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GREENER IDEAS LIMITED

BALDONNELL 110KV SUBSTATION

ENGINEERING SERVICES REPORT

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ENGINEERING SERVICES REPORT

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1.0 INTRODUCTION

1.1 APPOINTMENT

TOBIN Consulting Engineers have been appointed by Greener Ideas Ltd to provide Civil Consultancy Services for a proposed 110kV Substation development in Profile Park Business Campus in Kilcarbery, Dublin 22.

1.2 ADMINISTRATIVE JURISDICTION

The site is located within the administrative jurisdiction of South Dublin County Council, whose offices are located at County Hall Tallaght, Dublin 24.

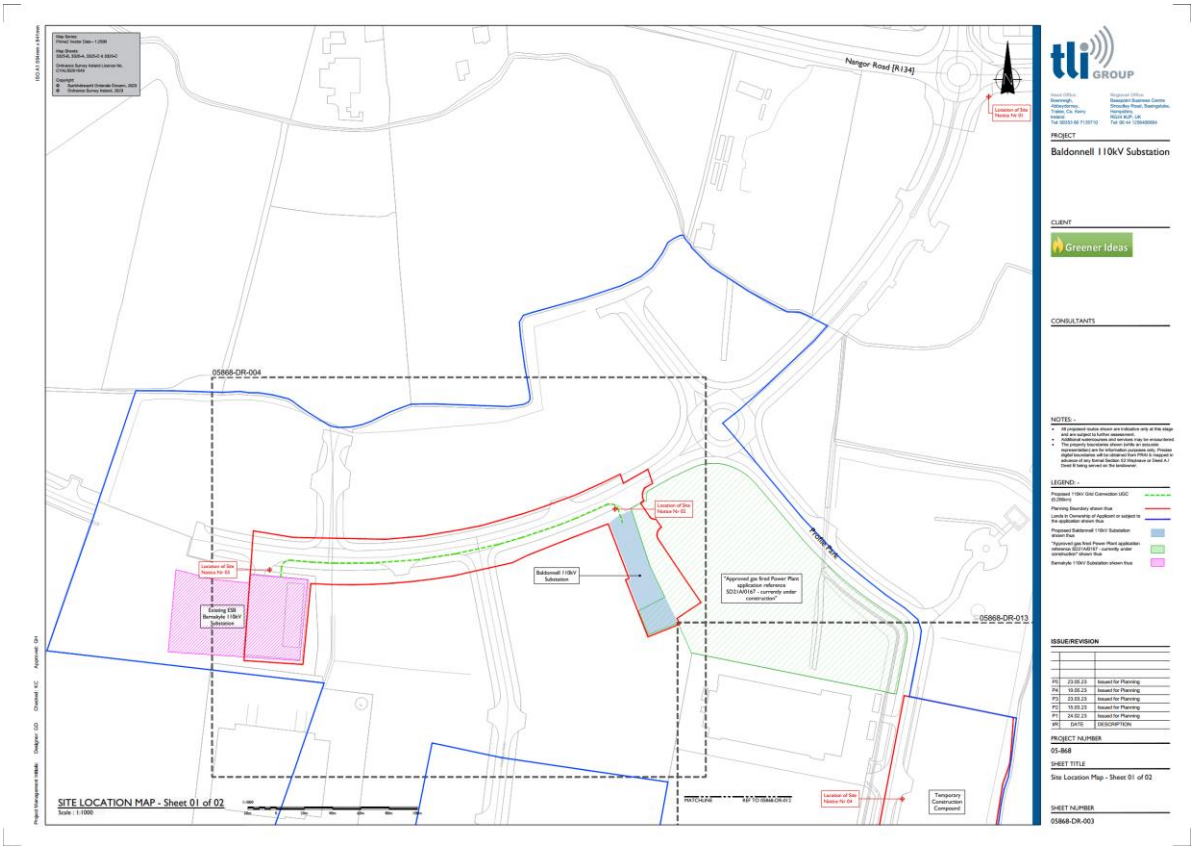


Figure 1-1: Site Location Map of Proposed Development (indicated by red line) and adjacent land in the Ownership of the Applicant (indicated in blue)

1.3 PROPOSED DEVELOPMENT

The proposed development will consist of a 110kV Substation and associated grid connection, with associated control room buildings, underground cabling, TRAFO, diesel generator car parking, access roads and security fencing. The substation is required to service the gas powered power plant, here after referred to as Power Plant, located on the eastern boundary of the site. The planning application number for the power plant is SD21A/0167. Planning permission for the Power Plant was granted in August 2022.

