.2	85.6	82.8
PER- AND POLYFLUOROALKYL SUBSTANCES							
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	<0.1	0.1	<0.1	<0.1	<0.1
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	0.1	0.2	<0.1	<0.1	<0.1
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	<0.1	0.2	<0.1	<0.1	<0.1
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	<0.1	0.2	<0.1	<0.1	<0.1
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	0.3	<0.1	<0.1	<0.1
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sum PFOA	µg/kgdm		<0.2	0.3	<0.2	<0.2	<0.2
PFNA (perfluorononanoic acid)	µg/kgdm	Q	<0.1	0.2	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Analytical report

WSP
Montague Trevor
acid)

PFDA (perfluorodecanoic
<0.1 <0.1

µg/kgdm
<0.1

Q

<0.1

<0.1

acid)

PFUnDA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluoroundecanoic acid)

PFDODA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluorododecanoic acid)

PFTTrDA (perfluorotridecanoic µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

acid)

PFTeDA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluorotetradecanoic acid)

PFHxDA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluorohexadecanoic acid)

PFODA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluorooctadecanoic acid)

PFBS (perfluorobutane µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

sulfonic acid)

PFPeS (perfluoropentane µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

sulfonic acid)

PFHxS (perfluorohexane µg/kgdm Q 0.4 0.3 <0.1 <0.1 <0.1

sulfonic acid)

PFHpS (perfluoroheptane µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

sulfonic acid)

PFOS linear (perfluorooctane µg/kgdm Q 0.2 1.6 <0.1 <0.1 <0.1

sulfonic acid)

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13808688 - 1

Order date 27.01.2023
Starting date 09.02.2023
Report date 15.02.2023

Code	Sample type	Sample description	Depth
006	Soil	DAA/GJ7	1 - 2m
007	Soil	DAA/GO4	0 - 1m
008	Soil	DAA/GO4	1 - 2m
009	Soil	DAA/GJ5	0.5 - 1m
010	Soil	DAA/GJ5	1 - 2m

Analysis	Unit	Q	006	007	008	009	010
PFOS branched	µg/kgdm	Q	0.2	0.4	<0.1	<0.1	<0.1
(perfluorooctane sulfonic acid)							
sum PFOS	µg/kgdm		0.4	2.0	<0.2	<0.2	<0.2
PFDS (perfluorodecane	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Analytical report

WSP
Montague Trevor
sulfonic acid)

4:2 FTS (4:2 fluorotelomer
<0.1 <0.1

µg/kgdm
<0.1

Q

<0.1

<0.1

sulfonic acid)

6:2 FTS (6:2 fluorotelomer

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

sulfonic acid)

8:2 FTS (8:2 fluorotelomer

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

sulfonic acid)

10:2 FTS (10:2 fluorotelomer

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

sulfonic acid)

MePFOSAA (N-

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

methylperfluorooctane

sulfonamidoacetic acid)

EtPFOSAA (N-

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

ethylperfluorooctane

sulfonamidoacetic acid)

PFOSA

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

(perfluorooctanesulfonamide)

MeFOSA (N-

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

methylperfluorooctanesulfon

amide)

8:2 DiPAP (8:2

µg/kgdm

Q

<0.1

<0.1

<0.1

<0.1

<0.1

polyfluoroalkyl phosphate

diester)

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13808688 - 1

Order date 27.01.2023
Starting date 09.02.2023
Report date 15.02.2023

Code	Sample type	Sample description	Depth
011	Soil	DAA/GM3	0 - 1m
012	Soil	DAA/GM3	1 - 2m
013	Soil	DAA/GI4	0.1 - 1m
014	Soil	DAA/GI4	1 - 2m

Analysis	Unit	Q	011	012	013	014
grinding sample material	-			Yes	Yes	
sample pretreatment		Q	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	85.3	86.0	81.6	89.6
PER- AND POLYFLUOROALKYL SUBSTANCES						
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.1	<0.1
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.3	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Analytical report

WSP
Montague Trevor
PFHxA (perfluorohexanoic
0.3 <0.1

µg/kgdm

Q

<0.1

<0.1

acid)

PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.2	<0.1
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	0.1	0.4	<0.1
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
sum PFOA	µg/kgdm		<0.2	<0.2	0.4	<0.2
PFNA (perfluorononanoic acid)	µg/kgdm	Q	<0.1	<0.1	0.1	<0.1
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	<0.1	0.2	<0.1	<0.1
PFDoDA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFTTrDA (perfluorotridecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFHxDA (perfluorohexadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFODA (perfluorooctadecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFBS (perfluorobutane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFPeS (perfluoropentane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFHxS (perfluorohexane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	0.3	<0.1
PFHpS (perfluoroheptane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFOS linear (perfluorooctane sulfonic acid)	µg/kgdm	Q	<0.1	0.6	0.3	<0.1
PFOS branched (perfluorooctane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	0.2	<0.1

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208

Order date 27.01.2023
Starting date 09.02.2023

Analysis marked with Q are accredited by the RvA



Initials :

Report number 13808688 - 1

Report date 15.02.2023

Code	Sample type	Sample description	Depth
011	Soil	DAA/GM3	0 - 1m
012	Soil	DAA/GM3	1 - 2m
013	Soil	DAA/GI4	0.1 - 1m
014	Soil	DAA/GI4	1 - 2m

Analysis	Unit	Q	011	012	013	014
sum PFOS	µg/kgdm		<0.2	0.6	0.5	<0.2
PFDS (perfluorodecane sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
4:2 FTS (4:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
6:2 FTS (6:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
8:2 FTS (8:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
10:2 FTS (10:2 fluorotelomer sulfonic acid)	µg/kgdm	Q	<0.1	0.1	<0.1	<0.1
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
PFOSA (perfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
MeFOSA (N-methylperfluorooctanesulfonamide)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1

Analysis marked with Q are accredited by the RvA



Initials :

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13808688 - 1

Order date 27.01.2023
Starting date 09.02.2023
Report date 15.02.2023

Analyses	Sample type	Relation to standard
sample pretreatment	Soil	Soil: NEN-EN 16179. Soil (AS3000): AS3000 and NEN-EN 16179
dry weight	Soil	Soil: NEN-EN 15934. Soil (AS3000): AS3010-2 and NEN-EN 15934
PFBA (perfluorobutanoic acid)	Soil	In house method
PFPeA (perfluoropentanoic acid)	Soil	Ditto
PFHxA (perfluorohexanoic acid)	Soil	Ditto
PFHpA (perfluoroheptanoic acid)	Soil	Ditto
PFOA linear (perfluorooctanoic acid)	Soil	Ditto
PFOA branched (perfluorooctanoic acid)	Soil	Ditto
sum PFOA	Soil	Ditto
PFNA (perfluorononanoic acid)	Soil	Ditto
PFDA (perfluorodecanoic acid)	Soil	Ditto
PFUnDA (perfluoroundecanoic acid)	Soil	Ditto
PFDoDA (perfluorododecanoic acid)	Soil	Ditto
PFTTrDA (perfluorotridecanoic acid)	Soil	Ditto
PFTeDA (perfluorotetradecanoic acid)	Soil	Ditto
PFHxDA (perfluorohexadecanoic acid)	Soil	Ditto
PFODA (perfluorooctadecanoic acid)	Soil	Ditto
PFBS (perfluorobutane sulfonic acid)	Soil	Ditto
PFPeS (perfluoropentane sulfonic acid)	Soil	Ditto
PFHxS (perfluorohexane sulfonic acid)	Soil	Ditto



Initials :

acid)

PFHpS (perfluoroheptane sulfonic Soil Ditto

acid)

PFOS linear (perfluorooctane Soil Ditto

sulfonic acid)

PFOS branched (perfluorooctane Soil Ditto

sulfonic acid)

sum PFOS Soil Ditto

PFDS (perfluorodecane sulfonic Soil Ditto

acid)

4:2 FTS (4:2 fluorotelomer Soil Ditto

sulfonic acid)

6:2 FTS (6:2 fluorotelomer Soil Ditto

sulfonic acid)

8:2 FTS (8:2 fluorotelomer Soil Ditto

sulfonic acid)

10:2 FTS (10:2 fluorotelomer Soil Ditto

sulfonic acid)

MePFOSAA (N- Soil Ditto

methylperfluorooctane

sulfonamidoacetic acid)

EtPFOSAA (N- Soil Ditto

ethylperfluorooctane

sulfonamidoacetic acid)

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13808688 - 1

Order date 27.01.2023

Starting date 09.02.2023

Report date 15.02.2023

Analyses	Sample type	Relation to standard
PFOSA (perfluorooctanesulfonamide)	Soil	Ditto
MeFOSA (N- methylperfluorooctanesulfonamid e)	Soil	Ditto
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	Ditto
grinding sample material	Soil	Ditto

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13808688 - 1

Order date 27.01.2023
Starting date 09.02.2023
Report date 15.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
sample pretreatment	Soil	-		-	-	-
dry weight	Soil	-		1 %	3.1 %	7.6 %
PFBA (perfluorobutanoic acid)	Soil	0.1 µg/kgdm	375-22-4	-2.08 %	5.5 %	12 %
PFPeA (perfluoropentanoic acid)	Soil	0.1 µg/kgdm	2706-90-3	-5.4 %	7.7 %	19 %
PFHxA (perfluorohexanoic acid)	Soil	0.1 µg/kgdm	307-24-4	0 %	5.4 %	11 %
PFHpA (perfluoroheptanoic acid)	Soil	0.1 µg/kgdm	375-85-9	-2.5 %	8.1 %	17 %
PFOA linear (perfluorooctanoic acid)	Soil	0.1 µg/kgdm	335-67-1	6.8 %	6.6 %	19 %
PFOA branched (perfluorooctanoic acid)	Soil	0.1 µg/kgdm		6.8 %	16 %	35 %
sum PFOA	Soil	0.1 µg/kgdm	-	7 %	7.9 %	21 %
PFNA (perfluorononanoic acid)	Soil	0.1 µg/kgdm	375-95-1	1.2 %	6.2 %	13 %
PFDA (perfluorodecanoic acid)	Soil	0.1 µg/kgdm	335-76-2	-1.98 %	5.3 %	11 %
PFUnDA (perfluoroundecanoic acid)	Soil	0.1 µg/kgdm	2058-94-8	-9.5 %	5.9 %	22 %
PFDoDA (perfluorododecanoic acid)	Soil	0.1 µg/kgdm	307-55-1	-4.68 %	7.8 %	18 %
PFTTrDA (perfluorotridecanoic acid)	Soil	0.1 µg/kgdm	72629-94-8	-10.3 %	11 %	30 %
PFTeDA (perfluorotetradecanoic acid)	Soil	0.1 µg/kgdm	376-06-7	-6.7 %	7.4 %	20 %
PFHxDA (perfluorohexadecanoic acid)	Soil	0.1 µg/kgdm	67905-19-5	-5.88 %	4.1 %	14 %
PFODA (perfluorooctadecanoic acid)	Soil	0.1 µg/kgdm	16517-11-6	-14.9 %	9.2 %	35 %
PFBS (perfluorobutane sulfonic acid)	Soil	0.1 µg/kgdm	375-73-5	-8.38 %	14 %	32 %
PFPeS (perfluoropentane sulfonic acid)	Soil	0.1 µg/kgdm	2706-91-4	-5.08 %	8.4 %	20 %
PFHxS (perfluorohexane sulfonic acid)	Soil	0.1 µg/kgdm	355-46-4	0.6 %	9 %	18 %
PFHpS (perfluoroheptane sulfonic acid)	Soil	0.1 µg/kgdm	375-92-8	-2.88 %	9 %	19 %
PFOS linear (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm	1763-23-1	-9.98 %	11 %	21 %
PFOS branched (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm		-0.1 %	17 %	32 %
sum PFOS	Soil	0.1 µg/kgdm		0 %	11 %	22 %
PFDS (perfluorodecane sulfonic acid)	Soil	0.1 µg/kgdm	335-77-3	-8.58 %	9 %	25 %
4:2 FTS (4:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	757124-72-4	-4.1 %	9 %	20 %
6:2 FTS (6:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	27619-97-2	4.8 %	12 %	27 %



Initials :

8:2 FTS (8:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	39108-34-4	3.2 %	9.8 %	21 %
10:2 FTS (10:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	120226-60-0	9 %	10 %	27 %
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2355-31-9	-3.9 %	4.2 %	12 %
Project name	WSP Golder Dublin Airport Authority			Order date	27.01.2023	
Project number	WSP_40000208			Starting date	09.02.2023	
Report number	13808688 - 1			Report date	15.02.2023	

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2991-50-6	-3 %	8.7 %	18 %
PFOSA (perfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	754-91-6	-4.2 %	4.9 %	13 %
MeFOSA (N-methylperfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	31506-32-8	-6.3 %	5.3 %	17 %
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	0.1 µg/kgdm	678-41-1	-3.48 %	6.2 %	14 %
grinding sample material	Soil	-	-	-	-	-

Analytical report

WSP
Montague Trevor

The expressed extended measurement uncertainty (U) is the uncertainty at 95% reliability. More information regarding the expressed figures is given in the factsheet measurement uncertainty.

Sample	Barcode	Reception date	Sampling date	Container
001	Y9957779	09.02.2023	25.01.2023	ALC201
002	Y9957781	09.02.2023	25.01.2023	ALC201
003	X1381397	09.02.2023	25.01.2023	ALC201
004	X1381398	09.02.2023	25.01.2023	ALC201
005	Y9957780	09.02.2023	25.01.2023	ALC201
006	Y9957778	09.02.2023	25.01.2023	ALC201
007	X1381381	09.02.2023	25.01.2023	ALC201
008	X1381403	09.02.2023	25.01.2023	ALC201
009	X1381406	09.02.2023	25.01.2023	ALC201
010	X1381392	09.02.2023	25.01.2023	ALC201
011	X1381388	09.02.2023	25.01.2023	ALC201
012	X1381391	09.02.2023	25.01.2023	ALC201
013	X1381387	09.02.2023	25.01.2023	ALC201
014	X1381395	09.02.2023	25.01.2023	ALC201

Analytical report

SGS Environmental Analytics

Steenhouwerstraat 15 · 3194 AG Rotterdam Tel.:
+31 (0)10 231 47 00 · Fax: +31 (0)10 416 30 34
www.sgs.com/analytics-nl



WSP
TM Montague
WSP Ireland Consulting Limited
Trinity House, Charleston Road
D06C8X4 DUBLIN 6

Page 1 of 7

Your Project name : WSP Golder Dublin Airport Authority
Your Project number : WSP_40000208
SGS report number : 13809447, version: 1.
Rotterdam, 03.02.2023

Dear Mr./Mrs,

Attached you find the results of the laboratory tests carried out for your project WSP_40000208. The tests were carried out according to your order. The reported results relate exclusively to the samples tested and as received by SGS. The sample description, sample date (if provided) and project description were adopted from your order. SGS is not responsible for the data provided by the customer.

All tests were carried out by SGS Environmental Analytics, Steenhouwerstraat 15, Rotterdam, Netherlands. Tests outsourced are marked in the report.

This certificate contains inclusive attachments 7 pages. In case of a version number of '2' or higher all former versions of the certificate are invalid. All attachments are inextricably part of this certificate. Only reproduction of the whole report is allowed.

In case of questions and/or remarks related to this certificate, for example in case of information required about measurement uncertainty of the analytical methods, please contact our Customer Support department.

As of September 1st, 2022 SGS Environmental Analytics B.V. has merged with SGS Nederland B.V. and trades under the name SGS Environmental Analytics. All SGS Environmental Analytics B.V. recognitions will remain in force and are/will be transferred to SGS Nederland B.V.

Yours faithfully,

René Eugster
Operations Manager Rotterdam

Project name WSP Golder Dublin Airport Authority

Order date 30.01.2023



SGS Environmental Analytics is accredited under nr. L028 by the Raad voor Accreditatie, according to the criteria for testing laboratories EN ISO/IEC 17025:2017.

All our work is carried out under the General Conditions, kept at the Kamer van Koophandel (Chamber of Commerce) in Rotterdam, Netherlands. Trade record: KVK Rotterdam 24226722.

Project number WSP_40000208
Starting date 31.01.2023
Report date 03.02.2023

Report number 13809447 - 1

Code	Sample type	Sample description					
001	Soil	DAA/PR2B					
002	Soil	DAA/PR3					
003	Soil	DAA/PR4					
004	Soil	DAA/N3 0.1 - 1.0					
005	Soil	DAA/N3 1.0 - 2.0					
Analysis	Unit	Q	001	002	003	004	005
grinding sample material	-		Yes	Yes	Yes	Yes	Yes
sample pretreatment		Q	Yes	Yes	Yes	Yes	Yes
dry weight	wght.-%	Q	79.3	88.5	87.2	86.1	86.3
<i>PER- AND POLYFLUOROALKYL SUBSTANCES</i>							
PFBA (perfluorobutanoic acid)	µg/kgdm	Q	0.2	<0.1	<0.1	<0.1	<0.1
PFPeA (perfluoropentanoic acid)	µg/kgdm	Q	0.3	<0.1	0.1	<0.1	<0.1
PFHxA (perfluorohexanoic acid)	µg/kgdm	Q	0.2	<0.1	<0.1	<0.1	<0.1
PFHpA (perfluoroheptanoic acid)	µg/kgdm	Q	0.2	<0.1	0.1	<0.1	<0.1
PFOA linear (perfluorooctanoic acid)	µg/kgdm	Q	0.4	<0.1	0.2	<0.1	<0.1
PFOA branched (perfluorooctanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sum PFOA	µg/kgdm		0.4	<0.2	0.2	<0.2	<0.2
PFNA (perfluorononanoic acid)	µg/kgdm	Q	0.3	<0.1	0.1	<0.1	<0.1
PFDA (perfluorodecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFUnDA (perfluoroundecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFDODA (perfluorododecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFTrDA (perfluorotridecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFTeDA (perfluorotetradecanoic acid)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
PFHxDA	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1



Initials :

Analytical report

WSP
Montague Trevor
(perfluorohexadecanoic acid)

PFODA	µg/kgdm	Q	<0.1	<0.1	<0.1
<0.1	<0.1				

(perfluorooctadecanoic acid)

PFBS (perfluorobutane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1

sulfonic acid)

PFPeS (perfluoropentane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1

sulfonic acid)

PFHxS (perfluorohexane)	µg/kgdm	Q	0.8	<0.1	0.2	<0.1

sulfonic acid)

PFHpS (perfluoroheptane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1

sulfonic acid)

PFOS linear (perfluorooctane)	µg/kgdm	Q	2.0	0.3	0.6	0.2

sulfonic acid)

Analysis marked with Q are accredited by the RvA				Order date	30.01.2023
Project name	WSP Golder Dublin Airport Authority			Starting date	31.01.2023
Project number	WSP_40000208			Report date	03.02.2023
Report number	13809447 - 1				

Code	Sample type	Sample description
001	Soil	DAA/PR2B
002	Soil	DAA/PR3
003	Soil	DAA/PR4
004	Soil	DAA/N3 0.1 - 1.0
005	Soil	DAA/N31.0 - 2.0

Analysis	Unit	Q	001	002	003	004	005
PFOS branched	µg/kgdm	Q	0.8	<0.1	0.3	<0.1	<0.1
(perfluorooctane sulfonic acid)							
sum PFOS	µg/kgdm		2.8	0.3	0.9	0.2	<0.2
PFDS (perfluorodecane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sulfonic acid)							
4:2 FTS (4:2 fluorotelomer)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sulfonic acid)							
6:2 FTS (6:2 fluorotelomer)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sulfonic acid)							
8:2 FTS (8:2 fluorotelomer)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sulfonic acid)							
10:2 FTS (10:2 fluorotelomer)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1
sulfonic acid)							
MePFOSAA (N-methylperfluorooctane)	µg/kgdm	Q	<0.1	<0.1	<0.1	<0.1	<0.1



Initials :

Analytical report

WSP
Montague Trevor
sulfonamidoacetic acid)

EtPFOSAA (N-
<0.1 µg/kgdm
<0.1

Q <0.1 <0.1 <0.1

ethylperfluorooctane

sulfonamidoacetic acid)

PFOSA µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

(perfluorooctanesulfonamide)

MeFOSA (N- µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

methylperfluorooctanesulfon

amide)

8:2 DiPAP (8:2 µg/kgdm Q <0.1 <0.1 <0.1 <0.1 <0.1

polyfluoroalkyl phosphate

diester)

Analysis marked with Q are accredited by the RvA

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13809447 - 1

Order date 30.01.2023

Starting date 31.01.2023

Report date 03.02.2023

Analyses	Sample type	Relation to standard
grinding sample material	Soil	In house method
sample pretreatment	Soil	Soil: NEN-EN 16179. Soil (AS3000): AS3000 and NEN-EN 16179
dry weight	Soil	Soil: NEN-EN 15934. Soil (AS3000): AS3010-2 and NEN-EN 15934
PFBA (perfluorobutanoic acid)	Soil	In house method
PFPeA (perfluoropentanoic acid)	Soil	Ditto
PFHxA (perfluorohexanoic acid)	Soil	Ditto
PFHpA (perfluoroheptanoic acid)	Soil	Ditto
PFOA linear (perfluorooctanoic acid)	Soil	Ditto
PFOA branched (perfluorooctanoic acid)	Soil	Ditto
sum PFOA	Soil	Ditto
PFNA (perfluorononanoic acid)	Soil	Ditto
PFDA (perfluorodecanoic acid)	Soil	Ditto
PFUnDA (perfluoroundecanoic acid)	Soil	Ditto
PFDODA (perfluorododecanoic acid)	Soil	Ditto
PFTTrDA (perfluorotridecanoic acid)	Soil	Ditto
PFTeDA (perfluorotetradecanoic acid)	Soil	Ditto
PFHxDA (perfluorohexadecanoic acid)	Soil	Ditto



Initials :

Analytical report

WSP
Montague Trevor
acid)

PFODA (perfluorooctadecanoic Soil Ditto

acid)

PFBS (perfluorobutane sulfonic Soil Ditto

acid)

PFPeS (perfluoropentane sulfonic Soil Ditto

acid)

PFHxS (perfluorohexane sulfonic Soil Ditto

acid)

PFHpS (perfluoroheptane sulfonic Soil Ditto

acid)

PFOS linear (perfluorooctane Soil Ditto

sulfonic acid)

PFOS branched (perfluorooctane Soil Ditto

sulfonic acid)

sum PFOS Soil Ditto

PFDS (perfluorodecane sulfonic Soil Ditto

acid)

4:2 FTS (4:2 fluorotelomer Soil Ditto

sulfonic acid)

6:2 FTS (6:2 fluorotelomer Soil Ditto

sulfonic acid)

8:2 FTS (8:2 fluorotelomer Soil Ditto

sulfonic acid)

10:2 FTS (10:2 fluorotelomer Soil Ditto

sulfonic acid)

MePFOSAA (N- Soil Ditto

methylperfluorooctane

sulfonamidoacetic acid)

EtPFOSAA (N- Soil Ditto

ethylperfluorooctane

sulfonamidoacetic acid)

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13809447 - 1

Order date 30.01.2023

Starting date 31.01.2023

Report date 03.02.2023

Analyses	Sample type	Relation to standard
PFOSA (perfluorooctanesulfonamide)	Soil	Ditto
MeFOSA (N-methylperfluorooctanesulfonamide)	Soil	Ditto
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	Ditto



Initials :



WSP
Montague Trevor

Analytical report

Page 6 of 8

Initials :



-- SGS Environmental Analytics is accredited under nr. L028 by the Raad voor Accreditatie, according to the criteria for testing laboratories EN ISO/IEC 17025:2017.

All our work is carried out under the General Conditions, kept at the Kamer van Koophandel (Chamber of Commerce) in Rotterdam, Netherlands. Trade record: KVK Rotterdam 24226722.