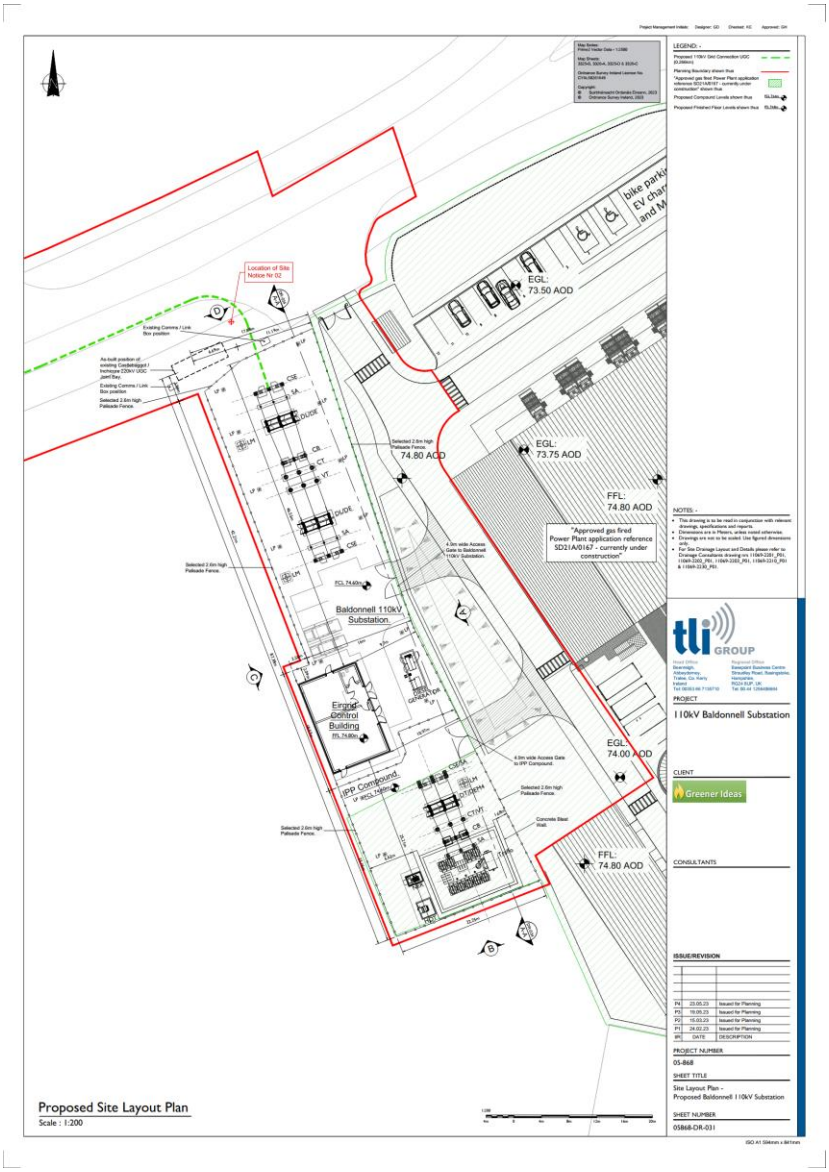


Figure 1-2: Proposed Site Layout, Drawing

1.4 SITE LOCATION

The proposed development site is located at Profile Park Business Campus in the Kilcarbery area of Dublin 22. It is proposed to provide access to the site through the adjacent lands to the east of the site which relates to a recently permitted gas fired power plant (SDCC Reg. REF. SD21A/0167) To the west and south the site is bounded by Greenfield lands and to the north by Falcon Avenue access road.

Profile Park comprises a 100 acre (40.5 Ha) fully enclosed, private business park strategically located on the outskirts of Dublin City. The Park is easily accessible from the major arterial roads in the City including the M50, M7 and M4, and is served by public transport links.

Profile Park is noted for the very heart of what is rapidly becoming “Ireland’s Data Centre Cluster” with Google, Microsoft, Digital Realty Trust and Telecity all located in the immediate vicinity.

The subject site is approximately 3 acres (1.2 Ha) in area, which comprises of the grid connection as well as the substation lands.

1.5 PURPOSE OF REPORT

The purpose of this report is to address the proposed service infrastructural requirements for the development. In the coming sections the Potable Water, Wastewater and Surface Water proposals will be detailed with the designed layouts showcased.

The design principles adopted will be those of best engineering practices and the standards used will be from the most recent applicable publications.

2.0 SITE INVESTIGATION

Ground Investigations Ireland (GII) were commissioned to carry out Site Investigative works for both the neighbouring power plant and substation site. The investigative works consisted of the following (refer to Appendix E for the SI results):

- 6 No. Trial Pits,
- 2 No. Soakaway Tests to BRE Digest 365,
- 8 No. Percussive Boreholes,
- 8 No. Rotary Core Boreholes,
- 6 No. TRL Dynamic cone penetrometer Tests,
- 8 No. Groundwater Monitoring Wells,
- 6 No. Samples from existing Stockpile on site,
- Geotechnical & Environmental Testing.

The trial holes and boreholes revealed:

Topsoil was encountered at several exploratory holes and was present to a maximum depth of 0.20m BGL.

Made Ground deposits were encountered from ground level or beneath the Topsoil at most locations and were present to a depth of between 0.40m and 2.30m BGL. These deposits were described generally as brown/grey slightly sandy slightly gravelly Clay with occasional cobbles and boulders and contained occasional fragments of concrete, granular fill, red brick, glass, and plastic. A large stockpile was also present on the site which consisted generally of a dark grey sandy gravelly Clay with some cobbles and boulders and variable amounts of anthropogenic material.

Cohesive deposits were encountered from ground level (where the topsoil had presumably been stripped prior to this site investigation) or beneath the Topsoil and/or Made Ground and were described typically as brown mottled grey slightly sandy slightly gravelly CLAY with occasional cobbles and boulders overlying a stiff dark grey/black slightly sandy slightly gravelly CLAY with occasional cobbles and boulders. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits typically increased with depth and was firm or stiff below 1.00m BGL in the majority of the borehole locations. These deposits had occasional (<5%), some (5%-20%) or many (20%-50%) cobble and boulder content, where noted on the exploratory hole logs.

In the majority of exploratory holes weathered rock was encountered which was diggable with the large excavator to a depth of up to 0.70m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as angular gravel and cobbles of argillaceous Limestone and Mudstone however there was some variability in the fracture spacing and the ease at which the excavator could progress. Some clay and sand were also present with the rock mass either from weathering or as infilling to fractures which were opened upon excavation.

The rotary core boreholes recovered interbedded medium strong to strong thinly bedded dark grey fine grained argillaceous LIMESTONE and very weak to medium strong thinly laminated black calcareous MUDSTONE. This is typical of the Lucan Formation, which is noted on the Geological Survey of Ireland's (GSI) geological mapping of the site. The degree of weathering ranged from unweathered to distinctly weathered, while the Mudstone was occasionally

recorded as residual. Rare calcite veins and visible pyrite lenses were noted during logging which are typically present within the Lucan Formation. The depth to rock varies from 1.40m BGL in BH-RC06 to a maximum of 3.60m BGL in BH-RC08. The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however both indices show an increase with depth in each of the boreholes.

Groundwater strikes were encountered in a number of exploratory holes, for this reason standpipes were installed, the groundwater monitoring results is contained in the below table.

Table 2-1: Groundwater Monitoring Results

BOREHOLE	DATE INSPECTED	GROUNDWATER LEVEL (mBGL)
BH-01	25/07/2022	3.05
	03/08/2022	2.86
BH-02	25/07/2022	3.05
	03/08/2022	2.84
BH-03	25/07/2022	2.20
	03/08/2022	2.14
BH-04	25/07/2022	1.17
	03/08/2022	1.12
BH-05	25/07/2022	1.53
	03/08/2022	1.48
BH-06	25/07/2022	1.72
	03/08/2022	1.71
BH-07	25/07/2022	0.84
	03/08/2022	0.65
BH-08	25/07/2022	2.63
	03/08/2022	2.55

At both soakaway test locations, SA01A and SA02, the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate.

3.0 WASTEWATER INFRASTRUCTURE

3.1 INTRODUCTION

As build records from the Profile Park Campus indicate there is an existing Foul Pipe North of the site within the access road.

Figure 3-1: Existing Services Layout, Drawing 11069-2203

On Greener Ideas Ltd neighbouring permitted gas powered Power Plant site, it is proposed to install wastewater infrastructure, which will discharge to the existing foul pipe in the access road. The proposed infrastructure for the Power Plant can be seen in Figure 3-2 below.

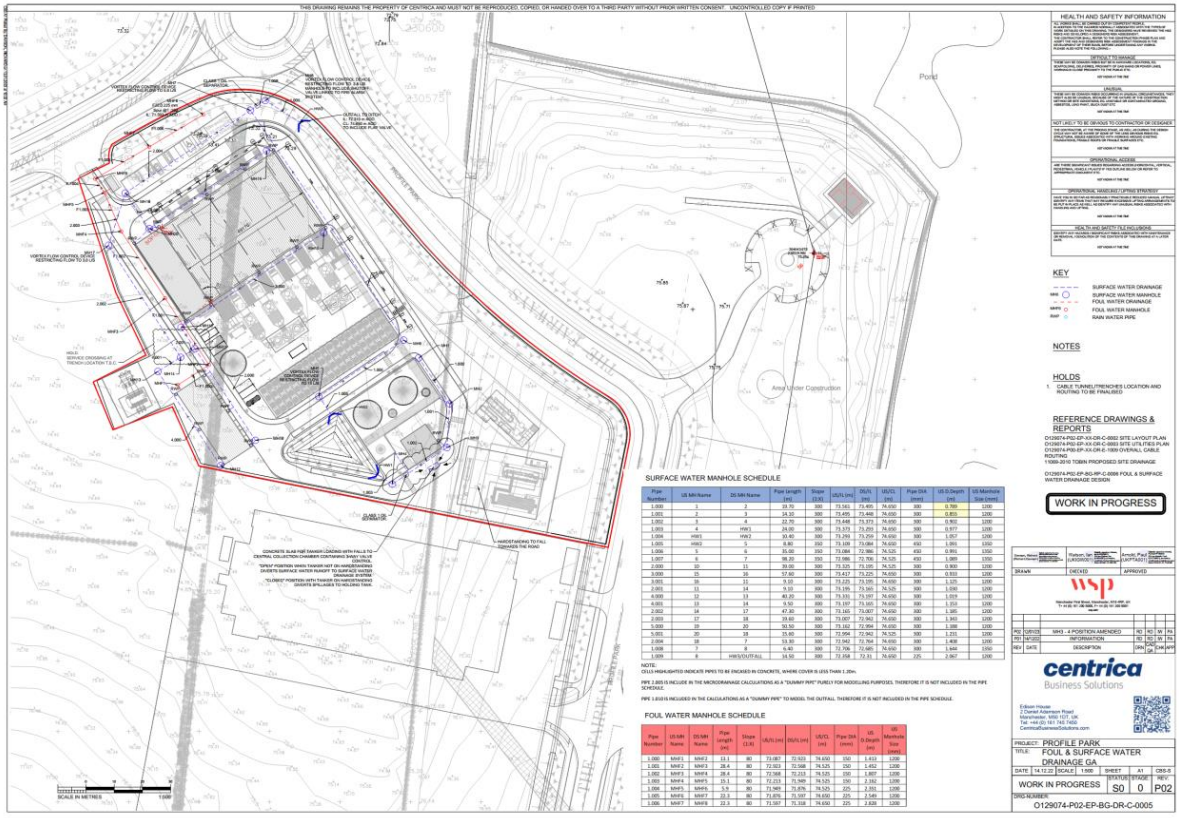


Figure 3-2: Drainage Construction Drawing for Neighbouring Permitted Power Plant Site, Ref. SD21A/0167

3.2 PROPOSAL

It is proposed to discharge wastewater generated on the site into the permitted new infrastructure on the neighbouring Power Plant site, reducing the number of connections required into the existing network within the Profile Park Campus Falcon Avenue access road.

The wastewater layout has been designed in accordance with Irish Water's latest standard details and code of practice.

Wastewater on site will be generated from a welfare facility, consisting of a sink and toilet for operatives use when on site. Wastewater will be discharged from the site through the use of gravity.

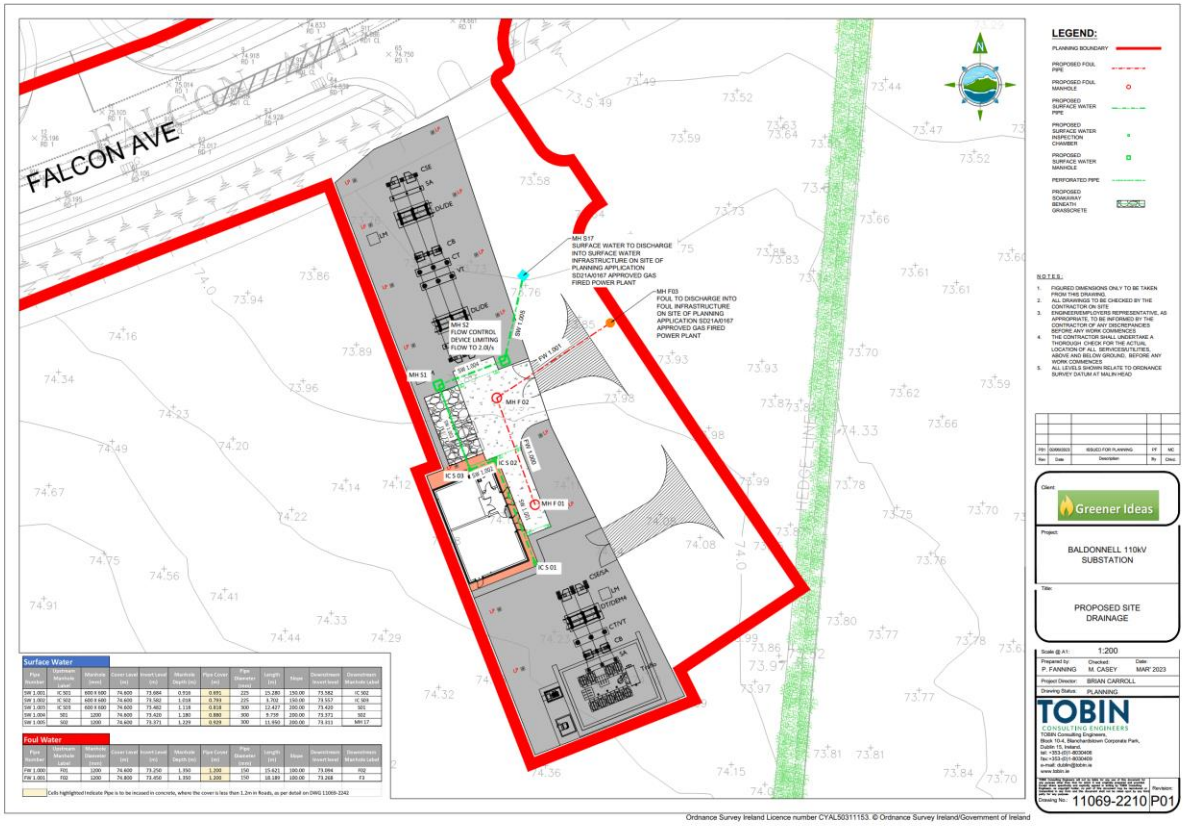


Figure 3-3: Proposed Drainage Layout, Drawing 11069-2210

4.0 SURFACE WATER INFRASTRUCTURE

4.1 INTRODUCTION

As build records from the Profile Park Campus indicate there is an existing Surface Water Pipe North of the site within the access road. There is also a stream located along the Southern boundary of the neighbouring Power Plant site, which has no impact on the proposed development surface water management strategy.