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13809447 - 1

Order date 30.01.2023
Starting date 31.01.2023
Report date 03.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
grinding sample material	Soil	-		-	-	-
sample pretreatment	Soil	-		-	-	-
dry weight	Soil	-		1 %	3.1 %	7.6 %
PFBA (perfluorobutanoic acid)	Soil	0.1 µg/kgdm	375-22-4	-2.08 %	5.5 %	12 %
PFPeA (perfluoropentanoic acid)	Soil	0.1 µg/kgdm	2706-90-3	-5.4 %	7.7 %	19 %
PFHxA (perfluorohexanoic acid)	Soil	0.1 µg/kgdm	307-24-4	0 %	5.4 %	11 %
PFHpA (perfluoroheptanoic acid)	Soil	0.1 µg/kgdm	375-85-9	-2.5 %	8.1 %	17 %
PFOA linear (perfluorooctanoic acid)	Soil	0.1 µg/kgdm	335-67-1	6.8 %	6.6 %	19 %
PFOA branched (perfluorooctanoic acid)	Soil	0.1 µg/kgdm		6.8 %	16 %	35 %
sum PFOA	Soil	0.1 µg/kgdm	-	7 %	7.9 %	21 %
PFNA (perfluorononanoic acid)	Soil	0.1 µg/kgdm	375-95-1	1.2 %	6.2 %	13 %
PFDA (perfluorodecanoic acid)	Soil	0.1 µg/kgdm	335-76-2	-1.98 %	5.3 %	11 %
PFUnDA (perfluoroundecanoic acid)	Soil	0.1 µg/kgdm	2058-94-8	-9.5 %	5.9 %	22 %
PFDoDA (perfluorododecanoic acid)	Soil	0.1 µg/kgdm	307-55-1	-4.68 %	7.8 %	18 %
PFTTrDA (perfluorotridecanoic acid)	Soil	0.1 µg/kgdm	72629-94-8	-10.3 %	11 %	30 %
PFTeDA (perfluorotetradecanoic acid)	Soil	0.1 µg/kgdm	376-06-7	-6.7 %	7.4 %	20 %
PFHxDA (perfluorohexadecanoic acid)	Soil	0.1 µg/kgdm	67905-19-5	-5.88 %	4.1 %	14 %
PFODA (perfluorooctadecanoic acid)	Soil	0.1 µg/kgdm	16517-11-6	-14.9 %	9.2 %	35 %
PFBS (perfluorobutane sulfonic acid)	Soil	0.1 µg/kgdm	375-73-5	-8.38 %	14 %	32 %
PFPeS (perfluoropentane sulfonic acid)	Soil	0.1 µg/kgdm	2706-91-4	-5.08 %	8.4 %	20 %
PFHxS (perfluorohexane sulfonic acid)	Soil	0.1 µg/kgdm	355-46-4	0.6 %	9 %	18 %
PFHpS (perfluoroheptane sulfonic acid)	Soil	0.1 µg/kgdm	375-92-8	-2.88 %	9 %	19 %
PFOS linear (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm	1763-23-1	-9.98 %	11 %	21 %
PFOS branched (perfluorooctane sulfonic acid)	Soil	0.1 µg/kgdm		-0.1 %	17 %	32 %
sum PFOS	Soil	0.1 µg/kgdm		0 %	11 %	22 %
PFDS (perfluorodecane sulfonic acid)	Soil	0.1 µg/kgdm	335-77-3	-8.58 %	9 %	25 %
4:2 FTS (4:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	757124-72-4	-4.1 %	9 %	20 %
6:2 FTS (6:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	27619-97-2	4.8 %	12 %	27 %
8:2 FTS (8:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	39108-34-4	3.2 %	9.8 %	21 %
10:2 FTS (10:2 fluorotelomer sulfonic acid)	Soil	0.1 µg/kgdm	120226-60-0	9 %	10 %	27 %
MePFOSAA (N-methylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2355-31-9	-3.9 %	4.2 %	12 %



Initials :

Analytical report

WSP
Montague Trevor

Project name WSP Golder Dublin Airport Authority
Project number WSP_40000208
Report number 13809447 - 1

Order date 30.01.2023
Starting date 31.01.2023
Report date 03.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
EtPFOSAA (N-ethylperfluorooctane sulfonamidoacetic acid)	Soil	0.1 µg/kgdm	2991-50-6	-3 %	8.7 %	18 %
PFOSA (perfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	754-91-6	-4.2 %	4.9 %	13 %
MeFOSA (N-methylperfluorooctanesulfonamide)	Soil	0.1 µg/kgdm	31506-32-8	-6.3 %	5.3 %	17 %
8:2 DiPAP (8:2 polyfluoroalkyl phosphate diester)	Soil	0.1 µg/kgdm	678-41-1	-3.48 %	6.2 %	14 %
The expressed extended measurement uncertainty (U) is the uncertainty at 95% reliability. More information regarding the expressed figures is given in the factsheet measurement uncertainty.						

Sample	Barcode	Reception date	Sampling date	Container
001	X1381738	27.01.2023	25.01.2023	ALC201
002	X1381732	27.01.2023	25.01.2023	ALC201
003	X1381365	27.01.2023	25.01.2023	ALC201
004	Y9957642	27.01.2023	25.01.2023	ALC201
005	Y9957641	27.01.2023	25.01.2023	ALC201



Initials :

Analytical report

WSP
TM Montague
WSP Ireland Consulting Limited
Trinity House, Charleston Road
D06C8X4 DUBLIN 6

Page 1 of 4

Your Project name : WSP Golder Dublin Airport Authority
Your Project number : WSP_40000208
SGS report number : 13809461, version: 1.

Rotterdam, 01.02.2023

Dear Mr./Mrs,

Attached you find the results of the laboratory tests carried out for your project WSP_40000208. The tests were carried out according to your order. The reported results relate exclusively to the samples tested and as received by SGS. The sample description, sample date (if provided) and project description were adopted from your order. SGS is not responsible for the data provided by the customer.

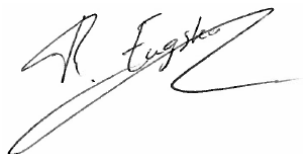
All tests were carried out by SGS Environmental Analytics, Steenhouwerstraat 15, Rotterdam, Netherlands. Tests outsourced are marked in the report.

This certificate contains inclusive attachments 4 pages. In case of a version number of '2' or higher all former versions of the certificate are invalid. All attachments are inextricably part of this certificate. Only reproduction of the whole report is allowed.

In case of questions and/or remarks related to this certificate, for example in case of information required about measurement uncertainty of the analytical methods, please contact our Customer Support department.

As of September 1st, 2022 SGS Environmental Analytics B.V. has merged with SGS Nederland B.V. and trades under the name SGS Environmental Analytics. All SGS Environmental Analytics B.V. recognitions will remain in force and are/will be transferred to SGS Nederland B.V.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'R. Eugster', with a long, sweeping horizontal stroke extending to the right.

René Eugster
Operations Manager Rotterdam

Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13809461 - 1

Order date 30.01.2023

Starting date 30.01.2023

Report date 01.02.2023

Code	Sample type	Sample description
001	Asbestos suspected	DAA/PR2B
002	Asbestos suspected	DAA/PR3
003	Asbestos suspected	DAA/PR4

Analysis	Unit	Q	001	002	003
degree of attachedness	-		not applicable	not applicable	not applicable
material delivered	kg		0.5	0.51	0.51
chrysotile	-		not detected	not detected	not detected
amosyte	-		not detected	not detected	not detected
crocidolite	-		not detected	not detected	not detected
anthophyllite	-		not detected	not detected	not detected
tremolyte	-		not detected	not detected	not detected
actinolite	-		not detected	not detected	not detected

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13809461 - 1

Order date 30.01.2023

Starting date 30.01.2023

Report date 01.02.2023

Analyses	Sample type	Relation to standard
degree of attachedness	Asbestos suspected	In house method
chrysotile	Asbestos suspected	Ditto
amosyte	Asbestos suspected	Ditto
crocidolite	Asbestos suspected	Ditto
anthophyllite	Asbestos suspected	Ditto
tremolyte	Asbestos suspected	Ditto
actinolite	Asbestos suspected	Ditto

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13809461 - 1

Order date 30.01.2023

Starting date 30.01.2023

Report date 01.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
degree of attachedness	Asbestos suspected	-		-	-	-
material delivered	Asbestos suspected	-		-	-	-
chrysotile	Asbestos suspected	-	12001-29-5	-	-	-
amosyte	Asbestos suspected	-	12172-73-5	-	-	-
crocidolite	Asbestos suspected	-	12001-28-4	-	-	-
anthophyllite	Asbestos suspected	-	77536-67-5	-	-	-
tremolyte	Asbestos suspected	-	77536-68-6	-	-	-
actinolite	Asbestos suspected	-	77536-66-4	-	-	-

The expressed extended measurement uncertainty (U) is the uncertainty at 95% reliability. More information regarding the expressed figures is given in the factsheet measurement uncertainty.

Sample	Barcode	Reception date	Sampling date	Container
001	X1381386	27.01.2023	26.01.2023	ALC201
002	X1381742	27.01.2023	26.01.2023	ALC201
003	X1381720	27.01.2023	26.01.2023	ALC201

Initials :



Analytical report

WSP
TM Montague
WSP Ireland Consulting Limited
Trinity House, Charleston Road
D06C8X4 DUBLIN 6

Page 1 of 11

Your Project name : WSP Golder Dublin Airport Authority
Your Project number : WSP_40000208
SGS report number : 13812215, version: 2. Amended report

Rotterdam, 27.02.2023

Dear Mr./Mrs,

Attached you find the results of the laboratory tests carried out for your project WSP_40000208. The tests were carried out according to your order. The reported results relate exclusively to the samples tested and as received by SGS. The sample description, sample date (if provided) and project description were adopted from your order. SGS is not responsible for the data provided by the customer.

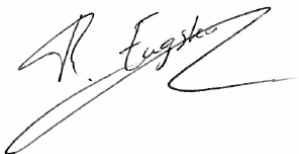
All tests were carried out by SGS Environmental Analytics, Steenhouwerstraat 15, Rotterdam, Netherlands. Tests outsourced are marked in the report.

This certificate contains inclusive attachments 11 pages. In case of a version number of '2' or higher all former versions of the certificate are invalid. All attachments are inextricably part of this certificate. Only reproduction of the whole report is allowed.

In case of questions and/or remarks related to this certificate, for example in case of information required about measurement uncertainty of the analytical methods, please contact our Customer Support department.

As of September 1st, 2022 SGS Environmental Analytics B.V. has merged with SGS Nederland B.V. and trades under the name SGS Environmental Analytics. All SGS Environmental Analytics B.V. recognitions will remain in force and are/will be transferred to SGS Nederland B.V.

Yours faithfully,



René Eugster
Operations Manager Rotterdam

Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Code	Sample type	Sample description				
001	Asbestos suspected	DAA/PR2B				
002	Asbestos suspected	DAA/PR3				
003	Asbestos suspected	DAA/PR4				
Analysis	Unit	Q	001	002	003	
grinding of asbestos suspected material	-			Yes		
dry weight	wght.-%	Q	74.8 ¹⁾	86.4 ¹⁾	86.5 ¹⁾	
TOC	% of DM		3.3	1.6	3.0	
pH (KCl)		Q	7.5	8.2	11.0	
temperature for PH	°C		18.6	19.7	18.9	
LEACHING						
start date			03.02.2023	03.02.2023	03.02.2023	
CEN test LS=10			#	#	#	
METALS						
antimony	mg/kgdm	Q	2.4	1.4	1.4	
arsenic	mg/kgdm	Q	23	93	12	
barium	mg/kgdm	Q	170	80	94	
cadmium	mg/kgdm	Q	2.6	1.7	0.81	
chromium	mg/kgdm	Q	33	19	18	
Chromium (VI)	mg/kgdm	Q	<0.4	<0.4	<0.4	
Boron	mg/kgdm	Q	<25	<25	<25	
copper	mg/kgdm	Q	40	22	21	
mercury	mg/kgdm	Q	0.22	<0.05	0.05	
lead	mg/kgdm	Q	77	30	23	
molybdenum	mg/kgdm	Q	4.9	2.1	1.8	
nickel	mg/kgdm	Q	57	26	25	
selenium	mg/kgdm	Q	1.5	<1	<1	
zinc	mg/kgdm	Q	110	73	65	
INORGANIC COMPOUNDS						
cyanide (total)	mg/kgdm	Q	<1 ²⁾	<1 ²⁾	<1 ²⁾	
sulphide (total S)	mg/kgdm		<7.3 ³⁾	<2.6 ⁴⁾	11	
VOLATILE AROMATICS						
benzene	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	0.06 ²⁾	
toluene	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾	
ethylbenzene	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾	
o-xylene	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾	
p- and m-xylene	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾	
xylenes	mg/kgdm	Q	<0.10 ²⁾	<0.10 ²⁾	<0.10 ²⁾	
total BTEX	mg/kgdm	Q	<0.25 ²⁾	<0.25 ²⁾	<0.25 ²⁾	

PHENOLS

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Code	Sample type	Sample description			
001	Asbestos suspected	DAA/PR2B			
002	Asbestos suspected	DAA/PR3			
003	Asbestos suspected	DAA/PR4			
Analysis	Unit	Q	001	002	003
phenol	mg/kgdm		<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾
POLYCYCLIC AROMATIC HYDROCARBONS					
naphthalene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
acenaphthylene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
acenaphthene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
fluorene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
phenanthrene	mg/kgdm	Q	0.88	<0.07 ⁵⁾	<0.15 ⁵⁾
anthracene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
fluoranthene	mg/kgdm	Q	0.13	0.10	<0.15 ⁵⁾
pyrene	mg/kgdm	Q	0.12	0.10	<0.15 ⁵⁾
benzo(a)anthracene	mg/kgdm	Q	0.07	<0.07 ⁵⁾	<0.15 ⁵⁾
chrysene	mg/kgdm	Q	0.07	<0.07 ⁵⁾	<0.15 ⁵⁾
benzo(b)fluoranthene	mg/kgdm	Q	0.10	0.09	0.17
benzo(k)fluoranthene	mg/kgdm	Q	0.04	0.39	<0.15 ⁵⁾
benzo(a)pyrene	mg/kgdm	Q	0.08	<0.07 ⁵⁾	0.15
dibenzo(a,h)anthracene	mg/kgdm	Q	<0.02	<0.07 ⁵⁾	<0.15 ⁵⁾
benzo(ghi)perylene	mg/kgdm	Q	0.06	<0.07 ⁵⁾	0.16
indeno(1,2,3-cd)pyrene	mg/kgdm	Q	0.05	0.43	<0.15 ⁵⁾
sum 10 PAH VROM	mg/kgdm	Q	1.4	0.92	<1.2
sum 16 PAH EPA	mg/kgdm	Q	1.6	1.1	<2.0
POLYCHLORINATED BIPHENYLS					
PCB 28	µg/kgdm	Q	<1	<1.3	<2.6
PCB 52	µg/kgdm	Q	<1	<1.5	<3.0
PCB 101	µg/kgdm	Q	<1	<1.2	<2.4
PCB 118	µg/kgdm	Q	<1	<1.4	<2.8
PCB 138	µg/kgdm	Q	<1	<1.3	<2.6
PCB 153	µg/kgdm	Q	<1	<1	<1.9
PCB 180	µg/kgdm	Q	<1	<1.3	<2.6
total (7) PCB	µg/kgdm	Q	<7.0	<9.0	<18
MINERAL OIL					
fraction C5-C6	mg/kgdm		<10 ²⁾	<10 ²⁾	<10 ²⁾
fraction C5-C8	mg/kgdm		<10	<10	<10
fraction C8-C10	mg/kgdm		<10 ²⁾	<10 ²⁾	<10 ²⁾
aromatic fraction >C6-C7	mg/kgdm	Q	<0.4 ¹⁾	<0.4 ¹⁾	<0.4 ¹⁾
aromatic fraction >C7-C8	mg/kgdm	Q	<0.05 ²⁾	<0.05 ²⁾	<0.05 ²⁾
aromatic fraction >C8-C10	mg/kgdm	Q	<0.3 ²⁾	<0.3 ²⁾	<0.3 ²⁾
aliphatic fraction >C5-C6	mg/kgdm	Q	<0.5 ²⁾	<0.5 ²⁾	<0.5 ²⁾
aliphatic fraction >C6-C8	mg/kgdm	Q	<0.6 ²⁾	<0.6 ²⁾	<0.6 ²⁾
aliphatic fraction >C8-C10	mg/kgdm	Q	<0.6 ²⁾	<0.6 ²⁾	<0.6 ²⁾
MTBE (methyl(tert)butylether)	mg/kgdm	Q	<0.02 ²⁾	<0.02 ²⁾	<0.02 ²⁾

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Code	Sample type	Sample description
001	Asbestos suspected	DAA/PR2B
002	Asbestos suspected	DAA/PR3
003	Asbestos suspected	DAA/PR4

Analysis	Unit	Q	001	002	003
SEVERAL CHEMICAL ANALYSIS					
sulphate	mg/kgdm		140	260	190
LEACHING					
L/S	ml/g	Q	10.00	10.01	10.00
end pH after leaching	-	Q	8.3	8.6	10.8
conductivity (25°C) after leaching	µS/cm	Q	152.6	177	232
ELUTRIATE T.O.C					
DOC	mg/kgdm	Q	51	61	120
ELUTRIATE METALS					
antimony	mg/kgdm	Q	<0.02	0.029	0.044
arsenic	mg/kgdm	Q	<0.01	0.07	0.05
barium	mg/kgdm	Q	<0.05	0.08	0.09
cadmium	mg/kgdm	Q	<0.002	<0.002	<0.002
chromium	mg/kgdm	Q	<0.01	<0.01	0.06
Boron	mg/kgdm		<0.5	<0.5	<0.5
copper	mg/kgdm	Q	0.08	0.10	0.27
mercury	mg/kgdm	Q	<0.0005	<0.0005	<0.0005
lead	mg/kgdm	Q	<0.02	<0.02	<0.02
molybdenum	mg/kgdm	Q	0.07	0.06	0.09
nickel	mg/kgdm	Q	<0.03	<0.03	0.07
selenium	mg/kgdm	Q	<0.02	<0.02	0.044
zinc	mg/kgdm	Q	<0.1	<0.1	<0.1
antimony	µg/l	Q	<2	2.8	4.4
arsenic	µg/l	Q	<1	6.9	5.1
barium	µg/l	Q	<5	7.5	9.3
cadmium	µg/l	Q	<0.2	<0.2	<0.2
chromium	µg/l	Q	<1	<1	6.2
copper	µg/l	Q	7.9	10	27
mercury	µg/l		<0.05	<0.05	<0.05
lead	µg/l	Q	<2	<2	<2
molybdenum	µg/l	Q	7.5	6.1	9.1
nickel	µg/l	Q	<3	<3	6.8
selenium	µg/l	Q	<2	<2	4.4
zinc	µg/l	Q	<10	<10	<10
ELUTRIATE INORGANIC COMPOUNDS					
ammonia	mgN/kgdm		<50	<50	<50
evaporation residue	mg/l		98.0	126	176

ELUTRIATE PHENOLS

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Code	Sample type	Sample description
001	Asbestos suspected	DAA/PR2B
002	Asbestos suspected	DAA/PR3
003	Asbestos suspected	DAA/PR4

Analysis	Unit	Q	001	002	003
phenol	mg/kgdm		<0.006	<0.006	<0.006
<i>ELUTRIATE SEVERAL CHEMICAL ANALYSIS</i>					
fluoride	mg/kgdm	Q	6.2	3.9	3.6
chloride	mg/kgdm	Q	<10	29	<10
sulphate	mg/kgdm	Q	36	230	220
fluoride	mg/l		0.62	0.39	0.37
chloride	mg/l		<1	2.8	<1
sulphate	mg/l		3.6	23	22

Analysis marked with Q are accredited by the RvA

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Remarks

- 1 The preservation period of the sample has been exceeded. This may have affected the representativeness of the sample.
- 2 The reported content is indicative due to exceeding the prescribed term of preservation.
- 3 The detection limit has been raised due to the analyses of a smaller amount of sample material.
- 4 Increased detectionlimit due to a high moisture content.
- 5 Increased detectionlimit due to a necessary dilution.

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Analyses	Sample type	Relation to standard
dry weight	Asbestos suspected	Soil: NEN-EN 15934. Soil (AS3000): AS3010-2 and NEN-EN 15934
TOC	Asbestos suspected	TOC based on organic matter (NEN5754)
pH (KCl)	Asbestos suspected	NEN-ISO 10390 and NEN-EN 15933
CEN test LS=10	Asbestos suspected	In accordance with NEN-EN 12457-2
antimony	Asbestos suspected	NEN-EN-ISO 17294-2, NEN-EN 16171 (digestion NEN 6961 and NEN-EN 16174)
arsenic	Asbestos suspected	Ditto
barium	Asbestos suspected	Ditto
cadmium	Asbestos suspected	Ditto
chromium	Asbestos suspected	Ditto
Chromium (VI)	Asbestos suspected	NEN-EN 15192 and ISO 15192
Boron	Asbestos suspected	NEN 6966, ISO 22036, NEN EN 16170 (digestion NEN 6961)
copper	Asbestos suspected	NEN-EN-ISO 17294-2, NEN-EN 16171 (digestion NEN 6961 and NEN-EN 16174)
mercury	Asbestos suspected	Ditto
lead	Asbestos suspected	Ditto
molybdenum	Asbestos suspected	Ditto
nickel	Asbestos suspected	Ditto
selenium	Asbestos suspected	Ditto
zinc	Asbestos suspected	Ditto
cyanide (total)	Asbestos suspected	NEN-ISO 17380
sulphide (total S)	Asbestos suspected	In house method
benzene	Asbestos suspected	NEN-EN-ISO 22155
toluene	Asbestos suspected	Ditto
ethylbenzene	Asbestos suspected	Ditto
o-xylene	Asbestos suspected	Ditto
p- and m-xylene	Asbestos suspected	Ditto
xylenes	Asbestos suspected	Ditto
total BTEX	Asbestos suspected	Ditto
phenol	Asbestos suspected	In house method
naphthalene	Asbestos suspected	Own method, extraction with acetone-hexane, analysis with GC-MS
acenaphthylene	Asbestos suspected	Ditto
acenaphthene	Asbestos suspected	Ditto
fluorene	Asbestos suspected	Ditto
phenanthrene	Asbestos suspected	Ditto
anthracene	Asbestos suspected	Ditto
fluoranthene	Asbestos suspected	Ditto
pyrene	Asbestos suspected	Ditto
benzo(a)anthracene	Asbestos suspected	Ditto
chrysene	Asbestos suspected	Ditto
benzo(b)fluoranthene	Asbestos suspected	Ditto
benzo(k)fluoranthene	Asbestos suspected	Ditto
benzo(a)pyrene	Asbestos suspected	Ditto
dibenzo(a,h)anthracene	Asbestos suspected	Ditto
benzo(ghi)perylene	Asbestos suspected	Ditto
indeno(1,2,3-cd)pyrene	Asbestos suspected	Ditto

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Analyses	Sample type	Relation to standard
PCB 28	Asbestos suspected	In-house method (acetone-hexane-extraction, analysis with GCMS)
PCB 52	Asbestos suspected	Ditto
PCB 101	Asbestos suspected	Ditto
PCB 118	Asbestos suspected	Ditto
PCB 138	Asbestos suspected	Ditto
PCB 153	Asbestos suspected	Ditto
PCB 180	Asbestos suspected	Ditto
total (7) PCB	Asbestos suspected	Ditto
fraction C5-C6	Asbestos suspected	Own methode, methanol extraction, analysis with GC/MS
fraction C5-C8	Asbestos suspected	Ditto
fraction C8-C10	Asbestos suspected	Ditto
aromatic fraction >C6-C7	Asbestos suspected	In house method
aromatic fraction >C7-C8	Asbestos suspected	Ditto
aromatic fraction >C8-C10	Asbestos suspected	Ditto
aliphatic fraction >C5-C6	Asbestos suspected	Ditto
aliphatic fraction >C6-C8	Asbestos suspected	Ditto
aliphatic fraction >C8-C10	Asbestos suspected	Ditto
MTBE (methyl(tert)butylether)	Asbestos suspected	NEN-EN-ISO 22155
sulphate	Asbestos suspected	In house method (pretreatment in house method, measurement NEN-ISO 15923-1)
end pH after leaching	Asbestos suspected Elutriate	NEN-EN-ISO 10523
conductivity (25°C) after leaching	Asbestos suspected Elutriate	ISO 7888 and EN 27888
DOC	Asbestos suspected Elutriate	NEN-EN 1484
antimony	Asbestos suspected Elutriate	NEN-EN-ISO 17294-2
arsenic	Asbestos suspected Elutriate	Ditto
barium	Asbestos suspected Elutriate	Ditto
cadmium	Asbestos suspected Elutriate	Ditto
chromium	Asbestos suspected Elutriate	Ditto
Boron	Asbestos suspected Elutriate	NEN 6966 and NEN-EN-ISO 11885
copper	Asbestos suspected Elutriate	NEN-EN-ISO 17294-2
mercury	Asbestos suspected Elutriate	NEN-EN-ISO 17852
lead	Asbestos suspected Elutriate	NEN-EN-ISO 17294-2
molybdenum	Asbestos suspected Elutriate	Ditto
nickel	Asbestos suspected Elutriate	Ditto
selenium	Asbestos suspected Elutriate	Ditto
zinc	Asbestos suspected Elutriate	Ditto
ammonia	Asbestos suspected Elutriate	In house method
evaporation residue	Asbestos suspected Elutriate	In accordance with NEN-EN 15216
phenol	Asbestos suspected Elutriate	Own method, analysis with GC-MS
fluoride	Asbestos suspected Elutriate	NEN-EN-ISO 10304-1
chloride	Asbestos suspected Elutriate	Ditto
sulphate	Asbestos suspected Elutriate	Ditto

Initials :