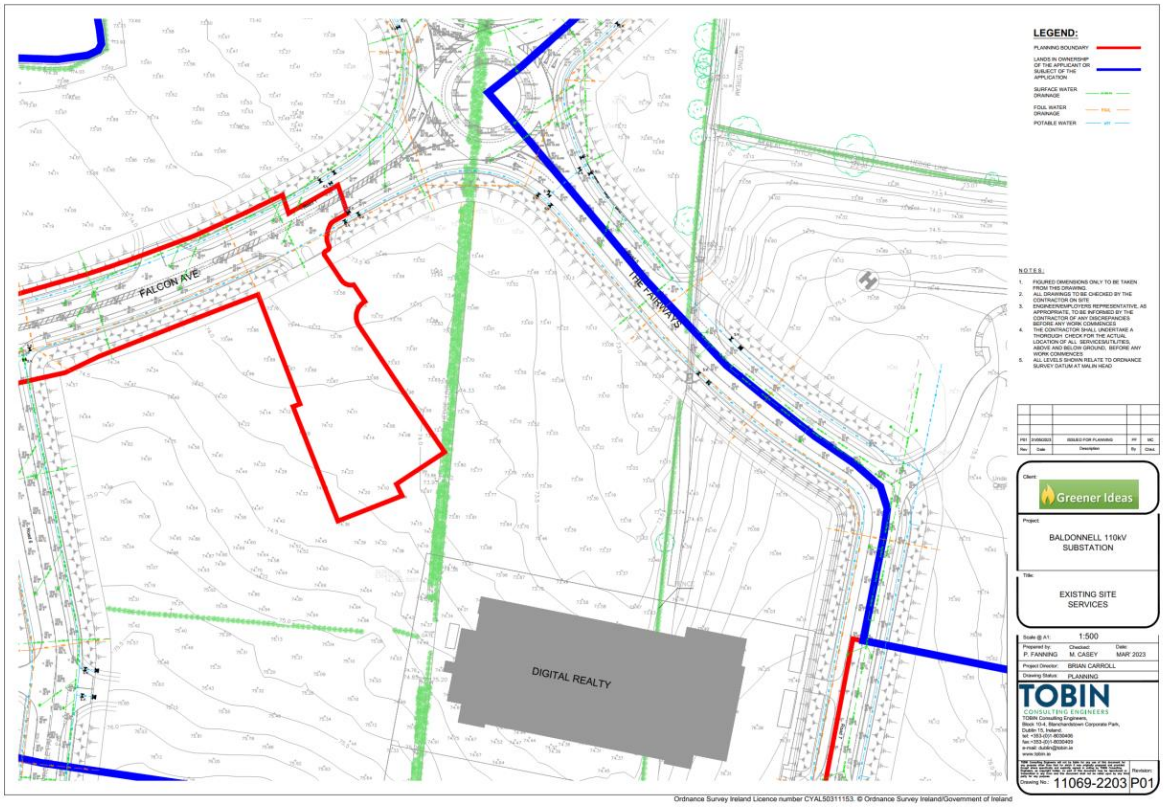


Figure 4-1: Existing Services Layout, Drawing 11069-2203

On Greener Ideas Ltd neighbouring Power Plant site, it is proposed to install new surface water infrastructure, which will discharge to stream located to the south of the power plant site. The proposed infrastructure can be seen in figure 4-2 below. The infrastructure includes a pond, detention basin, soakaway beneath the car parking, and a petrol interceptor before discharge.

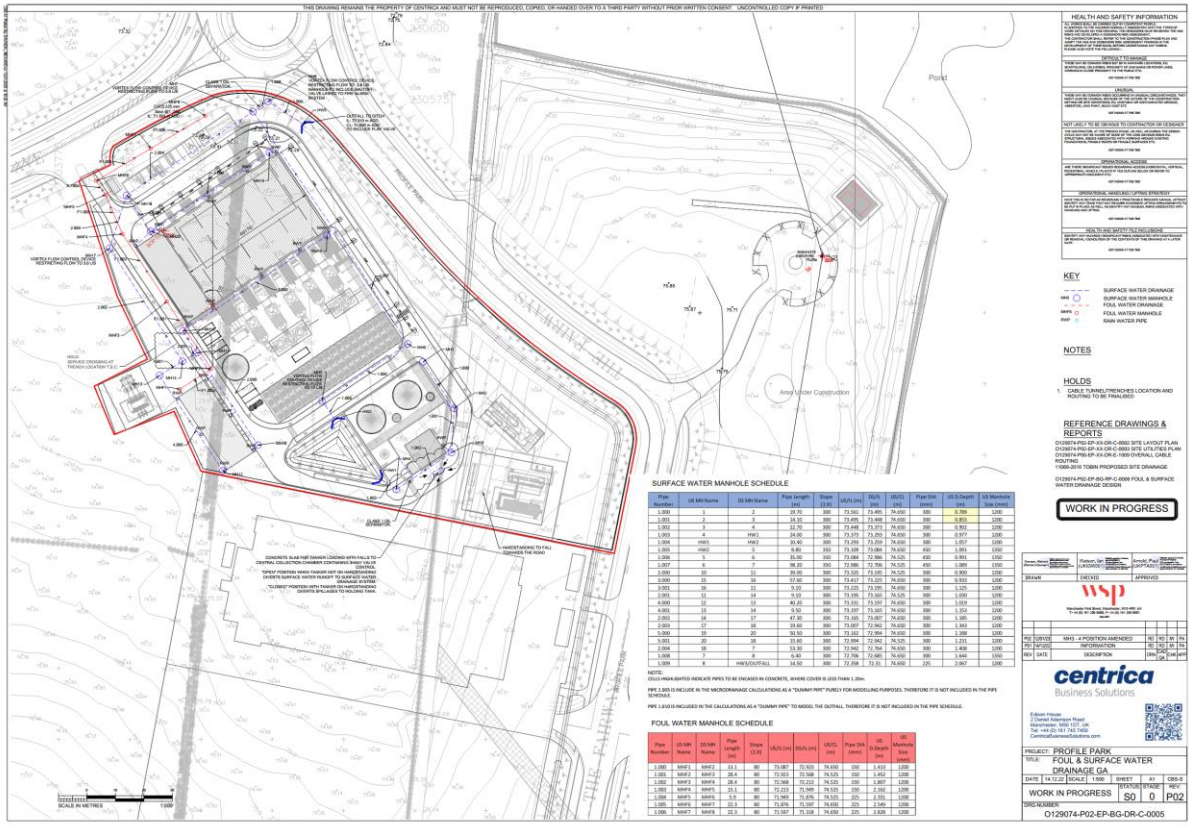


Figure 4-2: Drainage Construction Drawing for Power Plant Site

4.2 DESIGN PRINCIPLES

The design and management of the Surface Water for the proposed development will comply with the policies and guidelines outlined in the following.

- The Greater Dublin Strategic Drainage Study (GDSDS).
- South Dublin County Council's Development Plan, 2022-2028
- South Dublin County Council's SuDs Explanatory Design & Evaluation Guide
- Recommendations for Site Development Works for Housing Areas published by the Department of the Environment.
- Greater Dublin Regional Code of Practice for Drainage Works.
- The SuDs Manual (2015).

The key design principles of the Surface Water drainage are as follows.