Analytical report

WSP

Montague Trevor

Project name

WSP Golder Dublin Airport Authority

Project number

WSP_40000208

Report number

13812215 - 2

Order date

02.02.2023

Starting date

02.02.2023

Report date

27.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
dry weight	Asbestos suspected	-		1 %	3.1 %	7.6 %
TOC	Asbestos suspected	0.5 % of DM		-3 %	25 %	50 %
pH (KCl)	Asbestos suspected	1		0.1 abs.	0.09 abs.	0.85 abs.
temperature for PH	Asbestos suspected	-		-	-	-
start date	Asbestos suspected	-		-	-	-
CEN test LS=10	Asbestos suspected	-		-	-	-
antimony	Asbestos suspected	1 mg/kgdm	7440-36-0	12 %	9 %	30 %
arsenic	Asbestos suspected	4 mg/kgdm	7440-38-2	8.4 %	3.8 %	18 %
barium	Asbestos suspected	20 mg/kgdm	7440-39-3	8.5 %	4 %	19 %
cadmium	Asbestos suspected	0.2 mg/kgdm	7440-43-9	8.9 %	4.1 %	20 %
chromium	Asbestos suspected	10 mg/kgdm	7440-47-3	11 %	5.6 %	25 %
Chromium (VI)	Asbestos suspected	0.4 mg/kgdm	18540-29-9	5.3 %	6.3 %	52 %
Boron	Asbestos suspected	25 mg/kgdm	7440-42-8	-4.2 %	2.8 %	10 %
copper	Asbestos suspected	5 mg/kgdm	7440-50-8	12 %	7.3 %	28 %
mercury	Asbestos suspected	0.05 mg/kgdm	7439-97-6	9.2 %	4.1 %	20 %
lead	Asbestos suspected	10 mg/kgdm	7439-92-1	8 %	3 %	20 %
molybdenum	Asbestos suspected	0.5 mg/kgdm	7439-98-7	9.4 %	5.5 %	22 %
nickel	Asbestos suspected	3 mg/kgdm	7440-02-0	10 %	4.4 %	23 %
selenium	Asbestos suspected	1 mg/kgdm	7782-49-2	8.8 %	3.8 %	19 %
zinc	Asbestos suspected	20 mg/kgdm	7440-66-6	5.7 %	4.2 %	14 %
cyanide (total)	Asbestos suspected	1 mg/kgdm		8 %	8.4 %	23 %
sulphide (total S)	Asbestos suspected	2 mg/kgdm	12597-04-5	-	-	-
benzene	Asbestos suspected	0.05 mg/kgdm	71-43-2	-3.1 %	6.7 %	15 %
toluene	Asbestos suspected	0.05 mg/kgdm	108-88-3	5.2 %	5.6 %	15 %
ethylbenzene	Asbestos suspected	0.05 mg/kgdm	100-41-4	3 %	6.7 %	15 %
o-xylene	Asbestos suspected	0.05 mg/kgdm	95-47-6	2.7 %	8 %	16 %
p- and m-xylene	Asbestos suspected	0.05 mg/kgdm	179601-23-1	11 %	9.3 %	28 %
xylenes	Asbestos suspected	0.05 mg/kgdm		11 %	9.3 %	28 %
total BTEX	Asbestos suspected	0.2 mg/kgdm		11 %	9.3 %	28 %
phenol	Asbestos suspected	0.05 mg/kgdm	108-95-2	-5 %	9 %	20 %
naphthalene	Asbestos suspected	0.02 mg/kgdm	91-20-3	-9.1 %	4.4 %	20 %
acenaphthylene	Asbestos suspected	0.02 mg/kgdm	208-96-8	29 %	4.3 %	59 %
acenaphthene	Asbestos suspected	0.02 mg/kgdm	83-32-9	-9.1 %	4.4 %	20 %
fluorene	Asbestos suspected	0.02 mg/kgdm	86-73-7	-4.4 %	4.4 %	13 %
phenanthrene	Asbestos suspected	0.02 mg/kgdm	85-01-8	-6.3 %	4.6 %	16 %
anthracene	Asbestos suspected	0.02 mg/kgdm	120-12-7	-8.7 %	5.2 %	20 %
fluoranthene	Asbestos suspected	0.02 mg/kgdm	206-44-0	-6.2 %	3.5 %	14 %
pyrene	Asbestos suspected	0.02 mg/kgdm	129-00-0	-6.9 %	4.2 %	16 %
benzo(a)anthracene	Asbestos suspected	0.02 mg/kgdm	56-55-3	-5.3 %	4 %	13 %
chrysene	Asbestos suspected	0.02 mg/kgdm	218-01-9	-8.5 %	2.6 %	18 %
benzo(b)fluoranthene	Asbestos suspected	0.02 mg/kgdm	205-99-2	15 %	4.1 %	31 %
benzo(k)fluoranthene	Asbestos suspected	0.02 mg/kgdm	207-08-9	-6.2 %	4.1 %	15 %
benzo(a)pyrene	Asbestos suspected	0.02 mg/kgdm	50-32-8	-9.6 %	5.5 %	22 %
dibenzo(a,h)anthracene	Asbestos suspected	0.02 mg/kgdm	53-70-3	11 %	9.9 %	29 %
benzo(ghi)perylene	Asbestos suspected	0.02 mg/kgdm	191-24-2	-11 %	7.6 %	27 %
indeno(1,2,3-cd)pyrene	Asbestos suspected	0.02 mg/kgdm	193-39-5	-8.5 %	10 %	26 %
sum 10 PAH VROM	Asbestos suspected	0.2 mg/kgdm		-11 %	7.6 %	27 %
sum 16 PAH EPA	Asbestos suspected	0.32 mg/kgdm		11 %	9.9 %	29 %
PCB 28	Asbestos suspected	1 µg/kgdm	7012-37-5	52 %	6.1 %	105 %
PCB 52	Asbestos suspected	1 µg/kgdm	35693-99-3	15 %	3.4 %	31 %
PCB 101	Asbestos suspected	1 µg/kgdm	37680-73-2	2.8 %	4.9 %	11 %

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
PCB 118	Asbestos suspected	1 µg/kgdm	31508-00-6	4 %	4.8 %	13 %
PCB 138	Asbestos suspected	1 µg/kgdm	35065-28-2	3.4 %	6.6 %	15 %
PCB 153	Asbestos suspected	1 µg/kgdm	35065-27-1	4.6 %	6.3 %	16 %
PCB 180	Asbestos suspected	1 µg/kgdm	35065-29-3	12 %	6.1 %	27 %
total (7) PCB	Asbestos suspected	7 µg/kgdm		12 %	6.1 %	27 %
fraction C5-C6	Asbestos suspected	10 mg/kgdm		2 %	19 %	38 %
fraction C5-C8	Asbestos suspected	10 mg/kgdm		2 %	19 %	38 %
fraction C8-C10	Asbestos suspected	10 mg/kgdm		2 %	19 %	38 %
aromatic fraction >C6-C7	Asbestos suspected	0.4 mg/kgdm		27 %	20 %	68 %
aromatic fraction >C7-C8	Asbestos suspected	0.05 mg/kgdm		27 %	20 %	68 %
aromatic fraction >C8-C10	Asbestos suspected	0.3 mg/kgdm		27 %	20 %	68 %
aliphatic fraction >C5-C6	Asbestos suspected	0.5 mg/kgdm		27 %	20 %	68 %
aliphatic fraction >C6-C8	Asbestos suspected	0.6 mg/kgdm		27 %	20 %	68 %
aliphatic fraction >C8-C10	Asbestos suspected	0.6 mg/kgdm		27 %	20 %	68 %
MTBE (methyl(tert)butylether)	Asbestos suspected	0.02 mg/kgdm	1634-04-4	-1.4 %	11 %	23 %
sulphate	Asbestos suspected	50 mg/kgdm	14808-79-8	18 %	9.5 %	40 %
L/S	Asbestos suspected Elutriate	0.02 ml/g		-	-	-
end pH after leaching	Asbestos suspected Elutriate	0.1 -		0.04 abs.	0.19 abs.	0.4 abs.
conductivity (25°C) after leaching	Asbestos suspected Elutriate	-		1.3 %	1.4 %	3.8 %
DOC	Asbestos suspected Elutriate	5 mg/kgdm		2.3 %	4.4 %	17 %
antimony	Asbestos suspected Elutriate	0.02 mg/kgdm	7440-36-0	15 %	11 %	38 %
arsenic	Asbestos suspected Elutriate	0.01 mg/kgdm	7440-38-2	5.8 %	11 %	24 %
barium	Asbestos suspected Elutriate	0.05 mg/kgdm	7440-39-3	11 %	11 %	30 %
cadmium	Asbestos suspected Elutriate	0.002 mg/kgdm	7440-43-9	11 %	12 %	32 %
chromium	Asbestos suspected Elutriate	0.01 mg/kgdm	7440-47-3	7.1 %	11 %	26 %
Boron	Asbestos suspected Elutriate	0.5 mg/kgdm	7440-42-8	-	-	-
copper	Asbestos suspected Elutriate	0.02 mg/kgdm	7440-50-8	13 %	11 %	34 %
mercury	Asbestos suspected Elutriate	0.0005 mg/kgdm	7439-97-6	0 %	14 %	28 %
lead	Asbestos suspected Elutriate	0.02 mg/kgdm	7439-92-1	13 %	11 %	33 %
molybdenum	Asbestos suspected Elutriate	0.02 mg/kgdm	7439-98-7	7 %	11 %	25 %
nickel	Asbestos suspected Elutriate	0.03 mg/kgdm	7440-02-0	13 %	11 %	34 %
selenium	Asbestos suspected Elutriate	0.02 mg/kgdm	7782-49-2	6.6 %	11 %	26 %
zinc	Asbestos suspected Elutriate	0.1 mg/kgdm	7440-66-6	12 %	11 %	33 %
antimony	Asbestos suspected Elutriate	2 µg/l	7440-36-0	15 %	11 %	38 %
arsenic	Asbestos suspected Elutriate	1 µg/l	7440-38-2	5.8 %	11 %	24 %
barium	Asbestos suspected Elutriate	5 µg/l	7440-39-3	11 %	11 %	30 %
cadmium	Asbestos suspected Elutriate	0.2 µg/l	7440-43-9	11 %	12 %	32 %
chromium	Asbestos suspected Elutriate	1 µg/l	7440-47-3	7.1 %	11 %	26 %
copper	Asbestos suspected Elutriate	2 µg/l	7440-50-8	13 %	11 %	34 %
mercury	Asbestos suspected Elutriate	0.05 µg/l	7439-97-6	0 %	14 %	28 %
lead	Asbestos suspected Elutriate	2 µg/l	7439-92-1	13 %	11 %	33 %
molybdenum	Asbestos suspected Elutriate	1 µg/l	7439-98-7	7 %	11 %	25 %
nickel	Asbestos suspected Elutriate	3 µg/l	7440-02-0	13 %	11 %	34 %
selenium	Asbestos suspected Elutriate	2 µg/l	7782-49-2	6.6 %	11 %	26 %
zinc	Asbestos suspected Elutriate	10 µg/l	7440-66-6	12 %	11 %	33 %
ammonia	Asbestos suspected Elutriate	50 mgN/kgdm	14798-03-9	-	-	-
evaporation residue	Asbestos suspected Elutriate	50 mg/l		10 %	8.9 %	28 %
phenol	Asbestos suspected Elutriate	0.005 mg/kgdm	108-95-2	-	-	-
fluoride	Asbestos suspected Elutriate	2 mg/kgdm	16984-48-8	8 %	12 %	28 %
chloride	Asbestos suspected Elutriate	10 mg/kgdm	16887-00-6	2.2 %	12 %	24 %

Initials :



Analytical report

WSP

Montague Trevor

Project name WSP Golder Dublin Airport Authority

Project number WSP_40000208

Report number 13812215 - 2

Order date 02.02.2023

Starting date 02.02.2023

Report date 27.02.2023

Analysis	Sample type	LOQ	CAS #	Systematic Error	Random Error	Measurement uncertainty
sulphate	Asbestos suspected Elutriate	10 mg/kgdm	14808-79-8	5.5 %	9 %	18 %
fluoride	Asbestos suspected Elutriate	0.2 mg/l	16984-48-8	8 %	12 %	28 %
chloride	Asbestos suspected Elutriate	1 mg/l	16887-00-6	2.2 %	12 %	24 %
sulphate	Asbestos suspected Elutriate	1 mg/l	14808-79-8	3 %	10 %	21 %
grinding of asbestos suspected material	Asbestos suspected	-	-	-	-	-

The expressed extended measurement uncertainty (U) is the uncertainty at 95% reliability. More information regarding the expressed figures is given in the factsheet measurement uncertainty.

Sample	Barcode	Reception date	Sampling date	Container
001	X1381373	27.01.2023	26.01.2023	ALC201
002	X1381733	27.01.2023	26.01.2023	ALC201
003	X1381383	27.01.2023	26.01.2023	ALC201

Initials :





APPENDIX D

WAC Assessment

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



BOECW-RBN2V-NMFYF

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Job name

DAA Apron Extension

Description/Comments

Waste classification samples were collected and are considered to be representative of the overall material excavated from the Site. The results of chemical analysis of the samples have been used to determine whether, in our opinion, the samples are likely to be classified as hazardous or non-hazardous under current EU legislation and EPA guidance. It is noted that the environmental regulator and the waste acceptor may also decide whether a waste is hazardous or non-hazardous and acceptable at their facility. The analyses supplied included results for metals, PAHs, PCBs, TPH-CWG, and PFAS compounds. PFAS compounds are Persistent organic pollutants (POPs), chemical substances that persist in the environment, can bioaccumulate, and pose a risk to the environment and human health. PFAS compounds including Branched PFOS, PFHxS Perfluoro-1-hexanesulfonate, Perfluorohexanoic acid, Perfluorononanoic acid, Perfluorohexane sulfonic acid, Perfluoropentanoic acid, Perfluoroheptanoic acid, Perfluorobutanoic acid, and Perfluorooctanoic acid were detected in samples at low levels. The sum of these detections in the samples is well below the 50 mg/kg threshold defined for the POPs in UK guidance WM3. The presence of PFAS compounds does not make the waste hazardous but their disposal should be considered with regards to POP regulations to ensure that they do not persist in the environment.

Project

40000208

Site

Dublin Airport

Classified by

Name: **Martha Buckwalter-Davis** Company: **Golder Associates Ireland Ltd**
 Date: **03 Mar 2023 11:55 GMT** Naas
 Telephone: **+353 45 87 4411**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
 Most recent 3 year Refresher

Date

28 May 2015
 07 Apr 2020

Next 3 year Refresher due by Apr 2023

Purpose of classification

7 - Disposal of Waste

Address of the waste

Dublin Airport

Post Code n/a

Description of industry/producer giving rise to the waste

Dublin Airport Authority

Description of the specific process, sub-process and/or activity that created the waste

Redevelopment of site for apron extension

Description of the waste

made ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	GO6/1.0-2.0-161122-2.00-1.00		Non Hazardous		Pass	Pass	3
2	GC5/0.1-1.0-181122-1.00-0.10		Non Hazardous		-	-	8
3	GL6/0.0-1.0-241122-1.00-0.00		Non Hazardous		Pass	Pass	14
4	GO5/0.0-1.0-251122-1.00-0.00		Non Hazardous		Pass	Pass	18
5	GM7-151222-1.00-0.10		Non Hazardous		Pass	Pass	22
6	GJ6/1.0-2.0-301122-2.00-1.00		Non Hazardous		Pass	Pass	26
7	GN5/0.1-1.0-011222-1.00-0.10		Non Hazardous		Pass	Pass	30

Related documents

#	Name	Description
1	221118-165.hwol	ALS Hawarden .hwol file used to populate the Job
2	221123-181.hwol	ALS Hawarden .hwol file used to populate the Job
3	221201-28-L6.hwol	ALS Hawarden .hwol file used to populate the Job
4	221201-28-O5.hwol	ALS Hawarden .hwol file used to populate the Job
5	221206-75.hwol	ALS Hawarden .hwol file used to populate the Job
6	221222-90.hwol	ALS Hawarden .hwol file used to populate the Job
7	DAAFeb22v1.batch	ALS Hawarden .batch file used to populate the Job
8	METALS	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Martha Buckwalter-Davis

Created date: 03 Mar 2023 11:55 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	34
Appendix B: Rationale for selection of metal species	37
Appendix C: Version	38

Classification of sample: GO6/1.0-2.0-161122-2.00-1.00

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GO6/1.0-2.0-161122-2.00-1.00	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }				13 mg/kg		11.31 mg/kg	0.00113 %	✓	
	033-001-00-X	231-148-6	7440-38-2							
2	cadmium { cadmium sulfide }			1	1.84 mg/kg	1.285	2.057 mg/kg	0.00016 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
3	copper { dicopper oxide; copper (I) oxide }				23.1 mg/kg	1.126	22.627 mg/kg	0.00226 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
5	nickel { nickel(IV) oxide (nickel dioxide) }				37.8 mg/kg	1.545	50.815 mg/kg	0.00508 %	✓	
	028-004-00-8	234-823-3	12035-36-8							
6	selenium { selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex }				3.39 mg/kg	1.405	4.144 mg/kg	0.000414 %	✓	
	034-002-00-8									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	17.7 mg/kg		15.399 mg/kg	0.00154 %	✓	
	082-001-00-6									
8	zinc { zinc oxide }				66.2 mg/kg	1.245	71.688 mg/kg	0.00717 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	antimony { antimony trioxide }				1.52 mg/kg	1.197	1.583 mg/kg	0.000158 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
10	barium { barium oxide }				79.2 mg/kg	1.117	76.932 mg/kg	0.00769 %	✓	
		215-127-9	1304-28-5							
11	molybdenum { molybdenum(VI) oxide }				4.07 mg/kg	1.5	5.312 mg/kg	0.000531 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				7.27 mg/kg	1.462	9.244 mg/kg	0.000924 %	✓	
		215-160-9	1308-38-9							
13	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
	024-017-00-8									
14	1,1,1,2-tetrachloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		211-135-1	630-20-6							
15	1,1,1-trichloroethane; methyl chloroform				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	602-013-00-2	200-756-3	71-55-6							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	1,1,2,2-tetrachloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-015-00-3	201-197-8	79-34-5							
17	1,1,2-trichloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-014-00-8	201-166-9	79-00-5							
18	1,1-dichloroethane				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	602-011-00-1	200-863-5	75-34-3							
19	1,1-dichloroethylene; vinylidene chloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-025-00-8	200-864-0	75-35-4							
20	1,1-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-031-00-0	209-253-3	563-58-6							
21	1,2,3-trichlorobenzene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-757-1	87-61-6							
22	1,2,3-trichloropropane				<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
	602-062-00-X	202-486-1	96-18-4							
23	1,2,4-trichlorobenzene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	602-087-00-6	204-428-0	120-82-1							
24	1,2,4-trimethylbenzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-043-00-3	202-436-9	95-63-6							
25	1,2-dibromo-3-chloropropane				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	602-021-00-6	202-479-3	96-12-8							
26	1,2-dibromoethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-010-00-6	203-444-5	106-93-4							
27	1,2-dichlorobenzene; o-dichlorobenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-034-00-7	202-425-9	95-50-1							
28	1,2-dichloroethane; ethylene dichloride				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-012-00-7	203-458-1	107-06-2							
29	1,2-dichloropropane; propylene dichloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-020-00-0	201-152-2	78-87-5							
30	mesitylene; 1,3,5-trimethylbenzene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	601-025-00-5	203-604-4	108-67-8							
31	1,3-dichlorobenzene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	602-067-00-7	208-792-1	541-73-1							
32	1,3-dichloropropane				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		205-531-3	142-28-9							
33	1,4-dichlorobenzene; p-dichlorobenzene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-035-00-2	203-400-5	106-46-7							
34	2,2-dichloropropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		209-832-0	594-20-7							
35	4-isopropyltoluene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		202-796-7	99-87-6							
36	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
37	bromobenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-060-00-9	203-623-8	108-86-1							
38	bromochloromethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		200-826-3	74-97-5							
39	bromodichloromethane				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		200-856-7	75-27-4							
40	bromoform; tribromomethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-007-00-X	200-854-6	75-25-2							
41	bromomethane; methylbromide				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-002-00-2	200-813-2	74-83-9							
42	carbon disulphide				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	006-003-00-3	200-843-6	75-15-0							
43	carbon tetrachloride; tetrachloromethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-008-00-5	200-262-8	56-23-5							
44	chlorobenzene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-033-00-1	203-628-5	108-90-7							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
45	chloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-009-00-0	200-830-5	75-00-3							
46	chloroform; trichloromethane				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	602-006-00-4	200-663-8	67-66-3							
47	chloromethane; methyl chloride				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	602-001-00-7	200-817-4	74-87-3							
48	1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]							
49	dibromochloromethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-704-0	124-48-1							
50	dibromomethane				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-003-00-8	200-824-2	74-95-3							
51	dichlorodifluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-893-9	75-71-8							
52	dichloromethane; methylene chloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-004-00-3	200-838-9	75-09-2							
53	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
54	hexachlorobutadiene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-765-5	87-68-3							
55	Cumene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-024-00-X	202-704-5	98-82-8							
56	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
57	n-butylbenzene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		203-209-7	104-51-8							
58	Propylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-097-00-8	203-132-9	103-65-1							
59	sec-butylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-227-0	135-98-8							
60	styrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-026-00-0	202-851-5	100-42-5							
61	2-methoxy-2-methylbutane; tert-amyl methyl ether				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-213-00-2	213-611-4	994-05-8							
62	tert-butylbenzene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		202-632-4	98-06-6							
63	tetrachloroethylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-028-00-4	204-825-9	127-18-4							
64	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
65	trans-1,3-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		431-460-4	10061-02-6							
66	trichloroethylene; trichloroethene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-027-00-9	201-167-4	79-01-6							
67	trichlorofluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-892-3	75-69-4							
68	vinyl chloride; chloroethylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	602-023-00-7	200-831-0	75-01-4							
69	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
70	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
71	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
72	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
73	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
74	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
75	benzo[ghi]perylene 205-883-8	191-24-2			<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
76	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
77	chrysene 601-048-00-0	205-923-4	218-01-9		0.0149 mg/kg		0.013 mg/kg	0.0000013 %	✓	
78	coronene 205-881-7	191-07-1			<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
79	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
80	fluoranthene 205-912-4	206-44-0			<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
81	fluorene 201-695-5	86-73-7			<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
82	indeno[123-cd]pyrene 205-893-2	193-39-5			<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
83	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
84	pH PH				8.62 pH		8.62 pH	8.62 pH		
85	phenanthrene 201-581-5	85-01-8			<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
86	pyrene 204-927-3	129-00-0			<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
87	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
88	TPH (C6 to C40) petroleum group TPH				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
89	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
90	2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4] 602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.19 mg/kg		<0.19 mg/kg	<0.000019 %		<LOD
91	1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3] 602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
Total:								0.0288 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GO6/1.0-2.0-161122-2.00-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.493	3	5
2	LOI (loss on ignition)	%	3.63	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.62	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0668	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0049	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.203	0.5	10
16	nickel	mg/kg	0.0045	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	0.0247	0.1	0.5
20	zinc	mg/kg	0.0134	4	50
21	chloride	mg/kg	42	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	50.2	500	800
26	TDS (total dissolved solids)	mg/kg	661	4,000	60,000

Key

User supplied data

Classification of sample: GC5/0.1-1.0-181122-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GC5/0.1-1.0-181122-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
16% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }				15 mg/kg		12.6 mg/kg	0.00126 %	✓	
	033-001-00-X	231-148-6	7440-38-2							
2	cadmium { cadmium sulfide }			1	1.87 mg/kg	1.285	2.019 mg/kg	0.000157 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
3	copper { dicopper oxide; copper (I) oxide }				29.3 mg/kg	1.126	27.71 mg/kg	0.00277 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
5	nickel { nickel(IV) oxide (nickel dioxide) }				42.5 mg/kg	1.545	55.163 mg/kg	0.00552 %	✓	
	028-004-00-8	234-823-3	12035-36-8							
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.81 mg/kg	1.405	2.136 mg/kg	0.000214 %	✓	
	034-002-00-8									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	33.9 mg/kg		28.476 mg/kg	0.00285 %	✓	
	082-001-00-6									
8	zinc { zinc oxide }				85.5 mg/kg	1.245	89.395 mg/kg	0.00894 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	antimony { antimony trioxide }				1.53 mg/kg	1.197	1.539 mg/kg	0.000154 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
10	barium { barium oxide }				82.1 mg/kg	1.117	76.999 mg/kg	0.0077 %	✓	
		215-127-9	1304-28-5							
11	molybdenum { molybdenum(VI) oxide }				3.92 mg/kg	1.5	4.94 mg/kg	0.000494 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				9.43 mg/kg	1.462	11.577 mg/kg	0.00116 %	✓	
		215-160-9	1308-38-9							
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
	024-017-00-8									
14	1,1,1,2-tetrachloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		211-135-1	630-20-6							
15	1,1,1-trichloroethane; methyl chloroform				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	602-013-00-2	200-756-3	71-55-6							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	1,1,2,2-tetrachloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-015-00-3	201-197-8	79-34-5							
17	1,1,2-trichloroethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-014-00-8	201-166-9	79-00-5							
18	1,1-dichloroethane				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	602-011-00-1	200-863-5	75-34-3							
19	1,1-dichloroethylene; vinylidene chloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-025-00-8	200-864-0	75-35-4							
20	1,1-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-031-00-0	209-253-3	563-58-6							
21	1,2,3-trichlorobenzene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-757-1	87-61-6							
22	1,2,3-trichloropropane				<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
	602-062-00-X	202-486-1	96-18-4							
23	1,2,4-trichlorobenzene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	602-087-00-6	204-428-0	120-82-1							
24	1,2,4-trimethylbenzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-043-00-3	202-436-9	95-63-6							
25	1,2-dibromo-3-chloropropane				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	602-021-00-6	202-479-3	96-12-8							
26	1,2-dibromoethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-010-00-6	203-444-5	106-93-4							
27	1,2-dichlorobenzene; o-dichlorobenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-034-00-7	202-425-9	95-50-1							
28	1,2-dichloroethane; ethylene dichloride				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-012-00-7	203-458-1	107-06-2							
29	1,2-dichloropropane; propylene dichloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-020-00-0	201-152-2	78-87-5							
30	mesitylene; 1,3,5-trimethylbenzene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	601-025-00-5	203-604-4	108-67-8							
31	1,3-dichlorobenzene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	602-067-00-7	208-792-1	541-73-1							
32	1,3-dichloropropane				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		205-531-3	142-28-9							
33	1,4-dichlorobenzene; p-dichlorobenzene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-035-00-2	203-400-5	106-46-7							
34	2,2-dichloropropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		209-832-0	594-20-7							
35	4-isopropyltoluene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		202-796-7	99-87-6							
36	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
37	bromobenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-060-00-9	203-623-8	108-86-1							
38	bromochloromethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		200-826-3	74-97-5							
39	bromodichloromethane				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		200-856-7	75-27-4							
40	bromoform; tribromomethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-007-00-X	200-854-6	75-25-2							
41	bromomethane; methylbromide				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-002-00-2	200-813-2	74-83-9							
42	carbon disulphide				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	006-003-00-3	200-843-6	75-15-0							
43	carbon tetrachloride; tetrachloromethane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-008-00-5	200-262-8	56-23-5							
44	chlorobenzene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-033-00-1	203-628-5	108-90-7							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
45	chloroethane 602-009-00-0	200-830-5	75-00-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
46	chloroform; trichloromethane 602-006-00-4	200-663-8	67-66-3		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
47	chloromethane; methyl chloride 602-001-00-7	200-817-4	74-87-3		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
48	1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2] 602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
49	dibromochloromethane 204-704-0	124-48-1			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
50	dibromomethane 602-003-00-8	200-824-2	74-95-3		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
51	dichlorodifluoromethane 200-893-9	75-71-8			<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
52	dichloromethane; methylene chloride 602-004-00-3	200-838-9	75-09-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
53	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
54	hexachlorobutadiene 201-765-5	87-68-3			<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
55	Cumene 601-024-00-X	202-704-5	98-82-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
56	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
57	n-butylbenzene 203-209-7	104-51-8			<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
58	Propylbenzene 601-097-00-8	203-132-9	103-65-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
59	sec-butylbenzene 205-227-0	135-98-8			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
60	styrene 601-026-00-0	202-851-5	100-42-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
61	2-methoxy-2-methylbutane; tert-amyl methyl ether 603-213-00-2	213-611-4	994-05-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
62	tert-butylbenzene 202-632-4	98-06-6			<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
63	tetrachloroethylene 602-028-00-4	204-825-9	127-18-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
64	toluene 601-021-00-3	203-625-9	108-88-3		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
65	trans-1,3-dichloropropene 431-460-4	10061-02-6			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
66	trichloroethylene; trichloroethene 602-027-00-9	201-167-4	79-01-6		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
67	trichlorofluoromethane 200-892-3	75-69-4			<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
68	vinyl chloride; chloroethylene 602-023-00-7	200-831-0	75-01-4		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
69	acenaphthene 201-469-6	83-32-9			<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
70	acenaphthylene 205-917-1	208-96-8			<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
71	anthracene 204-371-1	120-12-7			<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
72	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.0818 mg/kg		0.0687 mg/kg	0.00000687 %	✓	
73	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.109 mg/kg		0.0916 mg/kg	0.00000916 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
74	benzo[b]fluoranthene				0.156 mg/kg		0.131 mg/kg	0.0000131 %	✓	
	601-034-00-4	205-911-9	205-99-2							
75	benzo[ghi]perylene				0.0846 mg/kg		0.0711 mg/kg	0.00000711 %	✓	
		205-883-8	191-24-2							
76	benzo[k]fluoranthene				0.0517 mg/kg		0.0434 mg/kg	0.00000434 %	✓	
	601-036-00-5	205-916-6	207-08-9							
77	chrysene				0.0907 mg/kg		0.0762 mg/kg	0.00000762 %	✓	
	601-048-00-0	205-923-4	218-01-9							
78	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
79	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
80	fluoranthene				0.104 mg/kg		0.0874 mg/kg	0.00000874 %	✓	
		205-912-4	206-44-0							
81	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
82	indeno[123-cd]pyrene				0.0917 mg/kg		0.077 mg/kg	0.0000077 %	✓	
		205-893-2	193-39-5							
83	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
84	pH				8.48 pH		8.48 pH	8.48 pH		
			PH							
85	phenanthrene				0.0326 mg/kg		0.0274 mg/kg	0.00000274 %	✓	
		201-581-5	85-01-8							
86	pyrene				0.107 mg/kg		0.0899 mg/kg	0.00000899 %	✓	
		204-927-3	129-00-0							
87	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
88	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
89	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.173 mg/kg		0.173 mg/kg	0.0000173 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
90	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]							
91	perfluorooctanoic acid				0.0057 mg/kg		0.0048 mg/kg	0.000000485 %	✓	
	607-704-00-2	206-397-9	335-67-1							
92	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				0.002 mg/kg		0.0017 mg/kg	0.000000171 %	✓	
	607-761-00-3	206-798-9	375-85-9							
93	Total PFOS				0.0716 mg/kg		0.0601 mg/kg	0.00000601 %	✓	
			PFOS-T							
94	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				0.0037 mg/kg		0.0031 mg/kg	0.000000318 %	✓	
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]							
95	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
96	2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4] 602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.19 mg/kg		<0.19 mg/kg	<0.000019 %		<LOD
97	1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3] 602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
Total:								0.0331 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GC5/0.1-1.0-181122-1.00-0.10

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample cannot be evaluated against the Inert (Inert waste landfill) criteria because of missing determinand values.

The sample cannot be evaluated against the Non Haz (Non hazardous waste landfill) criteria because of missing determinand values.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2	3	5
2	LOI (loss on ignition)	%	5.34	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.48	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0495	20	100
11	cadmium	mg/kg		0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0149	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0845	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0142	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	57	500	800
26	TDS (total dissolved solids)	mg/kg	923	4,000	60,000

Key

	User supplied data
	Missing WAC determinand value

Classification of sample: GL6/0.0-1.0-241122-1.00-0.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GL6/0.0-1.0-241122-1.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				13.5 mg/kg		11.88 mg/kg		0.00119 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	1.75 mg/kg	1.285	1.979 mg/kg		0.000154 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				25.6 mg/kg	1.126	25.364 mg/kg		0.00254 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				43.3 mg/kg	1.545	58.878 mg/kg		0.00589 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.92 mg/kg	1.405	2.374 mg/kg		0.000237 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	21.4 mg/kg		18.832 mg/kg		0.00188 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				74.3 mg/kg	1.245	81.384 mg/kg		0.00814 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				1.46 mg/kg	1.197	1.538 mg/kg		0.000154 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				70.9 mg/kg	1.117	69.661 mg/kg		0.00697 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				3.64 mg/kg	1.5	4.805 mg/kg		0.000481 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				9.97 mg/kg	1.462	12.823 mg/kg		0.00128 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	benzene				<0.09 mg/kg		<0.09 mg/kg		<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
15	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg		<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
17	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
19	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
20	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
21	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
22	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
23	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
24	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
25	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
28	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
29	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
30	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
31	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
32	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
33	pH				8.42 pH		8.42 pH	8.42 pH		
			PH							
34	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
35	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
36	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
38	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0005 mg/kg		0.0005 mg/kg	0.000000056 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
39		nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
40		perfluorooctanoic acid			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-704-00-2	206-397-9	335-67-1								
41		Perfluoroheptanoic acid; tridecafluoroheptanoic acid			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-761-00-3	206-798-9	375-85-9								
42		Total PFOS			<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD	
			PFOS-T								
43		perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
44		xylene			<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD	
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
Total:								0.0302 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GL6/0.0-1.0-241122-1.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.493	3	5
2	LOI (loss on ignition)	%	2.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.42	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0705	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0159	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0467	0.5	10
16	nickel	mg/kg	0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.97	10	150
23	sulphate	mg/kg	64	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	933	4,000	60,000

Key

User supplied data

Classification of sample: GO5/0.0-1.0-251122-1.00-0.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GO5/0.0-1.0-251122-1.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				18.2 mg/kg		14.924 mg/kg		0.00149 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	3.59 mg/kg	1.285	3.784 mg/kg		0.000294 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				36.4 mg/kg	1.126	33.606 mg/kg		0.00336 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				52.8 mg/kg	1.545	66.9 mg/kg		0.00669 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.07 mg/kg	1.405	2.385 mg/kg		0.000238 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	49.1 mg/kg		40.262 mg/kg		0.00403 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				172 mg/kg	1.245	175.554 mg/kg		0.0176 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				8.72 mg/kg	1.197	8.56 mg/kg		0.000856 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				170 mg/kg	1.117	155.641 mg/kg		0.0156 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				4 mg/kg	1.5	4.921 mg/kg		0.000492 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				28.5 mg/kg	1.462	34.157 mg/kg		0.00342 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	benzene				<0.09 mg/kg		<0.09 mg/kg		<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
15	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg		<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
17	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
19	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
20	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
21	benzo[a]anthracene				0.0291 mg/kg		0.0239 mg/kg	0.00000239 %	✓	
	601-033-00-9	200-280-6	56-55-3							
22	benzo[a]pyrene; benzo[def]chrysene				0.0252 mg/kg		0.0207 mg/kg	0.00000207 %	✓	
	601-032-00-3	200-028-5	50-32-8							
23	benzo[b]fluoranthene				0.0325 mg/kg		0.0266 mg/kg	0.00000266 %	✓	
	601-034-00-4	205-911-9	205-99-2							
24	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
25	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
26	chrysene				0.0265 mg/kg		0.0217 mg/kg	0.00000217 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
28	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
29	fluoranthene				0.0431 mg/kg		0.0353 mg/kg	0.00000353 %	✓	
		205-912-4	206-44-0							
30	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
31	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
32	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
33	pH				7.79 pH		7.79 pH	7.79 pH		
			PH							
34	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
35	pyrene				0.0405 mg/kg		0.0332 mg/kg	0.00000332 %	✓	
		204-927-3	129-00-0							
36	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
38	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
39		nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
40		perfluorooctanoic acid			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-704-00-2	206-397-9	335-67-1								
41		Perfluoroheptanoic acid; tridecafluoroheptanoic acid			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-761-00-3	206-798-9	375-85-9								
42		Total PFOS			<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD	
			PFOS-T								
43		perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts			<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
44		xylene			<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD	
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
Total:								0.0552 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GO5/0.0-1.0-251122-1.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.772	3	5
2	LOI (loss on ignition)	%	4.86	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	7.79	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0678	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0071	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.228	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	37	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	44.9	500	800
26	TDS (total dissolved solids)	mg/kg	638	4,000	60,000

Key

User supplied data

Classification of sample: GM7-151222-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GM7-151222-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic {  arsenic }				14.2 mg/kg		11.786 mg/kg	0.00118 %	✓		
		033-001-00-X	231-148-6	7440-38-2								
2		cadmium {  cadmium sulfide }			1	1.97 mg/kg	1.285	2.102 mg/kg	0.000164 %	✓		
		048-010-00-4	215-147-8	1306-23-6								
3		copper {  dicopper oxide; copper (I) oxide }				30.5 mg/kg	1.126	28.502 mg/kg	0.00285 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
4		mercury {  mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
5		nickel {  nickel(IV) oxide (nickel dioxide) }				49 mg/kg	1.545	62.843 mg/kg	0.00628 %	✓		
		028-004-00-8	234-823-3	12035-36-8								
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.39 mg/kg	1.405	1.621 mg/kg	0.000162 %	✓		
		034-002-00-8										
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	31.2 mg/kg		25.896 mg/kg	0.00259 %	✓		
		082-001-00-6										
8		zinc {  zinc oxide }				88 mg/kg	1.245	90.914 mg/kg	0.00909 %	✓		
		030-013-00-7	215-222-5	1314-13-2								
9		antimony {  antimony trioxide }				1.15 mg/kg	1.197	1.143 mg/kg	0.000114 %	✓		
		051-005-00-X	215-175-0	1309-64-4								
10		barium {  barium oxide }				119 mg/kg	1.117	110.277 mg/kg	0.011 %	✓		
			215-127-9	1304-28-5								
11		molybdenum {  molybdenum(VI) oxide }				3.92 mg/kg	1.5	4.881 mg/kg	0.000488 %	✓		
		042-001-00-9	215-204-7	1313-27-5								
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				9.35 mg/kg	1.462	11.342 mg/kg	0.00113 %	✓		
			215-160-9	1308-38-9								
13		chromium in chromium(VI) compounds {  chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD	
		024-017-00-8										
14		benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD	
		601-020-00-8	200-753-7	71-43-2								
15		ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD	
		601-023-00-4	202-849-4	100-41-4								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
17	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
19	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
20	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
21	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
22	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
23	benzo[b]fluoranthene				0.0217 mg/kg		0.018 mg/kg	0.0000018 %	✓	
	601-034-00-4	205-911-9	205-99-2							
24	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
25	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
26	chrysene				0.0154 mg/kg		0.0128 mg/kg	0.00000128 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
28	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
29	fluoranthene				0.0239 mg/kg		0.0198 mg/kg	0.00000198 %	✓	
		205-912-4	206-44-0							
30	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
31	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
32	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
33	pH				8.44 pH		8.44 pH	8.44 pH		
			PH							
34	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
35	pyrene				0.0227 mg/kg		0.0188 mg/kg	0.00000188 %	✓	
		204-927-3	129-00-0							
36	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
38	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0991 mg/kg		0.0991 mg/kg	0.00000991 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
39	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]			607-720-00-X 206-400-3 [1] 221-470-5 [2] [3] 335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]	0.001 mg/kg		0.0009 mg/kg	0.00000009 %	✓		
40	perfluorooctanoic acid			607-704-00-2 206-397-9 335-67-1	0.0044 mg/kg		0.0036 mg/kg	0.000000366 %	✓		
41	Perfluoroheptanoic acid; tridecafluoroheptanoic acid			607-761-00-3 206-798-9 375-85-9	0.0013 mg/kg		0.001 mg/kg	0.000000109 %	✓		
42	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts			607-718-00-9 206-801-3 [1] [2] [3] 375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]	0.01 mg/kg		0.0083 mg/kg	0.00000083 %	✓		
43	xylene			601-022-00-9 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD	
Total:								0.0363 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GM7-151222-1.00-0.10

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.26	3	5
2	LOI (loss on ignition)	%	4.63	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.44	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0948	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.018	0.5	10
13	copper	mg/kg	0.034	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0776	0.5	10
16	nickel	mg/kg	0.0057	0.4	10
17	lead	mg/kg	0.0058	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.96	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	46.9	500	800
26	TDS (total dissolved solids)	mg/kg	885	4,000	60,000

Key

User supplied data

Classification of sample: GJ6/1.0-2.0-301122-2.00-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GJ6/1.0-2.0-301122-2.00-1.00	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				10.8 mg/kg		9.396 mg/kg		0.00094 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	1.79 mg/kg	1.285	2.002 mg/kg		0.000156 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				22.8 mg/kg	1.126	22.333 mg/kg		0.00223 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				33.8 mg/kg	1.545	45.438 mg/kg		0.00454 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.11 mg/kg	1.405	2.579 mg/kg		0.000258 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	17 mg/kg		14.79 mg/kg		0.00148 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				61.2 mg/kg	1.245	66.274 mg/kg		0.00663 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				0.771 mg/kg	1.197	0.803 mg/kg		0.0000803 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				138 mg/kg	1.117	134.048 mg/kg		0.0134 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				3.86 mg/kg	1.5	5.038 mg/kg		0.000504 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				6.57 mg/kg	1.462	8.354 mg/kg		0.000835 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	benzene				<0.09 mg/kg		<0.09 mg/kg		<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
15	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg		<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
17	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
19	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
20	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
21	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
22	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
23	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
24	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
25	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
28	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
29	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
30	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
31	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
32	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
33	pH				8.73 pH		8.73 pH	8.73 pH		
			PH							
34	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
35	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
36	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
38	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0035 mg/kg		0.0035 mg/kg	0.000000356 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
39	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]			607-720-00-X 206-400-3 [1] 221-470-5 [2] [3] 335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
40	perfluorooctanoic acid			607-704-00-2 206-397-9 335-67-1	0.0005 mg/kg		0.0004 mg/kg	0.000000048 %	✓		
41	Perfluoroheptanoic acid; tridecafluoroheptanoic acid			607-761-00-3 206-798-9 375-85-9	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
42	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts			607-718-00-9 206-801-3 [1] [2] [3] 375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
43	xylene			601-022-00-9 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD	
Total:								0.0323 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GJ6/1.0-2.0-301122-2.00-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.512	3	5
2	LOI (loss on ignition)	%	2.41	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.73	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0748	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0051	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.193	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	45.1	500	800
26	TDS (total dissolved solids)	mg/kg	578	4,000	60,000

Key

User supplied data

Classification of sample: GN5/0.1-1.0-011222-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GN5/0.1-1.0-011222-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
19% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic {  arsenic }				15.2 mg/kg		12.312 mg/kg	0.00123 %	✓	
		033-001-00-X	231-148-6	7440-38-2							
2		cadmium { cadmium sulfide }			1	2.1 mg/kg	1.285	2.186 mg/kg	0.00017 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
3		copper { dicopper oxide; copper (I) oxide }				27.1 mg/kg	1.126	24.714 mg/kg	0.00247 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
4		mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
5		nickel { nickel(IV) oxide (nickel dioxide) }				43.7 mg/kg	1.545	54.695 mg/kg	0.00547 %	✓	
		028-004-00-8	234-823-3	12035-36-8							
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.71 mg/kg	1.405	1.946 mg/kg	0.000195 %	✓	
		034-002-00-8									
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	32.3 mg/kg		26.163 mg/kg	0.00262 %	✓	
		082-001-00-6									
8		zinc { zinc oxide }				79.5 mg/kg	1.245	80.153 mg/kg	0.00802 %	✓	
		030-013-00-7	215-222-5	1314-13-2							
9		antimony { antimony trioxide }				1.35 mg/kg	1.197	1.309 mg/kg	0.000131 %	✓	
		051-005-00-X	215-175-0	1309-64-4							
10		barium {  barium oxide }				115 mg/kg	1.117	104.003 mg/kg	0.0104 %	✓	
			215-127-9	1304-28-5							
11		molybdenum { molybdenum(VI) oxide }				3.61 mg/kg	1.5	4.387 mg/kg	0.000439 %	✓	
		042-001-00-9	215-204-7	1313-27-5							
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				12.1 mg/kg	1.462	14.325 mg/kg	0.00143 %	✓	
			215-160-9	1308-38-9							
13		chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
		024-017-00-8									
14		benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
15		ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		601-023-00-4	202-849-4	100-41-4							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
17	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %			<LOD
		201-469-6	83-32-9								
19	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %			<LOD
		205-917-1	208-96-8								
20	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
		204-371-1	120-12-7								
21	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
	601-033-00-9	200-280-6	56-55-3								
22	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
23	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
24	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %			<LOD
		205-883-8	191-24-2								
25	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
	601-048-00-0	205-923-4	218-01-9								
27	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
		205-881-7	191-07-1								
28	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
29	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %			<LOD
		205-912-4	206-44-0								
30	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
		201-695-5	86-73-7								
31	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
		205-893-2	193-39-5								
32	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
33	pH				8.31 pH		8.31 pH	8.31 pH			
			PH								
34	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
		201-581-5	85-01-8								
35	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
		204-927-3	129-00-0								
36	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %			<LOD
	602-039-00-4	215-648-1	1336-36-3								
37	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %			<LOD
			TPH								
38	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %			<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]								

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
39	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
40	perfluorooctanoic acid				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
	607-704-00-2	206-397-9	335-67-1								
41	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
	607-761-00-3	206-798-9	375-85-9								
42	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD	
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
43	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD	
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
Total:								0.0338 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GN5/0.1-1.0-011222-1.00-0.10

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.8	3	5
2	LOI (loss on ignition)	%	4.43	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.31	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0874	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0225	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0804	0.5	10
16	nickel	mg/kg	0.0092	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0106	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.6	10	150
23	sulphate	mg/kg	120	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	62.9	500	800
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU CLP determinands

■ **arsenic** (EC Number: 231-148-6, CAS Number: 7440-38-2)

EU CLP index number: 033-001-00-X

Description/Comments: Worst Case: IARC considers arsenic Group 1; Carcinogenic to humans

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **lead compounds with the exception of those specified elsewhere in this Annex (worst case)**

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

■ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>

Data source date: 02 Apr 2020

Hazard Statements: Acute Tox. 3; H301 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 1; H332

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **1,1,1,2-tetrachloroethane** (EC Number: 211-135-1, CAS Number: 630-20-6)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , Carc. 2; H351 , Acute Tox. 4; H312 , Aquatic Chronic 3; H412 , Skin Irrit. 2; H315

■ **1,2,3-trichlorobenzene** (EC Number: 201-757-1, CAS Number: 87-61-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 3; H410

■ **1,3-dichloropropane** (EC Number: 205-531-3, CAS Number: 142-28-9)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335

■ **2,2-dichloropropane** (EC Number: 209-832-0, CAS Number: 594-20-7)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Acute Tox. 4; H312 , Eye Irrit. 2; H319

■ **4-isopropyltoluene** (EC Number: 202-796-7, CAS Number: 99-87-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Chronic 2; H411

▪ **bromochloromethane** (EC Number: 200-826-3, CAS Number: 74-97-5)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H312 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Ozone 1; H420

▪ **bromodichloromethane** (EC Number: 200-856-7, CAS Number: 75-27-4)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 1A; H360

▪ **dibromochloromethane** (EC Number: 204-704-0, CAS Number: 124-48-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT SE 3; H336 , Muta. 2; H341 , Aquatic Chronic 2; H411

▪ **dichlorodifluoromethane** (EC Number: 200-893-9, CAS Number: 75-71-8)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Aquatic Chronic 3; H412 , Ozone 1; H420 , Press. Gas; H280

▪ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

▪ **hexachlorobutadiene** (EC Number: 201-765-5, CAS Number: 87-68-3)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 2; H310 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 2; H330 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **n-butylbenzene** (EC Number: 203-209-7, CAS Number: 104-51-8)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **sec-butylbenzene** (EC Number: 205-227-0, CAS Number: 135-98-8)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Chronic 2; H411

▪ **tert-butylbenzene** (EC Number: 202-632-4, CAS Number: 98-06-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , STOT SE 3; H335 , Asp. Tox. 1; H304 , Aquatic Chronic 2; H411

▪ **trans-1,3-dichloropropene** (EC Number: 431-460-4, CAS Number: 10061-02-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Acute Tox. 3; H301 , Asp. Tox. 1; H304 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , Aquatic Chronic 1; H410

■ **trichlorofluoromethane** (EC Number: 200-892-3, CAS Number: 75-69-4)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Ozone 1; H420

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

▪ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

▪ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

 Total PFOS (CAS Number: PFOS-T)

Description/Comments: Some of the POPs added by Regulation (EU) No 1342/2014 in 2015 (ATP 3 to the POPs Regulation) such as PFOS are not in the LoW (and thus not in WM3) and yet also have the 50 mg/kg threshold. The intention of the legislation here is that although these additional POPs have a 50 mg/kg threshold;

this doesn't make the waste hazardous if the concentration is above 50 mg/kg,

but does require that the waste be disposed of if contains one of these POPs e.g. PFOS – as opposed to following the waste hierarchy to reuse the material for example.

The lawmakers want these materials destroyed even if they are not hazardous vis-a-vis the waste framework directive.

Data source: <https://app.hazwasteonline.com/help/substancekb/pops>

Data source date: 08 Dec 2022

Hazard Statements: None.

Appendix B: Rationale for selection of metal species

arsenic {arsenic}

Arsenic is used in alloys involving lead, medicine and agricultural purposes such as wood preservatives, animal feed, and insecticides.

cadmium {cadmium sulfide}

cadmium sulfide is used in pigments (CdS-CdSe solutions), for the photoconductive surface coating for photocopier drums, in photo-resistors and solar cells.

copper {dicopper oxide; copper (I) oxide}

copper(I) oxide used in oxidised copper, brake pads, pigments, a fungicide, and an antifouling agent for marine paints

mercury {mercury dichloride}

mercury dichloride is used as a catalyst for the conversion of acetylene to vinyl chloride, the precursor to polyvinylchloride and to form amalgams with other metals.

nickel {nickel(IV) oxide (nickel dioxide)}

nickel(II) oxide is used in chemical applications for specialized items or in the production of nickel alloys

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

worst case species as chromates not expected.

zinc {zinc oxide}

zinc oxide is used in car tyres, vulcanizing rubber, ceramic glazes, pigments, UV absorbers, paints, sunscreens, ointments.

antimony {antimony trioxide}

Worst case species (edit as required)

barium {barium oxide}

reasonable CLP species based on solubility and site history

molybdenum {molybdenum(VI) oxide}

Worst case species (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: **EU WM3 1st Edition v1.1.NI using the EU LoW**

HazWasteOnline Classification Engine Version: 2023.61.5539.10248 (02 Mar 2023)

HazWasteOnline Database: 2023.61.5539.10248 (02 Mar 2023)

This classification utilises the following guidance and legislation:

WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

17th ATP - Regulation (EU) 2021/849 of 11 March 2021

18th ATP - Regulation (EU) 2022/692 of 16 February 2022

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



LL6N1-Q8MQO-BRCXB

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

Dublin Airport Apron Extension April 2023

Description/Comments

Composite waste classification samples were collected from trial pits. The material represented by samples is considered to be representative of the overall material excavated from the Site. The results of chemical analysis of the samples have been used to determine whether, in our opinion, the samples are likely to be classified as hazardous or non-hazardous under current EU legislation and EPA guidance. It is noted that the environmental regulator and the waste acceptor may also decide whether a waste is hazardous or non-hazardous and acceptable at their facility. The analyses supplied included results for metals, PAHs, PCBs, TPH-CWG, and PFAS compounds. The hydrocarbon concentrations have been entered into HWOL as an unknown source of oil. One sample, GP7 0.2 - 1.0 m, has been classified as hazardous due to hydrocarbon concentrations in excess of 1,000 mg/kg which is the threshold when the source of oil is unknown. Statistical analysis could be carried out to consider the entire sample population. No asbestos was detected in any of the samples. The remaining samples are classified as non-hazardous and most meet inert waste acceptance criteria, with one sample (GD7 1.4-2.4 m) slightly exceeding inert limits for selenium (still within 3 times inert limits applicable for IMS Hollywood Landfill). PFAS compounds are Persistent organic pollutants (POPs), chemical substances that persist in the environment, can bioaccumulate, and pose a risk to the environment and human health. PFAS compounds were detected in some samples at low levels. The sum of these detections in the samples is well below the 50 mg/kg threshold defined for the POPs in UK guidance WM3. The presence of PFAS compounds does not make the waste hazardous but their disposal should be considered with regards to POP regulations to ensure that they do not persist in the environment.