1. The flow from the development to the existing Surface Water Infrastructure is designed to equal the natural greenfield runoff in accordance with the GDSDS and sustainable drainage best practice.
2. There are no additional or increased flows for the developed site compared to the existing greenfield condition.
3. The site will have an Attenuation Area designed to store volumes from the 30 year and 100-year storm events on site in accordance with SuDs best practise.
4. The design of the attenuation system includes an allowance for 20% climate change.

4.3 PROPOSAL

It is proposed to discharge surface water generated on the site into a Soakaway located beneath the proposed car parking area. Due to the poor infiltration rate of the site it is proposed to provide an overflow pipe within the soakaway to discharge surface water into the new infrastructure on the neighbouring power plant site. Surface water discharge rate will be maintained by a flow control device, limiting discharge rate from the site to 2l/s.

Surface water drainage for the proposed development is designed using the recommendations of the GDSDS, EN752 and BS8301:1985, with the following parameters applied:

- Return period for pipe network 2 years,
- Time of entry 4 minutes
- Pipe Friction (Ks) 0.6 mm
- Minimum Velocity 0.75 m/s
- M5 – 2D = 62.1
- M5-60 = 16.9 mm
- Ratio r (M5-60/M5-2D) = 0.272
- Climate Change 20% for rainfall intensities.

The surface water drainage network has been designed and simulated for a range of storm events (including 1 in 5, 1 in 30 and 1 in 100-year storm events) using the Source Control module of MicroDrainage. Refer to Appendix A for simulation results.

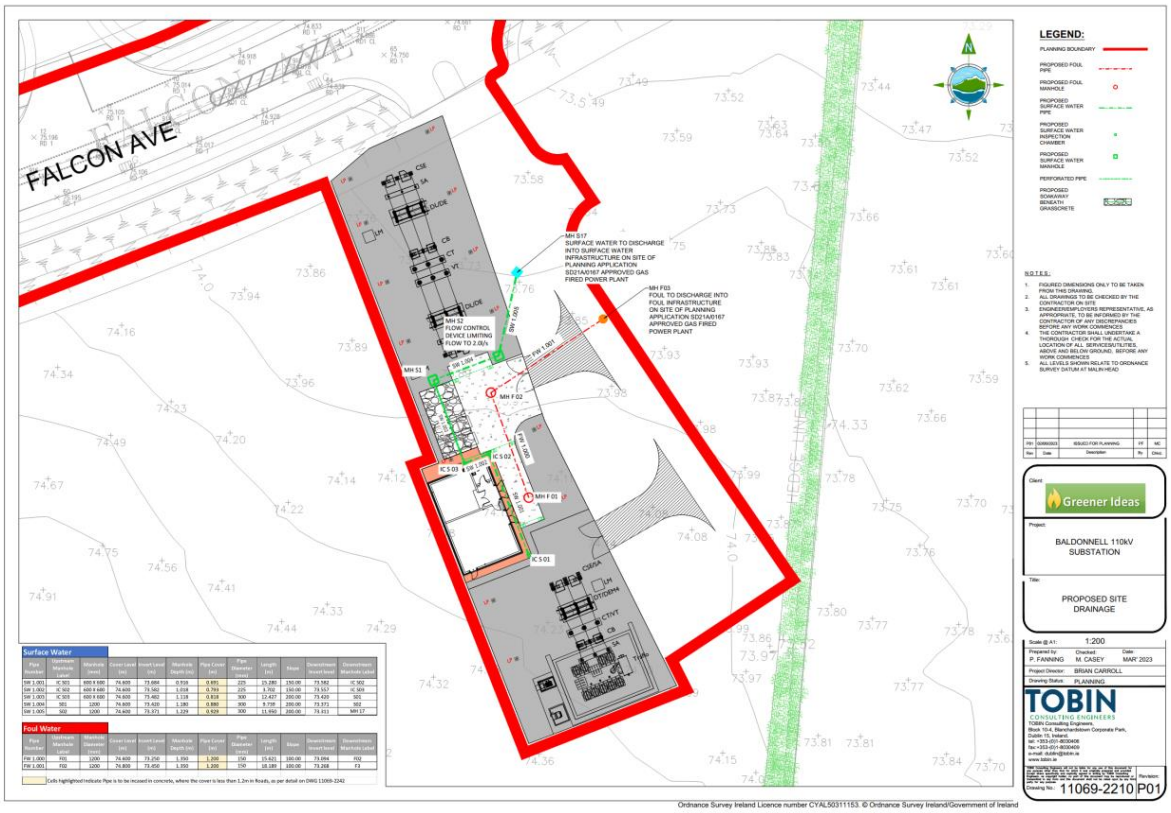


Figure 4-3: Proposed Drainage Layout, Drawing 11069-2210

4.3.1 Surface Water Storage

Surface water storage volumes have been calculated using the software *Microdrainage*. The total volume of storage required to store runoff from a 1%AEP storm event has been calculated as 37.5cu.m, refer to Appendix A for results.

4.3.1 SuDs (Sustainable Urban Drainage Systems)

A number of SuDs features have been proposed into the surface water drainage system in accordance with the GDSDs. SuDs are incorporated to attenuate runoff and volumes; reduce pollutant concentrations in surface water and to replicate the natural characteristics of surface water run off for the site in its pre-developed state.

The following SuDs features are proposed:

4.3.1.1 Hydrobrake

The rate of discharge from the proposed development will be controlled using a Hydrobrake. The total rate of discharged was determined using the QBAR greenfield run off method. The total rate of discharge was calculated at 2.00l/s.

4.3.1.2 Soakaway

It is proposed to install a soakaway beneath the parking area. The water, once discharged to the soakaway, will be allowed to infiltrate into the groundwater. Groundwater in the area was recorded at approximately 71.8mOD from the standpipe results. When the rate of water being collected by the underground pipes exceeds the infiltration rate into the ground, the collected water will be directed to an overflow pipe. The overflow pipe will discharge the excess water into the surface water infrastructure in the neighbouring Power Plant Site. Please refer to Appendix C for Soakaway Design.