Project

40000208

Site

Dublin Airport

Classified by

Name: **Martha Buckwalter-Davis** Company: **WSP Golder Associates Ireland Ltd**
 Date: **18 Apr 2023 14:53 GMT** **Town Centre House**
 Telephone: **0870677369** **Dublin Road**
Naas
W91TD0P

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
 Most recent 3 year Refresher

Date

28 May 2015
 04 Apr 2023

Next 3 year Refresher due by Apr 2026

Purpose of classification

7 - Disposal of Waste

Address of the waste

Dublin Airport

Post Code N/A

Description of industry/producer giving rise to the waste

Dublin Airport

Description of the specific process, sub-process and/or activity that created the waste

Soils excavated for apron extension

Description of the waste

GF7/0.1-1.0 – brown gravelly clay, medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
 GE6/ 0.1-1.0 – brown gravelly clay, medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
 GH6/ 0.1-1.0 – brown clayey gravelly sand, sand is coarse, gravel is medium to coarse, sub-angular to subrounded

G7B/ 0.3-0.5 – brown gravelly clay, medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
GL3/ 0.1-1.0 – brown to grey sandy gravelly clay, medium plasticity, sand is coarse, gravel is medium to coarse, sub-angular to subrounded
GP7/ 0.2-1.0 – brown gravelly clay, medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
GD7/ 1.4-2.4 – brown to black, gravelly clay with frequent gravel, clay is medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
GJ3/ 1.0-2.0 – brown to black, gravelly clay with frequent gravel, clay is medium to high plasticity, gravel is medium to coarse, sub-angular to subrounded
GI4/0.10-1.00 - brown sandy CLAY with frequent gravel, medium to high plasticity clay, sand is coarse, gravel is fine to coarse, sub-angular to sub-rounded
GI7/0.10-1.00 - brown sandy CLAY with frequent gravel, medium to high plasticity clay, sand is coarse, gravel is fine to coarse, sub-angular to sub-rounded
GF5/0.10-1.00 - brown sandy CLAY with frequent gravel, medium to high plasticity clay, sand is coarse, gravel is fine to coarse, sub-angular to sub-rounded

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	GP7-200123-1.00-0.20		Non Hazardous	HP 7, HP 11	Pass	Pass	4
2	G7B-180123-0.50-0.30		Hazardous		N/A	N/A	8
3	GD7-230123-2.40-1.40		Non Hazardous		Fail	Pass	12
4	GE6-130123-1.00-0.10		Non Hazardous		Pass	Pass	16
5	GF7-170123-1.00-0.10		Non Hazardous		Pass	Pass	20
6	GH6-120123-1.00-0.10		Non Hazardous		Pass	Pass	24
7	GJ3-240123-2.00-1.00		Non Hazardous		Pass	Pass	28
8	GL3-180123-1.00-0.00		Non Hazardous		Pass	Pass	31
9	GI4-250123-1.00-0.10		Non Hazardous		Pass	Pass	35
10	GI7-250123-1.00-0.10		Non Hazardous		Pass	Pass	39
11	GF5/0.1-1.0-060323-1.00-0.10		Non Hazardous		Pass	Pass	42

Related documents

#	Name	Description
1	230321-71.hwol	ALS Hawarden .hwol file used to populate the Job
2	April2023.batch	ALS Hawarden .batch file used to populate the Job
3	230125-103 (1).hwol	ALS Hawarden .hwol file used to populate the Job
4	230125-103.hwol	ALS Hawarden .hwol file used to populate the Job
5	230127-88.hwol	ALS Hawarden .hwol file used to populate the Job
6	METALS	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Martha Buckwalter-Davis

Created date: 18 Apr 2023 14:53 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	46
Appendix B: Rationale for selection of metal species	47
Appendix C: Version	48

Classification of sample: GP7-200123-1.00-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GP7-200123-1.00-0.20	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic {  arsenic }			1	14.7 mg/kg		12.054 mg/kg	0.00121 %	✓		
		033-001-00-X	231-148-6	7440-38-2								
2		cadmium {  cadmium sulfide }			1	2.28 mg/kg	1.285	2.403 mg/kg	0.000187 %	✓		
		048-010-00-4	215-147-8	1306-23-6								
3		copper {  dicopper oxide; copper (I) oxide }			1	27.2 mg/kg	1.126	25.112 mg/kg	0.00251 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
4		mercury {  mercury dichloride }			1	<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
5		nickel {  nickel(IV) oxide (nickel dioxide) }			1	51.3 mg/kg	1.545	65 mg/kg	0.0065 %	✓		
		028-004-00-8	234-823-3	12035-36-8								
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }			1	2.08 mg/kg	1.405	2.396 mg/kg	0.00024 %	✓		
		034-002-00-8										
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23.6 mg/kg		19.352 mg/kg	0.00194 %	✓		
		082-001-00-6										
8		zinc {  zinc oxide }			1	84.1 mg/kg	1.245	85.838 mg/kg	0.00858 %	✓		
		030-013-00-7	215-222-5	1314-13-2								
9		antimony {  antimony trioxide }			1	1.31 mg/kg	1.197	1.286 mg/kg	0.000129 %	✓		
		051-005-00-X	215-175-0	1309-64-4								
10		barium {  barium oxide }			1	120 mg/kg	1.117	109.864 mg/kg	0.011 %	✓		
			215-127-9	1304-28-5								
11		molybdenum {  molybdenum(VI) oxide }			1	3.88 mg/kg	1.5	4.773 mg/kg	0.000477 %	✓		
		042-001-00-9	215-204-7	1313-27-5								
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }			1	10.3 mg/kg	1.462	12.344 mg/kg	0.00123 %	✓		
			215-160-9	1308-38-9								
13		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }			1	<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD	
		024-017-00-8										
14		TPH (C6 to C40) petroleum group		TPH	1	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD	
15		pH		PH	1	8.53 pH		8.53 pH	8.53 pH			

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0095 mg/kg		0.0095 mg/kg	0.000000954 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
24	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0352 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GP7-200123-1.00-0.20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

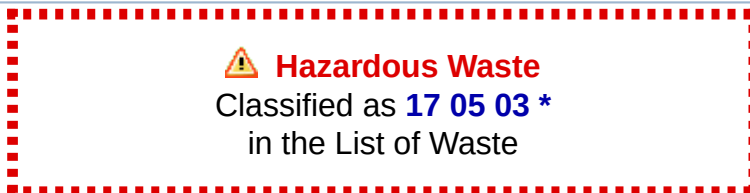
WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.582	3	5
2	LOI (loss on ignition)	%	5.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.53	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0452	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0211	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.06	0.5	10
16	nickel	mg/kg	0.0048	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0329	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	32	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	37.2	500	800
26	TDS (total dissolved solids)	mg/kg	867	4,000	60,000

Key

User supplied data

Classification of sample: G7B-180123-0.50-0.30



Sample details

Sample name:	LoW Code:
G7B-180123-0.50-0.30	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
9%	Entry:
(wet weight correction)	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.219%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.219%)

Determinands

Moisture content: 9% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }				14 mg/kg		12.74 mg/kg	0.00127 %	✓	
	033-001-00-X	231-148-6	7440-38-2							
2	cadmium { cadmium sulfide }			1	1.31 mg/kg	1.285	1.532 mg/kg	0.000119 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
3	copper { dicopper oxide; copper (I) oxide }				22.1 mg/kg	1.126	22.643 mg/kg	0.00226 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
5	nickel { nickel(IV) oxide (nickel dioxide) }				34.1 mg/kg	1.545	47.949 mg/kg	0.00479 %	✓	
	028-004-00-8	234-823-3	12035-36-8							
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	8.51 mg/kg		7.744 mg/kg	0.000774 %	✓	
	082-001-00-6									
8	zinc { zinc oxide }				63.1 mg/kg	1.245	71.473 mg/kg	0.00715 %	✓	
	030-013-00-7	215-222-5	1314-13-2							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
9	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %			<LOD
10	barium { barium oxide }	215-127-9	1304-28-5		56.5 mg/kg	1.117	57.405 mg/kg	0.00574 %	✓		
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	2.11 mg/kg	1.5	2.881 mg/kg	0.000288 %	✓		
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		15.2 mg/kg	1.462	20.216 mg/kg	0.00202 %	✓		
13	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %			<LOD
14	TPH (C6 to C40) petroleum group		TPH		2410 mg/kg		2193.1 mg/kg	0.219 %	✓		
15	pH		PH		11.3 pH		11.3 pH	11.3 pH			
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %			<LOD
17	naphthalene	601-052-00-2	202-049-5	91-20-3	0.666 mg/kg		0.606 mg/kg	0.0000606 %	✓		
18	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %			<LOD
19	acenaphthene	201-469-6	83-32-9		0.0199 mg/kg		0.0181 mg/kg	0.00000181 %	✓		
20	fluorene	201-695-5	86-73-7		0.0335 mg/kg		0.0305 mg/kg	0.00000305 %	✓		
21	phenanthrene	201-581-5	85-01-8		0.0195 mg/kg		0.0177 mg/kg	0.00000177 %	✓		
22	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
23	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %			<LOD
24	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
25	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
26	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
27	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
28	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
29	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
30	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
31	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
32	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
33	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	benzene	601-020-00-8	200-753-7	71-43-2	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
36	toluene	601-021-00-3	203-625-9	108-88-3	<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
37	ethylbenzene	601-023-00-4	202-849-4	100-41-4	0.0084 mg/kg		0.0076 mg/kg	0.000000764 %	✓	
38	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
39	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	0.0512 mg/kg		0.0466 mg/kg	0.00000466 %	✓	
Total:								0.244 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

ethylbenzene: (conc.: 7.64e-07%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.219%)

xylene: (conc.: 4.66e-06%)

WAC results for sample: G7B-180123-0.50-0.30

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

None of the WAC limits can be applied to this sample.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.264	3	5
2	LOI (loss on ignition)	%	2.25	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0596	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	1120	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	11.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0158	0.5	2
10	barium	mg/kg	0.186	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0694	0.5	10
13	copper	mg/kg	0.0952	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0684	0.5	10
16	nickel	mg/kg	0.0141	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	0.0261	0.06	0.7
19	selenium	mg/kg	0.0352	0.1	0.5
20	zinc	mg/kg	0.021	4	50
21	chloride	mg/kg	23	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	203	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	3000	4,000	60,000

Key

	User supplied data
	Not applicable
	Inert WAC criteria fail

Classification of sample: GD7-230123-2.40-1.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GD7-230123-2.40-1.40	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
9.2% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				12.2 mg/kg		11.078 mg/kg		0.00111 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	1.83 mg/kg	1.285	2.136 mg/kg		0.000166 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				27.5 mg/kg	1.126	28.113 mg/kg		0.00281 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				40.5 mg/kg	1.545	56.823 mg/kg		0.00568 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				7.38 mg/kg	1.405	9.415 mg/kg		0.000941 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	18.7 mg/kg		16.98 mg/kg		0.0017 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				75.3 mg/kg	1.245	85.104 mg/kg		0.00851 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				0.898 mg/kg	1.197	0.976 mg/kg		0.0000976 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				105 mg/kg	1.117	106.448 mg/kg		0.0106 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				5.41 mg/kg	1.5	7.369 mg/kg		0.000737 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				6.16 mg/kg	1.462	8.175 mg/kg		0.000817 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg		<0.001 %		<LOD
15	pH		PH		8.87 pH		8.87 pH		8.87 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0005 mg/kg		0.0005 mg/kg	0.000000053 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
24	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0344 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GD7-230123-2.40-1.40

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.57	3	5
2	LOI (loss on ignition)	%	2.52	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.87	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.272	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0061	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.475	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	0.0132	0.06	0.7
19	selenium	mg/kg	0.131	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	21	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	74	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	689	4,000	60,000

Key

	User supplied data
	Inert WAC criteria fail

Classification of sample: GE6-130123-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GE6-130123-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used			
		EU CLP index number	EC Number	CAS Number										
1		arsenic {  arsenic }	033-001-00-X	231-148-6	7440-38-2	1	11.6	mg/kg	1.285	10.324	mg/kg	0.00103 %	✓	
2		cadmium {  cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6		1.79	mg/kg	1.285	2.048	mg/kg	0.000159 %	✓	
3		copper {  dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	1	23.5	mg/kg	1.126	23.548	mg/kg	0.00235 %	✓	
4		mercury {  mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
5		nickel {  nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8	1	37.8	mg/kg	1.545	51.983	mg/kg	0.0052 %	✓	
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.13	mg/kg	1.405	2.663	mg/kg	0.000266 %	✓	
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	17.7	mg/kg		15.753	mg/kg	0.00158 %	✓	
8		zinc {  zinc oxide }	030-013-00-7	215-222-5	1314-13-2		67	mg/kg	1.245	74.222	mg/kg	0.00742 %	✓	
9		antimony {  antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	1	0.786	mg/kg	1.197	0.837	mg/kg	0.0000837 %	✓	
10		barium {  barium oxide }		215-127-9	1304-28-5		82.3	mg/kg	1.117	81.781	mg/kg	0.00818 %	✓	
11		molybdenum {  molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	1	4.25	mg/kg	1.5	5.674	mg/kg	0.000567 %	✓	
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.33	mg/kg	1.462	8.234	mg/kg	0.000823 %	✓	
13		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			1	<0.6	mg/kg	2.27	<1.362	mg/kg	<0.000136 %		<LOD
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		pH			PH	1	9.48	pH		9.48	pH	9.48 pH		
					PH									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
24	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0289 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GE6-130123-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.367	3	5
2	LOI (loss on ignition)	%	2.22	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	9.48	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.055	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0128	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.381	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	70	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	37.8	500	800
26	TDS (total dissolved solids)	mg/kg	567	4,000	60,000

Key

User supplied data

Classification of sample: GF7-170123-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GF7-170123-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				11.4 mg/kg		10.146 mg/kg		0.00101 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	1.67 mg/kg	1.285	1.91 mg/kg		0.000149 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				22.8 mg/kg	1.126	22.847 mg/kg		0.00228 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				42.1 mg/kg	1.545	57.897 mg/kg		0.00579 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.74 mg/kg	1.405	3.426 mg/kg		0.000343 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	16.4 mg/kg		14.596 mg/kg		0.00146 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				65.1 mg/kg	1.245	72.117 mg/kg		0.00721 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				0.907 mg/kg	1.197	0.966 mg/kg		0.0000966 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				87 mg/kg	1.117	86.451 mg/kg		0.00865 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				4.13 mg/kg	1.5	5.514 mg/kg		0.000551 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				4.75 mg/kg	1.462	6.179 mg/kg		0.000618 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	TPH (C6 to C40) petroleum group		TPH		18.7 mg/kg		16.643 mg/kg		0.00166 %	✓	
15	pH		PH		8.73 pH		8.73 pH		8.73 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
24	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0301 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00166%)

WAC results for sample: GF7-170123-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.579	3	5
2	LOI (loss on ignition)	%	1.72	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	49.3	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.73	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0122	0.5	2
10	barium	mg/kg	0.138	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0124	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.436	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	0.0158	0.06	0.7
19	selenium	mg/kg	0.0195	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	22	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	32.9	500	800
26	TDS (total dissolved solids)	mg/kg	531	4,000	60,000

Key

User supplied data

Classification of sample: GH6-120123-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GH6-120123-1.00-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic {  arsenic }				14.9 mg/kg		12.367 mg/kg	0.00124 %	✓		
		033-001-00-X	231-148-6	7440-38-2								
2		cadmium {  cadmium sulfide }			1	1.41 mg/kg	1.285	1.504 mg/kg	0.000117 %	✓		
		048-010-00-4	215-147-8	1306-23-6								
3		copper {  dicopper oxide; copper (I) oxide }				23.6 mg/kg	1.126	22.054 mg/kg	0.00221 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
4		mercury {  mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
5		nickel {  nickel(IV) oxide (nickel dioxide) }				32.6 mg/kg	1.545	41.81 mg/kg	0.00418 %	✓		
		028-004-00-8	234-823-3	12035-36-8								
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.58 mg/kg	1.405	1.843 mg/kg	0.000184 %	✓		
		034-002-00-8										
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	32.3 mg/kg		26.809 mg/kg	0.00268 %	✓		
		082-001-00-6										
8		zinc {  zinc oxide }				72.3 mg/kg	1.245	74.694 mg/kg	0.00747 %	✓		
		030-013-00-7	215-222-5	1314-13-2								
9		antimony {  antimony trioxide }				0.927 mg/kg	1.197	0.921 mg/kg	0.0000921 %	✓		
		051-005-00-X	215-175-0	1309-64-4								
10		barium {  barium oxide }				88.7 mg/kg	1.117	82.198 mg/kg	0.00822 %	✓		
			215-127-9	1304-28-5								
11		molybdenum {  molybdenum(VI) oxide }				3.19 mg/kg	1.5	3.972 mg/kg	0.000397 %	✓		
		042-001-00-9	215-204-7	1313-27-5								
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				11.2 mg/kg	1.462	13.587 mg/kg	0.00136 %	✓		
			215-160-9	1308-38-9								
13		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD	
		024-017-00-8										
14		TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD	
15		pH		PH		8.32 pH		8.32 pH	8.32 pH			

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0094 mg/kg		0.0094 mg/kg	0.000000947 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				0.032 mg/kg		0.0266 mg/kg	0.00000266 %	✓	
		201-469-6	83-32-9							
20	fluorene				0.036 mg/kg		0.0299 mg/kg	0.00000299 %	✓	
		201-695-5	86-73-7							
21	phenanthrene				0.534 mg/kg		0.443 mg/kg	0.0000443 %	✓	
		201-581-5	85-01-8							
22	anthracene				0.112 mg/kg		0.093 mg/kg	0.0000093 %	✓	
		204-371-1	120-12-7							
23	fluoranthene				0.658 mg/kg		0.546 mg/kg	0.0000546 %	✓	
		205-912-4	206-44-0							
24	pyrene				0.589 mg/kg		0.489 mg/kg	0.0000489 %	✓	
		204-927-3	129-00-0							
25	benzo[a]anthracene				0.263 mg/kg		0.218 mg/kg	0.0000218 %	✓	
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				0.279 mg/kg		0.232 mg/kg	0.0000232 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				0.279 mg/kg		0.232 mg/kg	0.0000232 %	✓	
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				0.0977 mg/kg		0.0811 mg/kg	0.00000811 %	✓	
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				0.237 mg/kg		0.197 mg/kg	0.0000197 %	✓	
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				0.124 mg/kg		0.103 mg/kg	0.0000103 %	✓	
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				0.0295 mg/kg		0.0245 mg/kg	0.00000245 %	✓	
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				0.134 mg/kg		0.111 mg/kg	0.0000111 %	✓	
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0296 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GH6-120123-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.937	3	5
2	LOI (loss on ignition)	%	4.34	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.32	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0551	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0335	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0535	0.5	10
16	nickel	mg/kg	0.0065	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.78	10	150
23	sulphate	mg/kg	22	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	55.3	500	800
26	TDS (total dissolved solids)	mg/kg	978	4,000	60,000

Key

User supplied data

Classification of sample: GJ3-240123-2.00-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GJ3-240123-2.00-1.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic }				12.6 mg/kg		11.088 mg/kg		0.00111 %	✓	
	033-001-00-X	231-148-6	7440-38-2								
2	cadmium { cadmium sulfide }			1	1.79 mg/kg	1.285	2.025 mg/kg		0.000158 %	✓	
	048-010-00-4	215-147-8	1306-23-6								
3	copper { dicopper oxide; copper (I) oxide }				26.2 mg/kg	1.126	25.958 mg/kg		0.0026 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg		<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
5	nickel { nickel(IV) oxide (nickel dioxide) }				39.1 mg/kg	1.545	53.167 mg/kg		0.00532 %	✓	
	028-004-00-8	234-823-3	12035-36-8								
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.77 mg/kg	1.405	2.188 mg/kg		0.000219 %	✓	
	034-002-00-8										
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	19.7 mg/kg		17.336 mg/kg		0.00173 %	✓	
	082-001-00-6										
8	zinc { zinc oxide }				73.2 mg/kg	1.245	80.179 mg/kg		0.00802 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
9	antimony { antimony trioxide }				1.16 mg/kg	1.197	1.222 mg/kg		0.000122 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
10	barium { barium oxide }				86.1 mg/kg	1.117	84.595 mg/kg		0.00846 %	✓	
		215-127-9	1304-28-5								
11	molybdenum { molybdenum(VI) oxide }				4.36 mg/kg	1.5	5.756 mg/kg		0.000576 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				10.7 mg/kg	1.462	13.762 mg/kg		0.00138 %	✓	
		215-160-9	1308-38-9								
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg		<0.000136 %		<LOD
	024-017-00-8										
14	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg		<0.001 %		<LOD
15	pH		PH		8.65 pH		8.65 pH		8.65 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
17	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
18	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
19	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
20	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
21	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
22	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
23	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
24	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
25	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
26	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
27	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
28	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
29	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
30	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
31	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
32	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
34	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
35	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
36	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
37	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
38	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0309 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GJ3-240123-2.00-1.00

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.559	3	5
2	LOI (loss on ignition)	%	2.96	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.65	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0849	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0078	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.258	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	673	4,000	60,000

Key

User supplied data

Classification of sample: GL3-180123-1.00-0.00

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GL3-180123-1.00-0.00	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2	43.1 mg/kg		37.497 mg/kg	0.00375 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	0.998 mg/kg	1.285	1.116 mg/kg	0.0000868 %	✓	
3	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	22.4 mg/kg	1.126	21.941 mg/kg	0.00219 %	✓	
4	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
5	nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8	25.8 mg/kg	1.545	34.683 mg/kg	0.00347 %	✓	
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			38 mg/kg		33.06 mg/kg	0.00331 %	✓	
8	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	91.8 mg/kg	1.245	99.41 mg/kg	0.00994 %	✓	
9	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<LOD
10	barium { barium oxide }		215-127-9	1304-28-5	94.6 mg/kg	1.117	91.891 mg/kg	0.00919 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	1.49 mg/kg	1.5	1.945 mg/kg	0.000194 %	✓	
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	16.7 mg/kg	1.462	21.235 mg/kg	0.00212 %	✓	
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
14	TPH (C6 to C40) petroleum group			TPH	57.4 mg/kg		49.938 mg/kg	0.00499 %	✓	
15	pH			PH	8.37 pH		8.37 pH	8.37 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.045 mg/kg		<0.045 mg/kg	<0.0000045 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.085 mg/kg		<0.085 mg/kg	<0.0000085 %		<LOD
		205-912-4	206-44-0							
24	pyrene				0.0972 mg/kg		0.0846 mg/kg	0.00000846 %	✓	
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.115 mg/kg		<0.115 mg/kg	<0.0000115 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.12 mg/kg		<0.12 mg/kg	<0.000012 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.105 mg/kg		<0.105 mg/kg	<0.0000105 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.0398 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00499%)

WAC results for sample: GL3-180123-1.00-0.00

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 0.612	3	5
2	LOI (loss on ignition)	% 2.91	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.105	1	-
5	Mineral oil (C10 to C40)	mg/kg 23.7	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.37	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0654	0.5	2
10	barium	mg/kg 0.135	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg 0.0117	0.5	10
13	copper	mg/kg 0.0818	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.0585	0.5	10
16	nickel	mg/kg 0.023	0.4	10
17	lead	mg/kg 0.0023	0.5	10
18	antimony	mg/kg 0.0196	0.06	0.7
19	selenium	mg/kg 0.0154	0.1	0.5
20	zinc	mg/kg 0.0178	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg <5	10	150
23	sulphate	mg/kg 215	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 79.9	500	800
26	TDS (total dissolved solids)	mg/kg 1170	4,000	60,000

Key

User supplied data

Classification of sample: GI4-250123-1.00-0.10

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GI4-250123-1.00-0.10	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
20%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used	
		EU CLP index number	EC Number	CAS Number									
1		arsenic {  arsenic }	033-001-00-X	231-148-6	7440-38-2	16	mg/kg		12.8	mg/kg	0.00128 %	✓	
2		cadmium {  cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1.5	mg/kg	1.285	1.542	mg/kg	0.00012 %	✓	
3		copper {  dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	28.3	mg/kg	1.126	25.49	mg/kg	0.00255 %	✓	
4		mercury {  mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
5		nickel {  nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8	37	mg/kg	1.545	45.737	mg/kg	0.00457 %	✓	
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			2.01	mg/kg	1.405	2.259	mg/kg	0.000226 %	✓	
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			37.4	mg/kg		29.92	mg/kg	0.00299 %	✓	
8		zinc {  zinc oxide }	030-013-00-7	215-222-5	1314-13-2	89.9	mg/kg	1.245	89.52	mg/kg	0.00895 %	✓	
9		antimony {  antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	1.16	mg/kg	1.197	1.111	mg/kg	0.000111 %	✓	
10		barium {  barium oxide }		215-127-9	1304-28-5	160	mg/kg	1.117	142.913	mg/kg	0.0143 %	✓	
11		molybdenum {  molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	2.91	mg/kg	1.5	3.492	mg/kg	0.000349 %	✓	
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }		215-160-9	1308-38-9	17.9	mg/kg	1.462	20.929	mg/kg	0.00209 %	✓	
13		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6	mg/kg	2.27	<1.362	mg/kg	<0.000136 %		<LOD
14		TPH (C6 to C40) petroleum group			TPH	122	mg/kg		97.6	mg/kg	0.00976 %	✓	
15		pH			PH	8.08	pH		8.08	pH	8.08 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	naphthalene				<0.045 mg/kg		<0.045 mg/kg	<0.0000045 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
17	acenaphthylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		205-917-1	208-96-8							
18	acenaphthene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-469-6	83-32-9							
19	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
20	phenanthrene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
		201-581-5	85-01-8							
21	anthracene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
		204-371-1	120-12-7							
22	fluoranthene				<0.085 mg/kg		<0.085 mg/kg	<0.0000085 %		<LOD
		205-912-4	206-44-0							
23	pyrene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
		204-927-3	129-00-0							
24	benzo[a]anthracene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
25	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
26	benzo[b]fluoranthene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
27	benzo[k]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
28	benzo[a]pyrene; benzo[def]chrysene				<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
29	indeno[123-cd]pyrene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
		205-893-2	193-39-5							
30	dibenz[a,h]anthracene				<0.115 mg/kg		<0.115 mg/kg	<0.0000115 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
31	benzo[ghi]perylene				<0.12 mg/kg		<0.12 mg/kg	<0.000012 %		<LOD
		205-883-8	191-24-2							
32	polychlorobiphenyls; PCB				<0.105 mg/kg		<0.105 mg/kg	<0.0000105 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
34	benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
35	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
36	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
37	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
38	xylene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0476 %		

Key	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00976%)

WAC results for sample: GI4-250123-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 1.44	3	5
2	LOI (loss on ignition)	% 6.09	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.105	1	-
5	Mineral oil (C10 to C40)	mg/kg 60	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.08	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0143	0.5	2
10	barium	mg/kg 0.112	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg <0.01	0.5	10
13	copper	mg/kg 0.0616	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.0577	0.5	10
16	nickel	mg/kg 0.014	0.4	10
17	lead	mg/kg <0.002	0.5	10
18	antimony	mg/kg 0.012	0.06	0.7
19	selenium	mg/kg 0.0145	0.1	0.5
20	zinc	mg/kg <0.01	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg 6.72	10	150
23	sulphate	mg/kg 220	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 80.4	500	800
26	TDS (total dissolved solids)	mg/kg 1230	4,000	60,000

Key

User supplied data

Classification of sample: GI7-250123-1.00-0.10

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GI7-250123-1.00-0.10	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
18%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2	13.9 mg/kg		11.398 mg/kg	0.00114 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	2.16 mg/kg	1.285	2.276 mg/kg	0.000177 %	✓	
3	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	29.4 mg/kg	1.126	27.143 mg/kg	0.00271 %	✓	
4	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
5	nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8	42.3 mg/kg	1.545	53.596 mg/kg	0.00536 %	✓	
6	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			38 mg/kg		31.16 mg/kg	0.00312 %	✓	
7	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	90.4 mg/kg	1.245	92.268 mg/kg	0.00923 %	✓	
8	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	1.51 mg/kg	1.197	1.482 mg/kg	0.000148 %	✓	
9	barium { barium oxide }		215-127-9	1304-28-5	101 mg/kg	1.117	92.469 mg/kg	0.00925 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	3.64 mg/kg	1.5	4.478 mg/kg	0.000448 %	✓	
11	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	13.3 mg/kg	1.462	15.94 mg/kg	0.00159 %	✓	
12	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
13	TPH (C6 to C40) petroleum group			TPH	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
14	pH			PH	8.32 pH		8.32 pH	8.32 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
20	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.0248 mg/kg		0.0203 mg/kg	0.00000203 %	✓	
22	pyrene	204-927-3	129-00-0		0.0235 mg/kg		0.0193 mg/kg	0.00000193 %	✓	
23	benzo[a]anthracene	601-033-00-9	200-280-6		<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
24	chrysene	601-048-00-0	205-923-4		0.018 mg/kg		0.0148 mg/kg	0.00000148 %	✓	
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.0264 mg/kg		0.0216 mg/kg	0.00000216 %	✓	
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.0199 mg/kg		0.0163 mg/kg	0.00000163 %	✓	
28	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
31	polychlorobiphenyls; PCB	602-039-00-4	215-648-1		<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
32	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzene	601-020-00-8	200-753-7		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
34	toluene	601-021-00-3	203-625-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
35	ethylbenzene	601-023-00-4	202-849-4		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
36	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
37	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
Total:								0.0344 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GI7-250123-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.23	3	5
2	LOI (loss on ignition)	%	5.35	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.32	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.076	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.017	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0897	0.5	10
16	nickel	mg/kg	0.0047	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.42	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	898	4,000	60,000

Key

User supplied data

Classification of sample: GF5/0.1-1.0-060323-1.00-0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
GF5/0.1-1.0-060323-1.00-0.10	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic {  arsenic }			1	13.1 mg/kg		11.135 mg/kg	0.00111 %	✓		
		033-001-00-X	231-148-6	7440-38-2								
2		cadmium {  cadmium sulfide }			1	1.53 mg/kg	1.285	1.671 mg/kg	0.00013 %	✓		
		048-010-00-4	215-147-8	1306-23-6								
3		copper {  dicopper oxide; copper (I) oxide }			1	26.6 mg/kg	1.126	25.456 mg/kg	0.00255 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
4		mercury {  mercury dichloride }			1	<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
5		nickel {  nickel(IV) oxide (nickel dioxide) }			1	36.6 mg/kg	1.545	48.071 mg/kg	0.00481 %	✓		
		028-004-00-8	234-823-3	12035-36-8								
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }			1	1.74 mg/kg	1.405	2.078 mg/kg	0.000208 %	✓		
		034-002-00-8										
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	38.9 mg/kg		33.065 mg/kg	0.00331 %	✓		
		082-001-00-6										
8		zinc {  zinc oxide }			1	84 mg/kg	1.245	88.873 mg/kg	0.00889 %	✓		
		030-013-00-7	215-222-5	1314-13-2								
9		antimony {  antimony trioxide }			1	0.956 mg/kg	1.197	0.973 mg/kg	0.0000973 %	✓		
		051-005-00-X	215-175-0	1309-64-4								
10		barium {  barium oxide }			1	99.6 mg/kg	1.117	94.523 mg/kg	0.00945 %	✓		
			215-127-9	1304-28-5								
11		molybdenum {  molybdenum(VI) oxide }			1	3.67 mg/kg	1.5	4.68 mg/kg	0.000468 %	✓		
		042-001-00-9	215-204-7	1313-27-5								
12		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }			1	6.2 mg/kg	1.462	7.702 mg/kg	0.00077 %	✓		
			215-160-9	1308-38-9								
13		chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }			1	<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD	
		024-017-00-8										
14		TPH (C6 to C40) petroleum group		TPH	1	<10 mg/kg		<10 mg/kg	<0.001 %		<LOD	
15		pH		PH	1	8.54 pH		8.54 pH	8.54 pH			

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0076 mg/kg		0.0076 mg/kg	0.000000769 %		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
17	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		201-581-5	85-01-8							
22	anthracene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		204-371-1	120-12-7							
23	fluoranthene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
		205-912-4	206-44-0							
24	pyrene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
		204-927-3	129-00-0							
25	benzo[a]anthracene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
35	benzene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
36	toluene				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
37	ethylbenzene				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
38	coronene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		205-881-7	191-07-1							
39	xylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
Total:								0.033 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: GF5/0.1-1.0-060323-1.00-0.10

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.648	3	5
2	LOI (loss on ignition)	%	4.37	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	12.4	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.54	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0844	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0104	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.171	0.5	10
16	nickel	mg/kg	0.0115	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.34	10	150
23	sulphate	mg/kg	71	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	45.9	500	800
26	TDS (total dissolved solids)	mg/kg	873	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU CLP determinands

■ **arsenic** (EC Number: 231-148-6, CAS Number: 7440-38-2)

EU CLP index number: 033-001-00-X

Description/Comments: Worst Case: IARC considers arsenic Group 1; Carcinogenic to humans

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **lead compounds with the exception of those specified elsewhere in this Annex (worst case)**

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

■ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>

Data source date: 02 Apr 2020

Hazard Statements: Acute Tox. 3; H301 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 1; H332

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

▪ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

▪ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

▪ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.

Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>

Data source date: 16 Jun 2014

Hazard Statements: STOT SE 2; H371

Appendix B: Rationale for selection of metal species

arsenic {arsenic}

Arsenic is used in alloys involving lead, medicine and agricultural purposes such as wood preservatives, animal feed, and insecticides.

cadmium {cadmium sulfide}

cadmium sulfide is used in pigments (CdS-CdSe solutions), for the photoconductive surface coating for photocopier drums, in photo-resistors and solar cells.

copper {dicopper oxide; copper (I) oxide}

copper(I) oxide used in oxidised copper, brake pads, pigments, a fungicide, and an antifouling agent for marine paints

mercury {mercury dichloride}

mercury dichloride is used as a catalyst for the conversion of acetylene to vinyl chloride, the precursor to polyvinylchloride and to form amalgams with other metals.

nickel {nickel(IV) oxide (nickel dioxide)}

nickel(II) oxide is used in chemical applications for specialized items or in the production of nickel alloys

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

worst case species as chromates not expected.

zinc {zinc oxide}

zinc oxide is used in car tyres, vulcanizing rubber, ceramic glazes, pigments, UV absorbers, paints, sunscreens, ointments.

antimony {antimony trioxide}

Worst case species

barium {barium oxide}

reasonable CLP species based on solubility and site history

molybdenum {molybdenum(VI) oxide}

Worst case species

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species

Appendix C: Version

HazWasteOnline Classification Engine: **EU WM3 1st Edition v1.1.NI using the EU LoW**

HazWasteOnline Classification Engine Version: 2023.73.5544.10256 (14 Mar 2023)

HazWasteOnline Database: 2023.73.5544.10256 (14 Mar 2023)

This classification utilises the following guidance and legislation:

WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

17th ATP - Regulation (EU) 2021/849 of 11 March 2021

18th ATP - Regulation (EU) 2022/692 of 16 February 2022

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



BTC9K-6JCUG-TXOBS

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

Dublin Airport Authority PFAS soils

Description/Comments

Waste classification samples were collected and are considered to be representative of the overall material excavated from the Site. The results of chemical analysis of the samples have been used to determine whether, in our opinion, the samples are likely to be classified as hazardous or non-hazardous under current EU legislation and EPA guidance. It is noted that the environmental regulator and the waste acceptor may also decide whether a waste is hazardous or non-hazardous and acceptable at their facility. The analyses supplied included results for metals, PAHs, PCBs, TPH-CWG, and PFAS compounds. PFAS compounds are Persistent organic pollutants (POPs), chemical substances that persist in the environment, can bioaccumulate, and pose a risk to the environment and human health. PFAS compounds including Branched PFOS, PFHxS Perfluoro-1-hexanesulfonate, Perfluorohexanoic acid, Perfluorononanoic acid, Perfluorohexane sulfonic acid, Perfluoropentanoic acid, Perfluoroheptanoic acid, Perfluorobutanoic acid, and Perfluorooctanoic acid were detected in samples SP02, SP04, and SP06 at low levels (<0.002 mg/kg). The sum of these detections in the samples is well below the 50 mg/kg threshold defined for the POPs in UK guidance WM3. The presence of PFAS compounds does not make the waste hazardous but their disposal should be considered with regards to POP regulations to ensure that they do not persist in the environment.

Project

PFAS.batch

Site

Apron 5

Classified by

Name: **Martha Buckwalter-Davis** Company: **Golder Associates Ireland Ltd**
 Date: **08 Dec 2022 17:09 GMT** Naas
 Telephone: **+353 45 87 4411**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
 Most recent 3 year Refresher

Date

28 May 2015
 07 Apr 2020

Next 3 year Refresher due by Apr 2023

Purpose of classification

7 - Disposal of Waste

Address of the waste

Dublin Airport Apron 5

Post Code N/A

Description of industry/producer giving rise to the waste

Dublin Airport Authority

Description of the specific process, sub-process and/or activity that created the waste

Excavation of soils for construction of Airport Apron 5

Description of the waste

made ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	SP01-121022-0.00-0.00		Non Hazardous		Pass	Pass	3
2	SP02-191022-0.00-0.00		Non Hazardous		Pass	Pass	9
3	SP04-021122-0.00-0.00		Non Hazardous		Fail	Pass	15
4	SP05-021122-0.00-0.00		Non Hazardous		Pass	Pass	19
5	SP06-021122-0.00-0.00		Non Hazardous		Pass	Pass	25

Related documents

#	Name	Description
1	221014-62.hwol	ALS Hawarden .hwol file used to populate the Job
2	221021-102.hwol	ALS Hawarden .hwol file used to populate the Job
3	221104-92.hwol	ALS Hawarden .hwol file used to populate the Job
4	PFAS.batch	ALS Hawarden .batch file used to populate the Job
5	METALS	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Martha Buckwalter-Davis

Created date: 08 Dec 2022 17:09 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	29
Appendix B: Rationale for selection of metal species	32
Appendix C: Version	33

Classification of sample: SP01-121022-0.00-0.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP01-121022-0.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
14% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				13.4	mg/kg	1.32	15.215	mg/kg	0.00152 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	1.75	mg/kg	1.285	1.934	mg/kg	0.000151 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	copper { dicopper oxide; copper (I) oxide }				27.6	mg/kg	1.126	26.724	mg/kg	0.00267 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
4	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
5	nickel { nickel(IV) oxide (nickel dioxide) }				40.7	mg/kg	1.545	54.085	mg/kg	0.00541 %	✓	
	028-004-00-8	234-823-3	12035-36-8									
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.81	mg/kg	1.405	2.187	mg/kg	0.000219 %	✓	
	034-002-00-8											
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	28.4	mg/kg		24.424	mg/kg	0.00244 %	✓	
	082-001-00-6											
8	zinc { zinc oxide }				77	mg/kg	1.245	82.425	mg/kg	0.00824 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
9	antimony { antimony trioxide }				<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
10	1,1,1,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		211-135-1	630-20-6									
11	1,1,1-trichloroethane; methyl chloroform				<0.07	mg/kg		<0.07	mg/kg	<0.000007 %		<LOD
	602-013-00-2	200-756-3	71-55-6									
12	1,1,2,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-015-00-3	201-197-8	79-34-5									
13	1,1,2-trichloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-014-00-8	201-166-9	79-00-5									
14	1,1-dichloroethane				<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
	602-011-00-1	200-863-5	75-34-3									
15	1,1-dichloroethylene; vinylidene chloride				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-025-00-8	200-864-0	75-35-4									
16	1,1-dichloropropene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-031-00-0	209-253-3	563-58-6									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	1,2,3-trichlorobenzene	201-757-1	87-61-6		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
18	1,2,3-trichloropropane	602-062-00-X	202-486-1	96-18-4	<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
19	1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
20	1,2,4-trimethylbenzene	601-043-00-3	202-436-9	95-63-6	<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
21	1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8	<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
22	1,2-dibromoethane	602-010-00-6	203-444-5	106-93-4	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9	95-50-1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	1,2-dichloroethane; ethylene dichloride	602-012-00-7	203-458-1	107-06-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2	78-87-5	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8	<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
27	1,3-dichlorobenzene	602-067-00-7	208-792-1	541-73-1	<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
28	1,3-dichloropropane	205-531-3	142-28-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
29	1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5	106-46-7	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	2,2-dichloropropane	209-832-0	594-20-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	4-isopropyltoluene	202-796-7	99-87-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzene	601-020-00-8	200-753-7	71-43-2	<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
33	bromobenzene	602-060-00-9	203-623-8	108-86-1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	bromochloromethane	200-826-3	74-97-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	bromodichloromethane	200-856-7	75-27-4		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
36	bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	carbon disulphide	006-003-00-3	200-843-6	75-15-0	<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
39	carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	chlorobenzene	602-033-00-1	203-628-5	108-90-7	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
41	chloroethane	602-009-00-0	200-830-5	75-00-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
42	chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3	<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
43	chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3	<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
44	1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
45	dibromochloromethane	204-704-0	124-48-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
46	dibromomethane				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-003-00-8	200-824-2	74-95-3							
47	dichlorodifluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-893-9	75-71-8							
48	dichloromethane; methylene chloride				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-004-00-3	200-838-9	75-09-2							
49	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
50	hexachlorobutadiene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-765-5	87-68-3							
51	Cumene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-024-00-X	202-704-5	98-82-8							
52	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
53	n-butylbenzene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		203-209-7	104-51-8							
54	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]							
55	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-761-00-3	206-798-9	375-85-9							
56	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]							
57	perfluorooctanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-704-00-2	206-397-9	335-67-1							
58	Propylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-097-00-8	203-132-9	103-65-1							
59	sec-butylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-227-0	135-98-8							
60	styrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-026-00-0	202-851-5	100-42-5							
61	2-methoxy-2-methylbutane; tert-amyl methyl ether				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-213-00-2	213-611-4	994-05-8							
62	tert-butylbenzene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		202-632-4	98-06-6							
63	tetrachloroethylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-028-00-4	204-825-9	127-18-4							
64	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
65	Total PFOS				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
			PFOS-T							
66	trans-1,3-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		431-460-4	10061-02-6							
67	trichloroethylene; trichloroethene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-027-00-9	201-167-4	79-01-6							
68	trichlorofluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-892-3	75-69-4							
69	vinyl chloride; chloroethylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	602-023-00-7	200-831-0	75-01-4							
70	acenaphthene				<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
		201-469-6	83-32-9							
71	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
72	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
73	barium { barium oxide }	215-127-9	1304-28-5		110 mg/kg	1.117	105.621 mg/kg	0.0106 %		✓	
74	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.0723 mg/kg		0.0622 mg/kg	0.00000622 %		✓	
75	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.0659 mg/kg		0.0567 mg/kg	0.00000567 %		✓	
76	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.0864 mg/kg		0.0743 mg/kg	0.00000743 %		✓	
77	benzo[ghi]perylene	205-883-8		191-24-2	0.0504 mg/kg		0.0433 mg/kg	0.00000433 %		✓	
78	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.0299 mg/kg		0.0257 mg/kg	0.00000257 %		✓	
79	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9		1308-38-9	11.6 mg/kg	1.462	14.58 mg/kg	0.00146 %		✓	
80	TPH (C6 to C40) petroleum group			TPH	147 mg/kg		126.42 mg/kg	0.0126 %		✓	
81	pH			PH	8.44 pH		8.44 pH	8.44 pH			
82	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	3.38 mg/kg	1.5	4.361 mg/kg	0.000436 %		✓	
83	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %			<LOD
84	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %			<LOD
85	fluorene	201-695-5		86-73-7	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
86	phenanthrene	201-581-5		85-01-8	0.0933 mg/kg		0.0802 mg/kg	0.00000802 %		✓	
87	fluoranthene	205-912-4		206-44-0	0.159 mg/kg		0.137 mg/kg	0.0000137 %		✓	
88	pyrene	204-927-3		129-00-0	0.154 mg/kg		0.132 mg/kg	0.0000132 %		✓	
89	chrysene	601-048-00-0	205-923-4	218-01-9	0.0891 mg/kg		0.0766 mg/kg	0.00000766 %		✓	
90	indeno[123-cd]pyrene	205-893-2		193-39-5	0.0466 mg/kg		0.0401 mg/kg	0.00000401 %		✓	
91	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD
92	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %			<LOD
93	coronene	205-881-7		191-07-1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
94	fluorine	009-001-00-0	231-954-8	7782-41-4	<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
95	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3]	0.0005 mg/kg		0.0004 mg/kg	0.000000044 %		✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		249-415-0 [4] 249-644-6 [5]	29081-56-9 [4] 29457-72-5 [5]							
96	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
97	2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4] 602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.19 mg/kg		<0.19 mg/kg	<0.000019 %		<LOD
98	1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3] 602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
Total:								0.0468 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Determinand defined by classifier (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1 %/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0126%)

WAC results for sample: SP01-121022-0.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 0.8	3	5
2	LOI (loss on ignition)	% 3.82	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg 7.73	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.44	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0179	0.5	2
10	barium	mg/kg 0.176	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg <0.01	0.5	10
13	copper	mg/kg 0.0485	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.26	0.5	10
16	nickel	mg/kg 0.0162	0.4	10
17	lead	mg/kg 0.0023	0.5	10
18	antimony	mg/kg 0.0162	0.06	0.7
19	selenium	mg/kg 0.0143	0.1	0.5
20	zinc	mg/kg 0.13	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg <5	10	150
23	sulphate	mg/kg 64	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 73.4	500	800
26	TDS (total dissolved solids)	mg/kg 1120	4,000	60,000

Key

User supplied data

Classification of sample: SP02-191022-0.00-0.00

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP02-191022-0.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
19% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				18.2	mg/kg	1.32	19.464	mg/kg	0.00195 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	1.89	mg/kg	1.285	1.968	mg/kg	0.000153 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	copper { dicopper oxide; copper (I) oxide }				32.7	mg/kg	1.126	29.821	mg/kg	0.00298 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
4	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
5	nickel { nickel(IV) oxide (nickel dioxide) }				40.8	mg/kg	1.545	51.065	mg/kg	0.00511 %	✓	
	028-004-00-8	234-823-3	12035-36-8									
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.4	mg/kg	1.405	2.731	mg/kg	0.000273 %	✓	
	034-002-00-8											
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	43.7	mg/kg		35.397	mg/kg	0.00354 %	✓	
	082-001-00-6											
8	zinc { zinc oxide }				94.9	mg/kg	1.245	95.68	mg/kg	0.00957 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
9	antimony { antimony trioxide }				0.918	mg/kg	1.197	0.89	mg/kg	0.000089 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
10	1,1,1,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		211-135-1	630-20-6									
11	1,1,1-trichloroethane; methyl chloroform				<0.07	mg/kg		<0.07	mg/kg	<0.000007 %		<LOD
	602-013-00-2	200-756-3	71-55-6									
12	1,1,2,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-015-00-3	201-197-8	79-34-5									
13	1,1,2-trichloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-014-00-8	201-166-9	79-00-5									
14	1,1-dichloroethane				<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
	602-011-00-1	200-863-5	75-34-3									
15	1,1-dichloroethylene; vinylidene chloride				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-025-00-8	200-864-0	75-35-4									
16	1,1-dichloropropene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-031-00-0	209-253-3	563-58-6									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	1,2,3-trichlorobenzene	201-757-1	87-61-6		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
18	1,2,3-trichloropropane	602-062-00-X	202-486-1		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
19	1,2,4-trichlorobenzene	602-087-00-6	204-428-0		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
20	1,2,4-trimethylbenzene	601-043-00-3	202-436-9		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
21	1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3		<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
22	1,2-dibromoethane	602-010-00-6	203-444-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	1,2-dichloroethane; ethylene dichloride	602-012-00-7	203-458-1		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
27	1,3-dichlorobenzene	602-067-00-7	208-792-1		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
28	1,3-dichloropropane	205-531-3	142-28-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
29	1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	2,2-dichloropropane	209-832-0	594-20-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	4-isopropyltoluene	202-796-7	99-87-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzene	601-020-00-8	200-753-7		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
33	bromobenzene	602-060-00-9	203-623-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	bromochloromethane	200-826-3	74-97-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	bromodichloromethane	200-856-7	75-27-4		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
36	bromoform; tribromomethane	602-007-00-X	200-854-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	bromomethane; methylbromide	602-002-00-2	200-813-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	carbon disulphide	006-003-00-3	200-843-6		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
39	carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	chlorobenzene	602-033-00-1	203-628-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
41	chloroethane	602-009-00-0	200-830-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
42	chloroform; trichloromethane	602-006-00-4	200-663-8		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
43	chloromethane; methyl chloride	602-001-00-7	200-817-4		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
44	1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
45	dibromochloromethane	204-704-0	124-48-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
46	dibromomethane				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-003-00-8	200-824-2	74-95-3							
47	dichlorodifluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-893-9	75-71-8							
48	dichloromethane; methylene chloride				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	602-004-00-3	200-838-9	75-09-2							
49	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
50	hexachlorobutadiene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-765-5	87-68-3							
51	Cumene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-024-00-X	202-704-5	98-82-8							
52	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
53	n-butylbenzene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		203-209-7	104-51-8							
54	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]							
55	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-761-00-3	206-798-9	375-85-9							
56	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]							
57	perfluorooctanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-704-00-2	206-397-9	335-67-1							
58	Propylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-097-00-8	203-132-9	103-65-1							
59	sec-butylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-227-0	135-98-8							
60	styrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-026-00-0	202-851-5	100-42-5							
61	2-methoxy-2-methylbutane; tert-amyl methyl ether				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	603-213-00-2	213-611-4	994-05-8							
62	tert-butylbenzene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		202-632-4	98-06-6							
63	tetrachloroethylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-028-00-4	204-825-9	127-18-4							
64	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
65	Total PFOS				0.0022 mg/kg		0.0017 mg/kg	0.000000178 %	✓	
			PFOS-T							
66	trans-1,3-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		431-460-4	10061-02-6							
67	trichloroethylene; trichloroethene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
	602-027-00-9	201-167-4	79-01-6							
68	trichlorofluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
		200-892-3	75-69-4							
69	vinyl chloride; chloroethylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	602-023-00-7	200-831-0	75-01-4							
70	acenaphthene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
		201-469-6	83-32-9							
71	acenaphthylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
72	anthracene	204-371-1	120-12-7		<0.032 mg/kg		<0.032 mg/kg	<0.0000032 %			<LOD
73	barium { barium oxide }	215-127-9	1304-28-5		119 mg/kg	1.117	107.62 mg/kg	0.0108 %	✓		
74	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %			<LOD
75	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
76	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
77	benzo[ghi]perylene	205-883-8	191-24-2		<0.048 mg/kg		<0.048 mg/kg	<0.0000048 %			<LOD
78	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %			<LOD
79	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		11.6 mg/kg	1.462	13.733 mg/kg	0.00137 %	✓		
80	TPH (C6 to C40) petroleum group		TPH		353 mg/kg		285.93 mg/kg	0.0286 %	✓		
81	pH		PH		8.23 pH		8.23 pH	8.23 pH			
82	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	3.58 mg/kg	1.5	4.35 mg/kg	0.000435 %	✓		
83	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %			<LOD
84	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
85	fluorene	201-695-5	86-73-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
86	phenanthrene	201-581-5	85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
87	fluoranthene	205-912-4	206-44-0		<0.034 mg/kg		<0.034 mg/kg	<0.0000034 %			<LOD
88	pyrene	204-927-3	129-00-0		0.0408 mg/kg		0.033 mg/kg	0.0000033 %	✓		
89	chrysene	601-048-00-0	205-923-4	218-01-9	0.0298 mg/kg		0.0241 mg/kg	0.00000241 %	✓		
90	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.036 mg/kg		<0.036 mg/kg	<0.0000036 %			<LOD
91	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.046 mg/kg		<0.046 mg/kg	<0.0000046 %			<LOD
92	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.042 mg/kg		<0.042 mg/kg	<0.0000042 %			<LOD
93	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
94	fluorine	009-001-00-0	231-954-8	7782-41-4	<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
95	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3]	0.0024 mg/kg		0.002 mg/kg	0.0000002 %	✓		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		249-415-0 [4] 249-644-6 [5]	29081-56-9 [4] 29457-72-5 [5]							
96	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
97	2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4] 602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.19 mg/kg		<0.19 mg/kg	<0.000019 %		<LOD
98	1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3] 602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
Total:								0.0657 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Determinand defined by classifier (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1 %/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0286%)