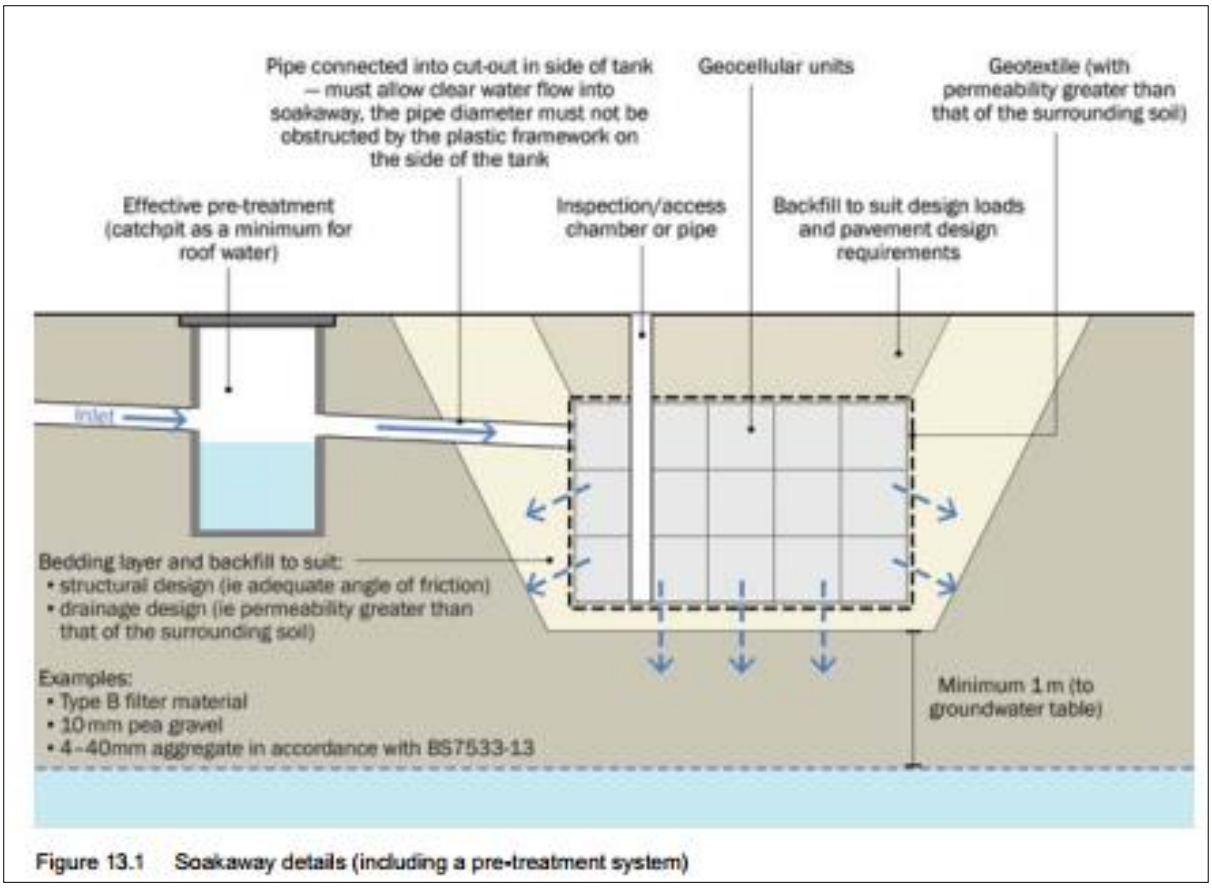


Figure 4-4: Typical Cross Section of a Soakaway (Extract from CIRA SuDs Manual)

4.3.1.3 Petrol Interceptor

It is proposed to discharge all the surface water to the soakaway but when the flow of water within the pipe exceeds the infiltration rate, excess water will be directed to the existing surface water infrastructure on the power plant site. Further treatment will be provided through the detention basin under the car parking and a petrol interceptor before discharging to the stream.

4.3.2 Treatment Train

Through the SuDs measures described above, the surface water management (treatment train) approach has been incorporated into the development in accordance with the GDSDS. This will assure the surface water runoff quantity and quality issues are addressed.

In accordance with the GDSDS, the following four objectives of the treatment train provide an integrated and balanced approach to help mitigate the changes in surface water runoff flows that occur as land is urbanised and to help mitigate the impacts of surface water quality on receiving systems:

1. **Pollution Prevention**: spill prevention (protection provided by soakaway), recycling, public awareness, and participation.
2. **Source Control**: conveyance and infiltration of runoff (provided by the proposed surface water network, Detention Basin, Dry Swale, Hydrobrake, Petrol Interceptor and Permeable Paving).

3. **Site Control:** reduction in volume and rate of surface water runoff, with some additional treatment provided (provided by Detention Basin, Hydrobrake, Petrol Interceptor and Permeable Paving).
4. **Regional Control:** Interception of runoff downstream of all source and on-site controls to provide follow-up flow management and water quality treatment (provided by the Existing Surface Water infrastructure).

The above measures ensure a suitable treatment train is provided in accordance with GDSDS

Appendix A – Surface Water Simulation Criteria & Results

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes GDSDS Manhole Sizes IW Foul

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	5	PIMP (%)	100
M5-60 (mm)	16.900	Add Flow / Climate Change (%)	20
Ratio R	0.272	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Block 10-3
Blanchardstown Corporate Park
Dublin 15

Date 19/05/2022 16:09
File 11069_DrainageModel.MDX

Designed by patrick.fanning
Checked by

Micro Drainage | Network 2018.1.1

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	74.800	1.050	Open Manhole	1200	1.000	73.750	300				
2	74.800	1.319	Open Manhole	1200	1.001	73.481	300	1.000	73.481	300	
4	74.800	1.449	Open Manhole	1200	1.002	73.351	300	1.001	73.351	300	
4	74.800	0.975	Open Manhole	1200	2.000	73.825	225				
5	74.800	1.026	Open Manhole	1200	2.001	73.774	225	2.000	73.774	225	
6	74.800	1.104	Open Manhole	1200	2.002	73.696	225	2.001	73.696	225	
7	74.800	1.231	Open Manhole	1200	2.003	73.569	225	2.002	73.569	225	
7	74.800	1.473	Open Manhole	1200	1.003	73.327	300	1.002	73.327	300	
								2.003	73.402	225	
8	74.800	1.558	Open Manhole	1350	1.004	73.242	375	1.003	73.317	300	
8	74.800	1.814	Open Manhole	1350	1.005	72.986	450	1.004	73.061	375	
9	74.800	1.841	Open Manhole	1350	1.006	72.959	450	1.005	72.959	450	
10	74.800	1.956	Open Manhole	1350	1.007	72.844	450	1.006	72.844	450	
11	74.800	1.982	Open Manhole	1350	1.008	72.818	450	1.007	72.818	450	
12	74.810	2.016	Open Manhole	1350	1.009	72.794	450	1.008	72.794	450	

Block 10-3
Blanchardstown Corporate Park
Dublin 15

Date 19/05/2022 16:09 | Designed by patrick.fanning
File 11069_DrainageModel.MDX | Checked by
Micro Drainage | Network 2018.1.1

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
13	75.000	2.345	Open Manhole	1350	1.010	72.655	450	1.009	72.655	450	
14	75.000	2.368	Open Manhole	1350	1.011	72.632	450	1.010	72.632	450	
	74.800	2.190	Open Manhole	0		OUTFALL		1.011	72.610	450	

PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	300	1	74.800	73.750	0.750	Open Manhole	1200
1.001	o	300	2	74.800	73.481	1.019	Open Manhole	1200
1.002	o	300	4	74.800	73.351	1.149	Open Manhole	1200
2.000	o	225	4	74.800	73.825	0.750	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	80.839	300.5	2	74.800	73.481	1.019	Open Manhole	1200
1.001	39.096	300.0	4	74.800	73.351	1.149	Open Manhole	1200
1.002	7.098	295.8	7	74.800	73.327	1.173	Open Manhole	1200
2.000	10.232	200.0	5	74.800	73.774	0.801	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
2.001	o	225	5	74.800	73.774	0.801	Open Manhole	1200
2.002	o	225	6	74.800	73.696	0.879	Open Manhole	1200
2.003	o	225	7	74.800	73.569	1.006	Open Manhole	1200
1.003	o	300	7	74.800	73.327	1.173	Open Manhole	1200
1.004	o	375	8	74.800	73.242	1.183	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
2.001	15.627	200.0	6	74.800	73.696	0.879	Open Manhole	1200
2.002	25.252	200.0	7	74.800	73.569	1.006	Open Manhole	1200
2.003	0.500#	3.0	7	74.800	73.402	1.173	Open Manhole	1200
1.003	0.500#	50.0	8	74.800	73.317	1.183	Open Manhole	1350
1.004	54.319	300.0	8	74.800	73.061	1.364	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.005	o	450	8	74.800	72.986	1.364	Open Manhole	1350
1.006	o	450	9	74.800	72.959	1.391	Open Manhole	1350
1.007	o	450	10	74.800	72.844	1.506	Open Manhole	1350
1.008	o	450	11	74.800	72.818	1.532	Open Manhole	1350
1.009	o	450	12	74.810	72.794	1.566	Open Manhole	1350
1.010	o	450	13	75.000	72.655	1.895	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.005	8.066	300.0	9	74.800	72.959	1.391	Open Manhole	1350
1.006	34.508	300.0	10	74.800	72.844	1.506	Open Manhole	1350
1.007	10.425	400.0	11	74.800	72.818	1.532	Open Manhole	1350
1.008	9.542	400.0	12	74.810	72.794	1.566	Open Manhole	1350
1.009	0.500#	3.6	13	75.000	72.655	1.895	Open Manhole	1350
1.010	9.112	396.2	14	75.000	72.632	1.918	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	o	450	14	75.000	72.632	1.918	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	8.957	407.1		74.800	72.610	1.740	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	90	0.078	0.070	0.070
	User	-	90	0.085	0.076	0.147
	User	-	60	0.022	0.013	0.160
	User	-	60	0.083	0.050	0.209
	User	-	90	0.008	0.008	0.217
1.001	User	-	100	0.005	0.005	0.005
	User	-	75	0.034	0.026	0.031
	User	-	100	0.002	0.002	0.033
	User	-	100	0.010	0.010	0.044
	User	-	90	0.051	0.046	0.089
	User	-	60	0.080	0.048	0.137
	User	-	60	0.017	0.010	0.147
	User	-	80	0.002	0.001	0.149
1.002	User	-	75	0.006	0.005	0.005
2.000	-	-	100	0.000	0.000	0.000
2.001	User	-	100	0.002	0.002	0.002
2.002	User	-	60	0.011	0.007	0.007
	User	-	100	0.002	0.002	0.009
	User	-	75	0.017	0.013	0.022
2.003	User	-	75	0.174	0.131	0.131
	User	-	100	0.026	0.026	0.157

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.003	User	-	75	0.009	0.007	0.007
	User	-	100	0.010	0.010	0.016
	User	-	100	0.005	0.005	0.022
	User	-	75	0.026	0.019	0.041
1.004	User	-	60	0.036	0.021	0.021
	User	-	100	0.006	0.006	0.027
1.005	User	-	75	0.009	0.007	0.007
	User	-	80	0.011	0.009	0.016
	User	-	100	0.003	0.003	0.018
	User	-	60	0.123	0.074	0.092
1.006	User	-	90	0.024	0.022	0.022
	User	-	100	0.004	0.004	0.026
	User	-	100	0.007	0.007	0.033
	User	-	90	0.018	0.016	0.050
1.007	User	-	90	0.103	0.092	0.092
1.008	User	-	90	0.025	0.022	0.022
	User	-	75	0.021	0.015	0.037
	User	-	60	0.001	0.001	0.038
1.009	User	-	60	0.033	0.020	0.020
	User	-	90	0.027	0.025	0.044
1.010	-	-	100	0.000	0.000	0.000

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.011	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.216	0.936	0.936

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.011		74.800	72.610	72.500	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	20.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.900	Cv (Summer)	0.750
Return Period (years)	5	Ratio R	0.272	Cv (Winter)	0.840
Region	Scotland and Ireland	Profile Type	Summer	Storm Duration (mins)	30

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 14, DS/PN: 1.011, Volume (m³): 4.6

Unit Reference	MD-SHE-0085-3800-1495-3800	Sump Available	Yes
Design Head (m)	1.495	Diameter (mm)	85
Design Flow (l/s)	3.8	Invert Level (m)	72.632
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.495	3.8	Kick-Flo®	0.761	2.8
Flush-Flo™	0.375	3.5	Mean Flow over Head Range	-	3.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	0.300	3.4	0.500	3.4	0.800	2.8	1.200	3.4	1.600	3.9
0.200	3.2	0.400	3.5	0.600	3.3	1.000	3.2	1.400	3.7	1.800	4.1

Hydro-Brake® Optimum Manhole: 14, DS/PN: 1.011, Volume (m³): 4.6

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
2.000	4.3	2.600	4.9	4.000	6.0	5.500	7.0	7.000	7.8	8.500	8.6
2.200	4.5	3.000	5.2	4.500	6.3	6.000	7.3	7.500	8.1	9.000	8.8
2.400	4.7	3.500	5.6	5.000	6.7	6.500	7.5	8.000	8.3	9.500	9.0

Storage Structures for Storm

Tank or Pond Manhole: 7, DS/PN: 1.003

Invert Level (m) 73.327

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	228.1	0.800	228.1	0.801	0.0

Tank or Pond Manhole: 9, DS/PN: 1.006

Invert Level (m) 72.959

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	91.7	1.532	91.7	1.533	0.0

Tank or Pond Manhole: 13, DS/PN: 1.010

Invert Level (m) 72.655

Tank or Pond Manhole: 13, DS/PN: 1.010

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	175.0	1.000	175.0	1.001	0.0

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	1	0.500
1.001	2	0.500
1.002	4	0.500
2.000	4	0.500
2.001	5	0.500
2.002	6	0.500
2.003	7	0.500
1.003	7	0.500
1.004	8	0.500
1.005	8	0.500
1.006	9	0.500
1.007	10	0.500
1.008	11	0.500
1.009	12	0.500
1.010	13	0.500

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.011	14	0.500

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	20.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 1	Number of Storage Structures 3	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.900
Region	Scotland and Ireland	Ratio R	0.272
Cv (Summer)			0.750
Cv (Winter)			0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100