WAC results for sample: SP02-191022-0.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 1.86	3	5
2	LOI (loss on ignition)	% 6.67	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.042	1	-
5	Mineral oil (C10 to C40)	mg/kg 17.3	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.23	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0089	0.5	2
10	barium	mg/kg 0.117	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg <0.01	0.5	10
13	copper	mg/kg 0.0491	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.0825	0.5	10
16	nickel	mg/kg 0.0201	0.4	10
17	lead	mg/kg 0.0025	0.5	10
18	antimony	mg/kg <0.01	0.06	0.7
19	selenium	mg/kg <0.01	0.1	0.5
20	zinc	mg/kg 0.0188	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg 6.19	10	150
23	sulphate	mg/kg 206	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 68.3	500	800
26	TDS (total dissolved solids)	mg/kg 1310	4,000	60,000

Key

User supplied data

Classification of sample: SP04-021122-0.00-0.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP04-021122-0.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
14% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic { arsenic trioxide }			1	13 mg/kg	1.32	14.761 mg/kg	0.00148 %	✓		
		033-003-00-0	215-481-4	1327-53-3								
2		cadmium { cadmium sulfide }			1	1.72 mg/kg	1.285	1.901 mg/kg	0.000148 %	✓		
		048-010-00-4	215-147-8	1306-23-6								
3		copper { dicopper oxide; copper (I) oxide }				23.5 mg/kg	1.126	22.754 mg/kg	0.00228 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
4		mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
5		nickel { nickel(IV) oxide (nickel dioxide) }				35.5 mg/kg	1.545	47.175 mg/kg	0.00472 %	✓		
		028-004-00-8	234-823-3	12035-36-8								
6		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.25 mg/kg	1.405	1.51 mg/kg	0.000151 %	✓		
		034-002-00-8										
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	25.1 mg/kg		21.586 mg/kg	0.00216 %	✓		
		082-001-00-6										
8		zinc { zinc oxide }				69.4 mg/kg	1.245	74.29 mg/kg	0.00743 %	✓		
		030-013-00-7	215-222-5	1314-13-2								
9		antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<LOD	
		051-005-00-X	215-175-0	1309-64-4								
10		benzene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD	
		601-020-00-8	200-753-7	71-43-2								
11		ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD	
		601-023-00-4	202-849-4	100-41-4								
12		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD	
		603-181-00-X	216-653-1	1634-04-4								
13		nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
		607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
14		Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD	
		607-761-00-3	206-798-9	375-85-9								

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
15		perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts 607-718-00-9206-801-3 [1] [2] [3]375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]				0.0012 mg/kg		0.001 mg/kg	0.000000109 %	✓	
16		perfluorooctanoic acid 607-704-00-2206-397-9335-67-1				0.0016 mg/kg		0.0014 mg/kg	0.000000141 %	✓	
17		toluene 601-021-00-3203-625-9108-88-3				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
18	👤	Total PFOS PFOS-T				0.0058 mg/kg		0.005 mg/kg	0.000000503 %	✓	
19	🌿	acenaphthene 201-469-683-32-9				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
20	🌿	acenaphthylene 205-917-1208-96-8				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
21	🌿	anthracene 204-371-1120-12-7				<0.032 mg/kg		<0.032 mg/kg	<0.0000032 %		<LOD
22	🧑🏻‍🔬	barium { barium oxide } 215-127-91304-28-5				90.9 mg/kg	1.117	87.282 mg/kg	0.00873 %	✓	
23		benzo[a]anthracene 601-033-00-9200-280-656-55-3				<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %		<LOD
24		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3200-028-550-32-8				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
25		benzo[b]fluoranthene 601-034-00-4205-911-9205-99-2				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
26	🌿	benzo[ghi]perylene 205-883-8191-24-2				<0.048 mg/kg		<0.048 mg/kg	<0.0000048 %		<LOD
27		benzo[k]fluoranthene 601-036-00-5205-916-6207-08-9				<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %		<LOD
28	🧑🏻‍🔬	chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-91308-38-9				9.1 mg/kg	1.462	11.438 mg/kg	0.00114 %	✓	
29	🌿	TPH (C6 to C40) petroleum group TPH				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
30	🌿	pH PH				8.52 pH		8.52 pH	8.52 pH		
31	🧑🏻‍🔬	molybdenum { molybdenum(VI) oxide } 042-001-00-9215-204-71313-27-5				3.43 mg/kg	1.5	4.425 mg/kg	0.000443 %	✓	
32	🧑🏻‍🔬	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
33		naphthalene 601-052-00-2202-049-591-20-3				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
34	🌿	fluorene 201-695-586-73-7				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
35	🌿	phenanthrene 201-581-585-01-8				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
36	🌿	fluoranthene 205-912-4206-44-0				0.0436 mg/kg		0.0375 mg/kg	0.00000375 %	✓	
37	🌿	pyrene 204-927-3129-00-0				0.0403 mg/kg		0.0347 mg/kg	0.00000347 %	✓	
38		chrysene 601-048-00-0205-923-4218-01-9				0.0293 mg/kg		0.0252 mg/kg	0.00000252 %	✓	
39	🌿	indeno[123-cd]pyrene 205-893-2193-39-5				<0.036 mg/kg		<0.036 mg/kg	<0.0000036 %		<LOD
40		dibenz[a,h]anthracene 601-041-00-2200-181-853-70-3				<0.046 mg/kg		<0.046 mg/kg	<0.0000046 %		<LOD
41	🌿	polychlorobiphenyls; PCB 602-039-00-4215-648-11336-36-3				<0.105 mg/kg		<0.105 mg/kg	<0.0000105 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
42	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
43	fluorine	009-001-00-0	231-954-8		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
44	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0054 mg/kg		0.0047 mg/kg	0.000000471 %	✓	
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
45	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
Total:								0.0301 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Determinand defined by classifier (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

WAC results for sample: SP04-021122-0.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.743	3	5
2	LOI (loss on ignition)	%	5.33	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.105	1	-
5	Mineral oil (C10 to C40)	mg/kg	70.5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.52	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0066	0.5	2
10	barium	mg/kg	0.104	20	100
11	cadmium	mg/kg	0.0011	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0199	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0852	0.5	10
16	nickel	mg/kg	0.0153	0.4	10
17	lead	mg/kg	0.0032	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	5.25	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.26	10	150
23	sulphate	mg/kg	32	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	55.6	500	800
26	TDS (total dissolved solids)	mg/kg	1110	4,000	60,000

Key

	User supplied data
	Inert WAC criteria fail

Classification of sample: SP05-021122-0.00-0.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP05-021122-0.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				14.8	mg/kg	1.32	16.023	mg/kg	0.0016 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	1.41	mg/kg	1.285	1.486	mg/kg	0.000116 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	copper { dicopper oxide; copper (I) oxide }				28.4	mg/kg	1.126	26.22	mg/kg	0.00262 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
4	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
5	nickel { nickel(IV) oxide (nickel dioxide) }				33.9	mg/kg	1.545	42.953	mg/kg	0.0043 %	✓	
	028-004-00-8	234-823-3	12035-36-8									
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.58	mg/kg	1.405	1.82	mg/kg	0.000182 %	✓	
	034-002-00-8											
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	44.6	mg/kg		36.572	mg/kg	0.00366 %	✓	
	082-001-00-6											
8	zinc { zinc oxide }				82.3	mg/kg	1.245	84.001	mg/kg	0.0084 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
9	antimony { antimony trioxide }				1.2	mg/kg	1.197	1.178	mg/kg	0.000118 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
10	1,1,1,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		211-135-1	630-20-6									
11	1,1,1-trichloroethane; methyl chloroform				<0.07	mg/kg		<0.07	mg/kg	<0.000007 %		<LOD
	602-013-00-2	200-756-3	71-55-6									
12	1,1,2,2-tetrachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-015-00-3	201-197-8	79-34-5									
13	1,1,2-trichloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-014-00-8	201-166-9	79-00-5									
14	1,1-dichloroethane				<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
	602-011-00-1	200-863-5	75-34-3									
15	1,1-dichloroethylene; vinylidene chloride				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-025-00-8	200-864-0	75-35-4									
16	1,1-dichloropropene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	602-031-00-0	209-253-3	563-58-6									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	1,2,3-trichlorobenzene	201-757-1	87-61-6		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
18	1,2,3-trichloropropane	602-062-00-X	202-486-1		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
19	1,2,4-trichlorobenzene	602-087-00-6	204-428-0		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
20	1,2,4-trimethylbenzene	601-043-00-3	202-436-9		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
21	1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3		<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
22	1,2-dibromoethane	602-010-00-6	203-444-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	1,2-dichloroethane; ethylene dichloride	602-012-00-7	203-458-1		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
27	1,3-dichlorobenzene	602-067-00-7	208-792-1		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
28	1,3-dichloropropane	205-531-3	142-28-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
29	1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30	2,2-dichloropropane	209-832-0	594-20-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	4-isopropyltoluene	202-796-7	99-87-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzene	601-020-00-8	200-753-7		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
33	bromobenzene	602-060-00-9	203-623-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	bromochloromethane	200-826-3	74-97-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	bromodichloromethane	200-856-7	75-27-4		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
36	bromoform; tribromomethane	602-007-00-X	200-854-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	bromomethane; methylbromide	602-002-00-2	200-813-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	carbon disulphide	006-003-00-3	200-843-6		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
39	carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	chlorobenzene	602-033-00-1	203-628-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
41	chloroethane	602-009-00-0	200-830-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
42	chloroform; trichloromethane	602-006-00-4	200-663-8		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
43	chloromethane; methyl chloride	602-001-00-7	200-817-4		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
44	1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
45	dibromochloromethane	204-704-0	124-48-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
46	dibromomethane				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %			<LOD
	602-003-00-8	200-824-2	74-95-3								
47	dichlorodifluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
		200-893-9	75-71-8								
48	dichloromethane; methylene chloride				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
	602-004-00-3	200-838-9	75-09-2								
49	ethylbenzene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
50	hexachlorobutadiene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
		201-765-5	87-68-3								
51	Cumene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-024-00-X	202-704-5	98-82-8								
52	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
53	n-butylbenzene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %			<LOD
		203-209-7	104-51-8								
54	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
55	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-761-00-3	206-798-9	375-85-9								
56	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
57	perfluorooctanoic acid				0.0012 mg/kg		0.001 mg/kg	0.0000001 %	✓		
	607-704-00-2	206-397-9	335-67-1								
58	Propylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-097-00-8	203-132-9	103-65-1								
59	sec-butylbenzene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-227-0	135-98-8								
60	styrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-026-00-0	202-851-5	100-42-5								
61	2-methoxy-2-methylbutane; tert-amyl methyl ether				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	603-213-00-2	213-611-4	994-05-8								
62	tert-butylbenzene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %			<LOD
		202-632-4	98-06-6								
63	tetrachloroethylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	602-028-00-4	204-825-9	127-18-4								
64	toluene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
65	Total PFOS				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %			<LOD
			PFOS-T								
66	trans-1,3-dichloropropene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		431-460-4	10061-02-6								
67	trichloroethylene; trichloroethene				<0.09 mg/kg		<0.09 mg/kg	<0.000009 %			<LOD
	602-027-00-9	201-167-4	79-01-6								
68	trichlorofluoromethane				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
		200-892-3	75-69-4								
69	vinyl chloride; chloroethylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
	602-023-00-7	200-831-0	75-01-4								
70	acenaphthene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
		201-469-6	83-32-9								
71	acenaphthylene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
72	anthracene	204-371-1	120-12-7		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %			<LOD
73	barium { barium oxide }	215-127-9	1304-28-5		102 mg/kg	1.117	93.385 mg/kg	0.00934 %	✓		
74	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.361 mg/kg		0.296 mg/kg	0.0000296 %	✓		
75	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.303 mg/kg		0.248 mg/kg	0.0000248 %	✓		
76	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.5 mg/kg		0.41 mg/kg	0.000041 %	✓		
77	benzo[ghi]perylene	205-883-8		191-24-2	0.225 mg/kg		0.185 mg/kg	0.0000185 %	✓		
78	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.162 mg/kg		0.133 mg/kg	0.0000133 %	✓		
79	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9		1308-38-9	13.2 mg/kg	1.462	15.82 mg/kg	0.00158 %	✓		
80	TPH (C6 to C40) petroleum group			TPH	151 mg/kg		123.82 mg/kg	0.0124 %	✓		
81	pH			PH	8.39 pH		8.39 pH	8.39 pH			
82	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	2.96 mg/kg	1.5	3.641 mg/kg	0.000364 %	✓		
83	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %			<LOD
84	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.045 mg/kg		<0.045 mg/kg	<0.0000045 %			<LOD
85	fluorene	201-695-5		86-73-7	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
86	phenanthrene	201-581-5		85-01-8	0.208 mg/kg		0.171 mg/kg	0.0000171 %	✓		
87	fluoranthene	205-912-4		206-44-0	0.584 mg/kg		0.479 mg/kg	0.0000479 %	✓		
88	pyrene	204-927-3		129-00-0	0.5 mg/kg		0.41 mg/kg	0.000041 %	✓		
89	chrysene	601-048-00-0	205-923-4	218-01-9	0.347 mg/kg		0.285 mg/kg	0.0000285 %	✓		
90	indeno[123-cd]pyrene	205-893-2		193-39-5	0.227 mg/kg		0.186 mg/kg	0.0000186 %	✓		
91	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.115 mg/kg		<0.115 mg/kg	<0.0000115 %			<LOD
92	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.21 mg/kg		<0.21 mg/kg	<0.000021 %			<LOD
93	coronene	205-881-7		191-07-1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
94	fluorine	009-001-00-0	231-954-8	7782-41-4	<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
95	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3]	0.002 mg/kg		0.0016 mg/kg	0.000000166 %	✓		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
		249-415-0 [4] 249-644-6 [5]	29081-56-9 [4] 29457-72-5 [5]							
96	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
97	2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4] 602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.19 mg/kg		<0.19 mg/kg	<0.000019 %		<LOD
98	1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3] 602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
Total:								0.0459 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Determinand defined by classifier (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1 %/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0124%)

WAC results for sample: SP05-021122-0.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.29	3	5
2	LOI (loss on ignition)	%	5.21	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.21	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.39	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0789	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0174	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.192	0.5	10
16	nickel	mg/kg	0.0046	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0165	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.4	10	150
23	sulphate	mg/kg	58	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	822	4,000	60,000

Key

User supplied data

Classification of sample: SP06-021122-0.00-0.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP06-021122-0.00-0.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				12.7	mg/kg	1.32	14.756	mg/kg	0.00148 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium sulfide }			1	1.93	mg/kg	1.285	2.183	mg/kg	0.00017 %	✓	
	048-010-00-4	215-147-8	1306-23-6									
3	copper { dicopper oxide; copper (I) oxide }				24.9	mg/kg	1.126	24.67	mg/kg	0.00247 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
4	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
5	nickel { nickel(IV) oxide (nickel dioxide) }				35.1	mg/kg	1.545	47.728	mg/kg	0.00477 %	✓	
	028-004-00-8	234-823-3	12035-36-8									
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.15	mg/kg	1.405	1.422	mg/kg	0.000142 %	✓	
	034-002-00-8											
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23.5	mg/kg		20.68	mg/kg	0.00207 %	✓	
	082-001-00-6											
8	zinc { zinc oxide }				70.8	mg/kg	1.245	77.551	mg/kg	0.00776 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
9	antimony { antimony trioxide }				<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
10	benzene				<0.09	mg/kg		<0.09	mg/kg	<0.000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
11	ethylbenzene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
12	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
13	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]									
14	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	607-761-00-3	206-798-9	375-85-9									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
15	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts 607-718-00-9	206-801-3 [1] [2] [3]	875-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
16	perfluorooctanoic acid 607-704-00-2	206-397-9	335-67-1		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
17	toluene 601-021-00-3	203-625-9	108-88-3		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %			<LOD
18	Total PFOS PFOS-T				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %			<LOD
19	acenaphthene 201-469-6	83-32-9			<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %			<LOD
20	acenaphthylene 205-917-1	208-96-8			<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %			<LOD
21	anthracene 204-371-1	120-12-7			<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
22	barium { barium oxide } 215-127-9	1304-28-5			103 mg/kg	1.117	101.2 mg/kg	0.0101 %	✓		
23	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
24	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
25	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.0208 mg/kg		0.0183 mg/kg	0.00000183 %	✓		
26	benzo[ghi]perylene 205-883-8	191-24-2			<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %			<LOD
27	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %			<LOD
28	chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9	1308-38-9			9.19 mg/kg	1.462	11.82 mg/kg	0.00118 %	✓		
29	TPH (C6 to C40) petroleum group TPH				36.7 mg/kg		32.296 mg/kg	0.00323 %	✓		
30	pH PH				8.76 pH		8.76 pH	8.76 pH			
31	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3.09 mg/kg	1.5	4.079 mg/kg	0.000408 %	✓		
32	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %			<LOD
33	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %			<LOD
34	fluorene 201-695-5	86-73-7			<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
35	phenanthrene 201-581-5	85-01-8			<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
36	fluoranthene 205-912-4	206-44-0			<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %			<LOD
37	pyrene 204-927-3	129-00-0			<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %			<LOD
38	chrysene 601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
39	indeno[123-cd]pyrene 205-893-2	193-39-5			<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
40	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD
41	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %			<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
42	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
43	fluorine	009-001-00-0	231-954-8		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
44	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0005 mg/kg		0.0004 mg/kg	0.000000045 %	✓	
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
45	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
Total:								0.0342 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Determinand defined by classifier (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- ND Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1 %/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00323%)

WAC results for sample: SP06-021122-0.00-0.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 0.688	3	5
2	LOI (loss on ignition)	% 3.07	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg <5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.76	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0173	0.5	2
10	barium	mg/kg 0.0681	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg 0.0107	0.5	10
13	copper	mg/kg 0.0311	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.273	0.5	10
16	nickel	mg/kg 0.008	0.4	10
17	lead	mg/kg 0.0021	0.5	10
18	antimony	mg/kg <0.01	0.06	0.7
19	selenium	mg/kg 0.0228	0.1	0.5
20	zinc	mg/kg 0.0154	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg 5.31	10	150
23	sulphate	mg/kg 129	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 38.3	500	800
26	TDS (total dissolved solids)	mg/kg 693	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU CLP determinands

• lead compounds with the exception of those specified elsewhere in this Annex (worst case)

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

• 1,1,1,2-tetrachloroethane (EC Number: 211-135-1, CAS Number: 630-20-6)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , Carc. 2; H351 , Acute Tox. 4; H312 , Aquatic Chronic 3; H412 , Skin Irrit. 2; H315

• 1,2,3-trichlorobenzene (EC Number: 201-757-1, CAS Number: 87-61-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 3; H410

• 1,3-dichloropropane (EC Number: 205-531-3, CAS Number: 142-28-9)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335

• 2,2-dichloropropane (EC Number: 209-832-0, CAS Number: 594-20-7)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Acute Tox. 4; H312 , Eye Irrit. 2; H319

• 4-isopropyltoluene (EC Number: 202-796-7, CAS Number: 99-87-6)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Chronic 2; H411

• bromochloromethane (EC Number: 200-826-3, CAS Number: 74-97-5)

Description/Comments: VOC; Data from C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H312 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Ozone 1; H420

• bromodichloromethane (EC Number: 200-856-7, CAS Number: 75-27-4)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 1A; H360

• dibromochloromethane (EC Number: 204-704-0, CAS Number: 124-48-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT SE 3; H336 , Muta. 2; H341 , Aquatic Chronic 2; H411

• **dichlorodifluoromethane** (EC Number: 200-893-9, CAS Number: 75-71-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Aquatic Chronic 3; H412 , Ozone 1; H420 , Press. Gas; H280

• **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

• **hexachlorobutadiene** (EC Number: 201-765-5, CAS Number: 87-68-3)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 2; H310 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 2; H330 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **n-butylbenzene** (EC Number: 203-209-7, CAS Number: 104-51-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **sec-butylbenzene** (EC Number: 205-227-0, CAS Number: 135-98-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Chronic 2; H411

• **tert-butylbenzene** (EC Number: 202-632-4, CAS Number: 98-06-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , STOT SE 3; H335 , Asp. Tox. 1; H304 , Aquatic Chronic 2; H411

 Total PFOS (CAS Number: PFOS-T)

Description/Comments: Some of the POPs added by Regulation (EU) No 1342/2014 in 2015 (ATP 3 to the POPs Regulation) such as PFOS are not in the LoW (and thus not in WM3) and yet also have the 50 mg/kg threshold. The intention of the legislation here is that although these additional POPs have a 50 mg/kg threshold; this doesn't make the waste hazardous if the concentration is above 50 mg/kg, but does require that the waste be disposed of if contains one of these POPs e.g. PFOS – as opposed to following the waste hierarchy to reuse the material for example. The lawmakers want these materials destroyed even if they are not hazardous vis-a-vis the waste framework directive.

Data source: <https://app.hazwasteonline.com/help/substancekb/pops>
Data source date: 08 Dec 2022
Hazard Statements: None.

• **trans-1,3-dichloropropene** (EC Number: 431-460-4, CAS Number: 10061-02-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Acute Tox. 3; H301 , Asp. Tox. 1; H304 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , Aquatic Chronic 1; H410

• **trichlorofluoromethane** (EC Number: 200-892-3, CAS Number: 75-69-4)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Ozone 1; H420

• **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

▪ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

▪ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>

Data source date: 02 Apr 2020

Hazard Statements: Acute Tox. 3; H301 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 1; H332

▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

▪ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

▪ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

▪ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

worst case species based on solubility and site history

cadmium {cadmium sulfide}

cadmium sulfide is used in pigments (CdS-CdSe solutions), for the photoconductive surface coating for photocopier drums, in photo-resistors and solar cells.

copper {dicopper oxide; copper (I) oxide}

copper(I) oxide used in oxidised copper, brake pads, pigments, a fungicide, and an antifouling agent for marine paints

mercury {mercury dichloride}

mercury dichloride is used as a catalyst for the conversion of acetylene to vinyl chloride, the precursor to polyvinylchloride and to form amalgams with other metals.

nickel {nickel(IV) oxide (nickel dioxide)}

nickel(II) oxide is used in chemical applications for specialized items or in the production of nickel alloys

selenium {selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex}

worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

worst case species as chromates not expected.

zinc {zinc oxide}

zinc oxide is used in car tyres, vulcanizing rubber, ceramic glazes, pigments, UV absorbers, paints, sunscreens, ointments.

antimony {antimony trioxide}

Worst case species

barium {barium oxide}

worst case based on solubility

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

worst case species

molybdenum {molybdenum(VI) oxide}

only CLP species

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

worst case species

Appendix C: Version

HazWasteOnline Classification Engine: **EU WM3 1st Edition v1.1.NI using the EU LoW**
 HazWasteOnline Classification Engine Version: 2022.325.5408.10064 (21 Nov 2022)
 HazWasteOnline Database: 2022.325.5408.10064 (21 Nov 2022)

This classification utilises the following guidance and legislation:

WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

17th ATP - Regulation (EU) 2021/849 of 11 March 2021

18th ATP - Regulation (EU) 2022/692 of 16 February 2022

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



V1741-SY0ML-ACS4Q

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Job name

Dublin Airport Stockpile Samples

Description/Comments

Composite waste classification samples were collected from stockpiled soils from construction of jet blast fence and perimeter road. The material represented by samples is considered to be representative of the overall material excavated from the Site. The results of chemical analysis of the samples have been used to determine whether, in our opinion, the samples are likely to be classified as hazardous or non-hazardous under current EU legislation and EPA guidance. It is noted that the environmental regulator and the waste acceptor may also decide whether a waste is hazardous or non-hazardous and acceptable at their facility. The analyses supplied included results for metals, PAHs, PCBs, TPH-CWG, and PFAS compounds. The hydrocarbon concentrations have been entered into HWOL as an unknown source of oil. All samples were classified as non-hazardous and meet inert waste acceptance criteria. No asbestos was detected in any of the samples. PFAS compounds are Persistent organic pollutants (POPs), chemical substances that persist in the environment, can bioaccumulate, and pose a risk to the environment and human health. PFAS compounds including Perfluorooctane sulfonic acid were detected in some samples at low levels. The sum of these detections in the samples is well below the 50 mg/kg threshold defined for the POPs in UK guidance WM3. The presence of PFAS compounds does not make the waste hazardous but their disposal should be considered with regards to POP regulations to ensure that they do not persist in the environment.

Project

40000208

Site

Dublin Airport

Classified by

Name: **Martha Buckwalter-Davis** Company: **WSP Golder Associates Ireland Ltd**
 Date: **18 Apr 2023 11:36 GMT** Town Centre House
 Telephone: **0870677369** Dublin Road
 Naas
 W91TD0P

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
 Most recent 3 year Refresher

Date

28 May 2015
 04 Apr 2023

Next 3 year Refresher due by Apr 2026

Purpose of classification

7 - Disposal of Waste

Address of the waste

Dublin Airport

Post Code N/A

Description of industry/producer giving rise to the waste

Dublin Airport Authority

Description of the specific process, sub-process and/or activity that created the waste

stockpiled soils arising from the construction of jet blast fence and perimeter road

Description of the waste

PR01 – brown sandy CLAY with frequent gravel, medium to high plasticity clay, sand is course, gravel is fine to coarse, sub-angular to sub-rounded
 PR02A – brown sandy gravelly CLAY, medium plasticity, sand is course, gravel is fine to medium, angular to subangular
 PR02B – brown sandy gravelly CLAY, medium plasticity, sand is course, gravel is fine to medium, angular to subangular
 SP07 – brown sandy CLAY with frequent gravel, medium to high plasticity clay, sand is course, gravel is fine to coarse, sub-angular to sub-rounded

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	PR01-100123--		Non Hazardous		Pass	Pass	3
2	PR02A-100123--		Non Hazardous		Pass	Pass	7
3	PR02B-100123--		Non Hazardous		Pass	Pass	11
4	SP07-100123--		Non Hazardous		Pass	Pass	15

Related documents

#	Name	Description
1	230114-36.hwol	ALS Hawarden .hwol file used to populate the Job
2	METALS	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Martha Buckwalter-Davis

Created date: 18 Apr 2023 11:36 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	19
Appendix B: Rationale for selection of metal species	20
Appendix C: Version	21

Classification of sample: PR01-100123--

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
PR01-100123--	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
21%	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(wet weight correction)	Entry:

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2	15.9 mg/kg		12.561 mg/kg	0.00126 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1.91 mg/kg	1.285	1.939 mg/kg	0.000151 %	✓	
3	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	32.4 mg/kg	1.126	28.818 mg/kg	0.00288 %	✓	
4	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
5	nickel { nickel(IV) oxide (nickel dioxide) }	028-004-00-8	234-823-3	12035-36-8	43.7 mg/kg	1.545	53.344 mg/kg	0.00533 %	✓	
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			1.49 mg/kg	1.405	1.654 mg/kg	0.000165 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			40.2 mg/kg		31.758 mg/kg	0.00318 %	✓	
8	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	92 mg/kg	1.245	90.466 mg/kg	0.00905 %	✓	
9	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4	1.67 mg/kg	1.197	1.579 mg/kg	0.000158 %	✓	
10	barium { barium oxide }		215-127-9	1304-28-5	117 mg/kg	1.117	103.199 mg/kg	0.0103 %	✓	
11	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5	3.39 mg/kg	1.5	4.018 mg/kg	0.000402 %	✓	
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9	12.9 mg/kg	1.462	14.895 mg/kg	0.00149 %	✓	
13	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8			<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
14	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
15	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-761-00-3	206-798-9	375-85-9								
16	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
17	perfluorooctanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-704-00-2	206-397-9	335-67-1								
18	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0034 mg/kg		0.0027 mg/kg	0.000000271 %	✓		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]								
19	phenanthrene				0.348 mg/kg		0.275 mg/kg	0.0000275 %	✓		
		201-581-5	85-01-8								
20	pyrene				0.395 mg/kg		0.312 mg/kg	0.0000312 %	✓		
		204-927-3	129-00-0								
21	chrysene				0.214 mg/kg		0.169 mg/kg	0.0000169 %	✓		
	601-048-00-0	205-923-4	218-01-9								
22	dibenz[a,h]anthracene				<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
23	fluoranthene				0.411 mg/kg		0.325 mg/kg	0.0000325 %	✓		
		205-912-4	206-44-0								
24	fluorene				0.0178 mg/kg		0.0141 mg/kg	0.00000141 %	✓		
		201-695-5	86-73-7								
25	indeno[123-cd]pyrene				0.0951 mg/kg		0.0751 mg/kg	0.00000751 %	✓		
		205-893-2	193-39-5								
26	naphthalene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
27	anthracene				0.0476 mg/kg		0.0376 mg/kg	0.00000376 %	✓		
		204-371-1	120-12-7								
28	benzo[a]anthracene				0.203 mg/kg		0.16 mg/kg	0.000016 %	✓		
	601-033-00-9	200-280-6	56-55-3								
29	benzo[a]pyrene; benzo[def]chrysene				0.179 mg/kg		0.141 mg/kg	0.0000141 %	✓		
	601-032-00-3	200-028-5	50-32-8								
30	benzo[b]fluoranthene				0.236 mg/kg		0.186 mg/kg	0.0000186 %	✓		
	601-034-00-4	205-911-9	205-99-2								
31	benzo[ghi]perylene				0.104 mg/kg		0.0822 mg/kg	0.00000822 %	✓		
		205-883-8	191-24-2								
32	benzo[k]fluoranthene				0.0782 mg/kg		0.0618 mg/kg	0.00000618 %	✓		
	601-036-00-5	205-916-6	207-08-9								
33	acenaphthene				0.0158 mg/kg		0.0125 mg/kg	0.00000125 %	✓		
		201-469-6	83-32-9								
34	acenaphthylene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %			<LOD
		205-917-1	208-96-8								
35	polychlorobiphenyls; PCB				<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %			<LOD
	602-039-00-4	215-648-1	1336-36-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
36	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
37	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
38	pH		PH		8.46 pH		8.46 pH	8.46 pH		
39	toluene	601-021-00-3	203-625-9	108-88-3	<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
40	benzene	601-020-00-8	200-753-7	71-43-2	<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
41	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
42	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
43	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
Total:								0.0358 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: PR01-100123--

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.11	3	5
2	LOI (loss on ignition)	%	4.73	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.46	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.005	0.5	2
10	barium	mg/kg	0.0854	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0118	0.5	10
13	copper	mg/kg	0.0365	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.111	0.5	10
16	nickel	mg/kg	0.0104	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	0.011	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0241	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.67	10	150
23	sulphate	mg/kg	103	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	50.5	500	800
26	TDS (total dissolved solids)	mg/kg	1060	4,000	60,000

Key

User supplied data

Classification of sample: PR02A-100123--

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
PR02A-100123--	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
14% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic }				17.4 mg/kg		14.964 mg/kg	0.0015 %	✓	
	033-001-00-X	231-148-6	7440-38-2							
2	cadmium { cadmium sulfide }			1	1.08 mg/kg	1.285	1.194 mg/kg	0.0000929 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
3	copper { dicopper oxide; copper (I) oxide }				21.7 mg/kg	1.126	21.011 mg/kg	0.0021 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
5	nickel { nickel(IV) oxide (nickel dioxide) }				26.8 mg/kg	1.545	35.613 mg/kg	0.00356 %	✓	
	028-004-00-8	234-823-3	12035-36-8							
6	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.15 mg/kg	1.405	1.39 mg/kg	0.000139 %	✓	
	034-002-00-8									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	34.7 mg/kg		29.842 mg/kg	0.00298 %	✓	
	082-001-00-6									
8	zinc { zinc oxide }				78.3 mg/kg	1.245	83.817 mg/kg	0.00838 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	antimony { antimony trioxide }				0.611 mg/kg	1.197	0.629 mg/kg	0.0000629 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
10	barium { barium oxide }				122 mg/kg	1.117	117.144 mg/kg	0.0117 %	✓	
		215-127-9	1304-28-5							
11	molybdenum { molybdenum(VI) oxide }				3.24 mg/kg	1.5	4.18 mg/kg	0.000418 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				12.7 mg/kg	1.462	15.963 mg/kg	0.0016 %	✓	
		215-160-9	1308-38-9							
13	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
	024-017-00-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
14	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]							
15	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-761-00-3	206-798-9	375-85-9							
16	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]							
17	perfluorooctanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	607-704-00-2	206-397-9	335-67-1							
18	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]							
19	phenanthrene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		201-581-5	85-01-8							
20	pyrene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		204-927-3	129-00-0							
21	chrysene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
22	dibenz[a,h]anthracene				<0.46 mg/kg		<0.46 mg/kg	<0.000046 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
23	fluoranthene				<0.34 mg/kg		<0.34 mg/kg	<0.000034 %		<LOD
		205-912-4	206-44-0							
24	fluorene				<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
		201-695-5	86-73-7							
25	indeno[123-cd]pyrene				<0.36 mg/kg		<0.36 mg/kg	<0.000036 %		<LOD
		205-893-2	193-39-5							
26	naphthalene				<0.18 mg/kg		<0.18 mg/kg	<0.000018 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
27	anthracene				<0.32 mg/kg		<0.32 mg/kg	<0.000032 %		<LOD
		204-371-1	120-12-7							
28	benzo[a]anthracene				<0.28 mg/kg		<0.28 mg/kg	<0.000028 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	benzo[a]pyrene; benzo[def]chrysene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
30	benzo[b]fluoranthene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[ghi]perylene				<0.48 mg/kg		<0.48 mg/kg	<0.000048 %		<LOD
		205-883-8	191-24-2							
32	benzo[k]fluoranthene				<0.28 mg/kg		<0.28 mg/kg	<0.000028 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
33	acenaphthene				<0.16 mg/kg		<0.16 mg/kg	<0.000016 %		<LOD
		201-469-6	83-32-9							
34	acenaphthylene				<0.24 mg/kg		<0.24 mg/kg	<0.000024 %		<LOD
		205-917-1	208-96-8							
35	polychlorobiphenyls; PCB				<0.42 mg/kg		<0.42 mg/kg	<0.000042 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
36	coronene	205-881-7	191-07-1		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
37	TPH (C6 to C40) petroleum group		TPH		237 mg/kg		203.82 mg/kg	0.0204 %	✓	
38	pH		PH		8.42 pH		8.42 pH	8.42 pH		
39	toluene	203-625-9	108-88-3		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
40	benzene	200-753-7	71-43-2		<0.09 mg/kg		<0.09 mg/kg	<0.000009 %		<LOD
41	ethylbenzene	202-849-4	100-41-4		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
42	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	216-653-1	1634-04-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
43	xylene	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
Total:								0.0538 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0204%)

WAC results for sample: PR02A-100123--

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

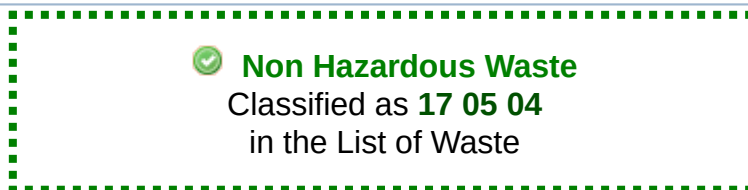
WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 1.53	3	5
2	LOI (loss on ignition)	% 3.91	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.4	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.42	1	-
5	Mineral oil (C10 to C40)	mg/kg 42.4	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.42	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0277	0.5	2
10	barium	mg/kg 0.148	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg <0.01	0.5	10
13	copper	mg/kg 0.0478	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.0968	0.5	10
16	nickel	mg/kg 0.0157	0.4	10
17	lead	mg/kg <0.002	0.5	10
18	antimony	mg/kg 0.0189	0.06	0.7
19	selenium	mg/kg 0.0136	0.1	0.5
20	zinc	mg/kg 0.0127	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg 5.48	10	150
23	sulphate	mg/kg 255	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 76.2	500	800
26	TDS (total dissolved solids)	mg/kg 1110	4,000	60,000

Key

User supplied data

Classification of sample: PR02B-100123--



Sample details

Sample name:	LoW Code:
PR02B-100123--	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		arsenic {  arsenic }			1	26.4	mg/kg		22.968	mg/kg	0.0023 %	✓	
		033-001-00-X	231-148-6	7440-38-2									
2		cadmium {  cadmium sulfide }			1	0.862	mg/kg	1.285	0.964	mg/kg	0.000075 %	✓	
		048-010-00-4	215-147-8	1306-23-6									
3		copper {  dicopper oxide; copper (I) oxide }			1	16.3	mg/kg	1.126	15.966	mg/kg	0.0016 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
4		mercury {  mercury dichloride }			1	<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
5		nickel {  nickel(IV) oxide (nickel dioxide) }			1	22.2	mg/kg	1.545	29.844	mg/kg	0.00298 %	✓	
		028-004-00-8	234-823-3	12035-36-8									
6		lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23.5	mg/kg		20.445	mg/kg	0.00204 %	✓	
		082-001-00-6											
7		zinc {  zinc oxide }			1	71.8	mg/kg	1.245	77.752	mg/kg	0.00778 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
8		antimony {  antimony trioxide }			1	<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
9		barium {  barium oxide }			1	90.2	mg/kg	1.117	87.617	mg/kg	0.00876 %	✓	
			215-127-9	1304-28-5									
10		molybdenum {  molybdenum(VI) oxide }			1	1.29	mg/kg	1.5	1.684	mg/kg	0.000168 %	✓	
		042-001-00-9	215-204-7	1313-27-5									
11		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }			1	8.33	mg/kg	1.462	10.592	mg/kg	0.00106 %	✓	
			215-160-9	1308-38-9									
12		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }			1	<0.6	mg/kg	2.27	<1.362	mg/kg	<0.000136 %		<LOD
		024-017-00-8											
13		nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]			1	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]									
14		Perfluoroheptanoic acid; tridecafluoroheptanoic acid			1	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		607-761-00-3	206-798-9	375-85-9									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
15	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts 607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
16	perfluorooctanoic acid 607-704-00-2	206-397-9	335-67-1		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
17	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5] 607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]		<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %			<LOD
18	phenanthrene 201-581-5	85-01-8			<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %			<LOD
19	pyrene 204-927-3	129-00-0			0.149 mg/kg		0.13 mg/kg	0.000013 %	✓		
20	chrysene 601-048-00-0	205-923-4	218-01-9		0.0678 mg/kg		0.059 mg/kg	0.0000059 %	✓		
21	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.115 mg/kg		<0.115 mg/kg	<0.0000115 %			<LOD
22	fluoranthene 205-912-4	206-44-0			0.162 mg/kg		0.141 mg/kg	0.0000141 %	✓		
23	fluorene 201-695-5	86-73-7			<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
24	indeno[123-cd]pyrene 205-893-2	193-39-5			<0.09 mg/kg		<0.09 mg/kg	<0.000009 %			<LOD
25	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.045 mg/kg		<0.045 mg/kg	<0.0000045 %			<LOD
26	anthracene 204-371-1	120-12-7			<0.08 mg/kg		<0.08 mg/kg	<0.000008 %			<LOD
27	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %			<LOD
28	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %			<LOD
29	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.075 mg/kg		<0.075 mg/kg	<0.0000075 %			<LOD
30	benzo[ghi]perylene 205-883-8	191-24-2			<0.12 mg/kg		<0.12 mg/kg	<0.000012 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %			<LOD
32	acenaphthene 201-469-6	83-32-9			<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	acenaphthylene 205-917-1	208-96-8			<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
34	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.21 mg/kg		<0.21 mg/kg	<0.000021 %			<LOD
35	coronene 205-881-7	191-07-1			<0.2 mg/kg		<0.2 mg/kg	<0.00002 %			<LOD
36	TPH (C6 to C40) petroleum group TPH				264 mg/kg		229.68 mg/kg	0.023 %	✓		
37	pH PH				9.18 pH		9.18 pH	9.18 pH			
38	toluene 601-021-00-3	203-625-9	108-88-3		<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %			<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
39	benzene				<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
40	ethylbenzene				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
41	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
42	xylene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0501 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because soils not expected to be flammable based on low levels of contamination with flammable substances (<1%/10,000 mg/kg)

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.023%)

WAC results for sample: PR02B-100123--

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.634	3	5
2	LOI (loss on ignition)	%	3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.21	1	-
5	Mineral oil (C10 to C40)	mg/kg	45.2	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	9.18	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.279	0.5	2
10	barium	mg/kg	0.0957	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0208	0.5	10
13	copper	mg/kg	0.126	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.132	0.5	10
16	nickel	mg/kg	0.0315	0.4	10
17	lead	mg/kg	0.0042	0.5	10
18	antimony	mg/kg	0.0275	0.06	0.7
19	selenium	mg/kg	0.0459	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	302	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	92.4	500	800
26	TDS (total dissolved solids)	mg/kg	954	4,000	60,000

Key

User supplied data

Classification of sample: SP07-100123--

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
SP07-100123--	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	 arsenic {  arsenic }				14.2 mg/kg		12.07 mg/kg	0.00121 %	✓	
	033-001-00-X	231-148-6	7440-38-2							
2	 cadmium { cadmium sulfide }			1	1.68 mg/kg	1.285	1.835 mg/kg	0.000143 %	✓	
	048-010-00-4	215-147-8	1306-23-6							
3	 copper { dicopper oxide; copper (I) oxide }				27 mg/kg	1.126	25.839 mg/kg	0.00258 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	 mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
5	 nickel { nickel(IV) oxide (nickel dioxide) }				38.5 mg/kg	1.545	50.566 mg/kg	0.00506 %	✓	
	028-004-00-8	234-823-3	12035-36-8							
6	 selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.18 mg/kg	1.405	1.409 mg/kg	0.000141 %	✓	
	034-002-00-8									
7	 lead {  lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	34 mg/kg		28.9 mg/kg	0.00289 %	✓	
	082-001-00-6									
8	 zinc { zinc oxide }				84.2 mg/kg	1.245	89.084 mg/kg	0.00891 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	 antimony { antimony trioxide }				1.17 mg/kg	1.197	1.191 mg/kg	0.000119 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
10	 barium {  barium oxide }				107 mg/kg	1.117	101.546 mg/kg	0.0102 %	✓	
		215-127-9	1304-28-5							
11	 molybdenum { molybdenum(VI) oxide }				2.97 mg/kg	1.5	3.787 mg/kg	0.000379 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
12	 chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				11.4 mg/kg	1.462	14.162 mg/kg	0.00142 %	✓	
		215-160-9	1308-38-9							
13	 chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.6 mg/kg	2.27	<1.362 mg/kg	<0.000136 %		<LOD
	024-017-00-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
14	nonadecafluorodecanoic acid; [1] ammonium nonadecafluorodecanoate; [2] sodium nonadecafluorodecanoate [3]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-720-00-X	206-400-3 [1] 221-470-5 [2] [3]	335-76-2 [1] 3108-42-7 [2] 3830-45-3 [3]								
15	Perfluoroheptanoic acid; tridecafluoroheptanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-761-00-3	206-798-9	375-85-9								
16	perfluorononan-1-oic acid [1] and its sodium [2] and ammonium [3] salts				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-718-00-9	206-801-3 [1] [2] [3]	375-95-1 [1] 21049-39-8 [2] 4149-60-4 [3]								
17	perfluorooctanoic acid				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	607-704-00-2	206-397-9	335-67-1								
18	perfluorooctane sulfonic acid; heptadecafluorooctane-1-sulfonic acid; [1] potassium perfluorooctanesulfonate; potassium heptadecafluorooctane-1-sulfonate; [2] diethanolamine perfluorooctane sulfonate; [3] ammonium perfluorooctane sulfonate; ammonium heptadecafluorooctanesulfonate; [4] lithium perfluorooctane sulfonate; lithium heptadecafluorooctanesulfonate [5]				0.0016 mg/kg		0.0013 mg/kg	0.000000138 %	✓		
	607-624-00-8	217-179-8 [1] 220-527-1 [2] 274-460-8 [3] 249-415-0 [4] 249-644-6 [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]								
19	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
		201-581-5	85-01-8								
20	pyrene				0.0596 mg/kg		0.0507 mg/kg	0.00000507 %	✓		
		204-927-3	129-00-0								
21	chrysene				0.0376 mg/kg		0.032 mg/kg	0.0000032 %	✓		
	601-048-00-0	205-923-4	218-01-9								
22	dibenz[a,h]anthracene				<0.046 mg/kg		<0.046 mg/kg	<0.0000046 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
23	fluoranthene				0.0677 mg/kg		0.0575 mg/kg	0.00000575 %	✓		
		205-912-4	206-44-0								
24	fluorene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
		201-695-5	86-73-7								
25	indeno[123-cd]pyrene				<0.036 mg/kg		<0.036 mg/kg	<0.0000036 %			<LOD
		205-893-2	193-39-5								
26	naphthalene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
27	anthracene				<0.032 mg/kg		<0.032 mg/kg	<0.0000032 %			<LOD
		204-371-1	120-12-7								
28	benzo[a]anthracene				0.0382 mg/kg		0.0325 mg/kg	0.00000325 %	✓		
	601-033-00-9	200-280-6	56-55-3								
29	benzo[a]pyrene; benzo[def]chrysene				0.036 mg/kg		0.0306 mg/kg	0.00000306 %	✓		
	601-032-00-3	200-028-5	50-32-8								
30	benzo[b]fluoranthene				0.0573 mg/kg		0.0487 mg/kg	0.00000487 %	✓		
	601-034-00-4	205-911-9	205-99-2								
31	benzo[ghi]perylene				<0.048 mg/kg		<0.048 mg/kg	<0.0000048 %			<LOD
		205-883-8	191-24-2								
32	benzo[k]fluoranthene				<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
33	acenaphthene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %			<LOD
		201-469-6	83-32-9								
34	acenaphthylene				<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %			<LOD
		205-917-1	208-96-8								
35	polychlorobiphenyls; PCB				<0.105 mg/kg		<0.105 mg/kg	<0.0000105 %			<LOD
	602-039-00-4	215-648-1	1336-36-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
36	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
37	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
38	pH		PH		8.47 pH		8.47 pH	8.47 pH		
39	toluene	601-021-00-3	203-625-9	108-88-3	<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
40	benzene	601-020-00-8	200-753-7	71-43-2	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
41	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
42	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
43	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.0342 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: SP07-100123--

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	% 0.627	3	5
2	LOI (loss on ignition)	% 4.4	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg <0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg <0.105	1	-
5	Mineral oil (C10 to C40)	mg/kg <5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg <10	100	-
7	pH	pH 8.47	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	-	-
Eluate Analysis 10:1				
9	arsenic	mg/kg 0.0097	0.5	2
10	barium	mg/kg 0.115	20	100
11	cadmium	mg/kg <0.0008	0.04	1
12	chromium	mg/kg <0.01	0.5	10
13	copper	mg/kg 0.0273	2	50
14	mercury	mg/kg <0.0001	0.01	0.2
15	molybdenum	mg/kg 0.149	0.5	10
16	nickel	mg/kg 0.0059	0.4	10
17	lead	mg/kg <0.002	0.5	10
18	antimony	mg/kg 0.0141	0.06	0.7
19	selenium	mg/kg 0.0126	0.1	0.5
20	zinc	mg/kg <0.01	4	50
21	chloride	mg/kg <20	800	15,000
22	fluoride	mg/kg 5.1	10	150
23	sulphate	mg/kg 129	1,000	20,000
24	phenol index	mg/kg <0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg 37.3	500	800
26	TDS (total dissolved solids)	mg/kg 937	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU CLP determinands

■ **arsenic** (EC Number: 231-148-6, CAS Number: 7440-38-2)

EU CLP index number: 033-001-00-X

Description/Comments: Worst Case: IARC considers arsenic Group 1; Carcinogenic to humans

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **lead compounds with the exception of those specified elsewhere in this Annex (worst case)**

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

■ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>

Data source date: 02 Apr 2020

Hazard Statements: Acute Tox. 3; H301, Skin Corr. 1B; H314, Eye Dam. 1; H318, Acute Tox. 1; H332

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

■ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

Appendix B: Rationale for selection of metal species

arsenic {arsenic}

Arsenic is used in alloys involving lead, medicine and agricultural purposes such as wood preservatives, animal feed, and insecticides.

cadmium {cadmium sulfide}

cadmium sulfide is used in pigments (CdS-CdSe solutions), for the photoconductive surface coating for photocopier drums, in photo-resistors and solar cells.

copper {dicopper oxide; copper (I) oxide}

copper(I) oxide used in oxidised copper, brake pads, pigments, a fungicide, and an antifouling agent for marine paints

mercury {mercury dichloride}

mercury dichloride is used as a catalyst for the conversion of acetylene to vinyl chloride, the precursor to polyvinylchloride and to form amalgams with other metals.

nickel {nickel(IV) oxide (nickel dioxide)}

nickel(II) oxide is used in chemical applications for specialized items or in the production of nickel alloys

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

worst case species as chromates not expected.

zinc {zinc oxide}

zinc oxide is used in car tyres, vulcanizing rubber, ceramic glazes, pigments, UV absorbers, paints, sunscreens, ointments.

antimony {antimony trioxide}

Worst case species (edit as required)

barium {barium oxide}

reasonable CLP species based on solubility and site history

molybdenum {molybdenum(VI) oxide}

Worst case species (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW

HazWasteOnline Classification Engine Version: 2023.73.5544.10256 (14 Mar 2023)

HazWasteOnline Database: 2023.73.5544.10256 (14 Mar 2023)

This classification utilises the following guidance and legislation:

WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

17th ATP - Regulation (EU) 2021/849 of 11 March 2021

18th ATP - Regulation (EU) 2022/692 of 16 February 2022



Town Centre House
Dublin Road
Naas
Co Kildare

wsp.com

CONFIDENTIAL