Block 10-3
Blanchardstown Corporate Park
Dublin 15

Date 19/05/2022 16:11
File 11069_DrainageModel.MDX

Designed by patrick.fanning
Checked by

Micro Drainage | Network 2018.1.1

Summary of Critical Results by Maximum Level (Rank 1) for Storm

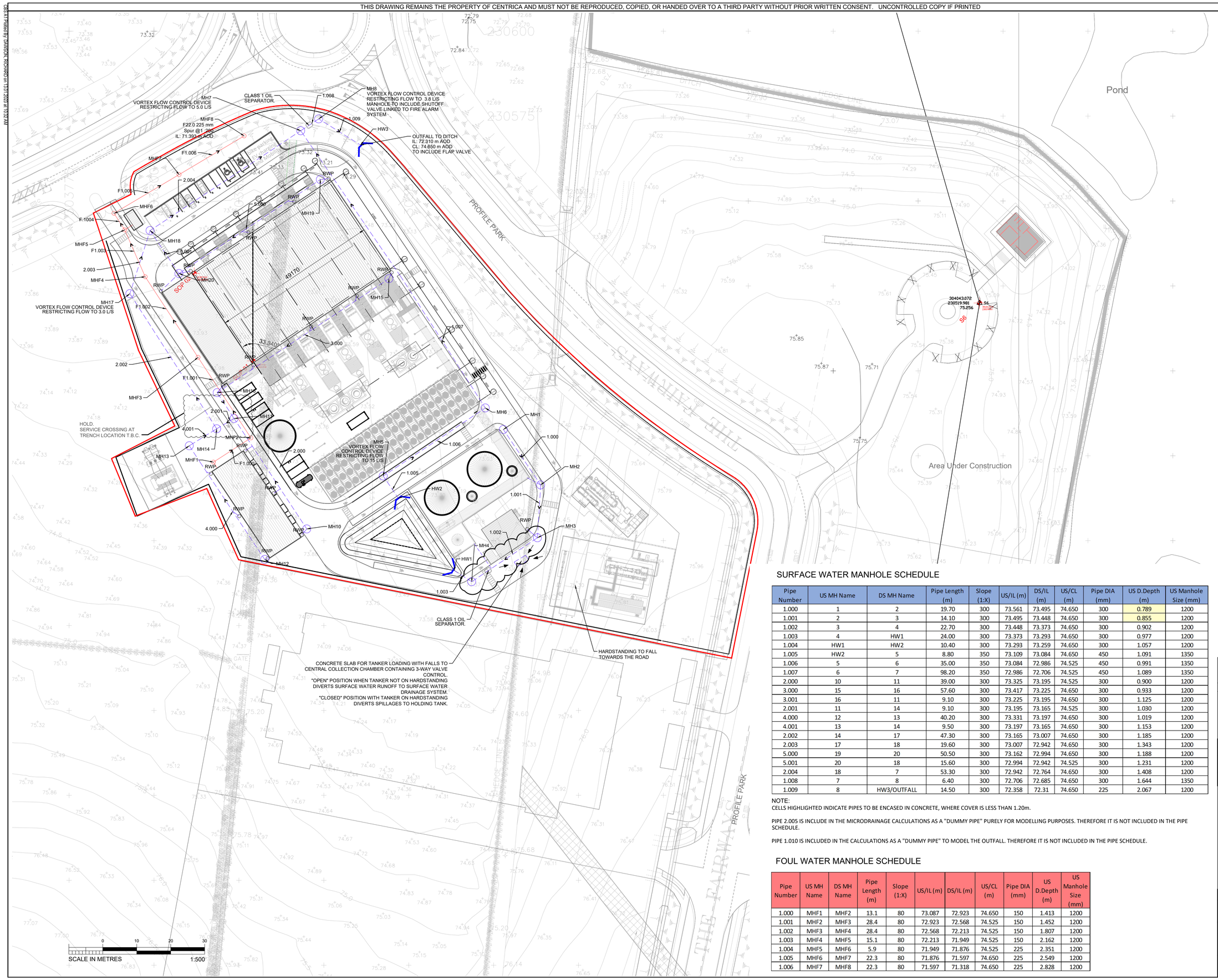
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	1	15 Winter	100	+0%	30/15 Summer				74.681	0.631	0.000	1.10		67.4
1.001	2	1440 Winter	100	+0%	30/15 Summer				74.589	0.808	0.000	0.16		9.3
1.002	4	1440 Winter	100	+0%	30/15 Summer				74.587	0.936	0.000	0.19		9.1
2.000	4	1440 Winter	100	+0%	100/360 Winter				74.586	0.536	0.000	0.01		0.5
2.001	5	1440 Winter	100	+0%	100/360 Winter				74.586	0.587	0.000	0.02		0.8
2.002	6	1440 Winter	100	+0%	100/240 Winter				74.586	0.665	0.000	0.03		0.8
2.003	7	1440 Winter	100	+0%	30/480 Winter				74.586	0.791	0.000	0.08		4.7
1.003	7	1440 Winter	100	+0%	30/240 Winter				74.586	0.959	0.000	0.23		13.4
1.004	8	1440 Winter	100	+0%	30/180 Winter				74.586	0.969	0.000	0.13		13.6
1.005	8	1440 Winter	100	+0%	30/60 Winter				74.583	1.148	0.000	0.12		14.5
1.006	9	1440 Winter	100	+0%	30/60 Winter				74.582	1.174	0.000	0.32		51.8
1.007	10	1440 Winter	100	+0%	1/360 Winter				74.581	1.287	0.000	0.43		42.4
1.008	11	960 Winter	100	+0%	1/360 Winter				74.606	1.338	0.000	0.37		35.0
1.009	12	960 Winter	100	+0%	1/240 Winter				74.628	1.384	0.000	0.12		25.8
1.010	13	960 Winter	100	+0%	1/120 Winter				74.635	1.530	0.000	0.12		11.2
1.011	14	960 Winter	100	+0%	1/120 Summer				74.636	1.554	0.000	0.05		4.3

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Status	Level Exceeded
1.000	1	FLOOD RISK	
1.001	2	FLOOD RISK	
1.002	4	FLOOD RISK	
2.000	4	FLOOD RISK	
2.001	5	FLOOD RISK	
2.002	6	FLOOD RISK	
2.003	7	FLOOD RISK	
1.003	7	FLOOD RISK	
1.004	8	FLOOD RISK	
1.005	8	FLOOD RISK	
1.006	9	FLOOD RISK	
1.007	10	FLOOD RISK	
1.008	11	FLOOD RISK	
1.009	12	FLOOD RISK	
1.010	13	SURCHARGED	
1.011	14	SURCHARGED	

Appendix B – Power Plant Neighbouring Site Drainage Layout, Ref SD21A/0167



HEALTH AND SAFETY INFORMATION

ALL WORKS SHALL BE CARRIED OUT BY COMPETENT PEOPLE.
IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING. THE DESIGNERS HAVE REVIEWED THE H&S RISKS AND DEVELOPED A DESIGNERS RISK ASSESSMENT.
THE CONTRACTOR SHALL REFER TO THE CONSTRUCTION PHASE PLAN AND ADOPT THE H&S AND DESIGNERS RISK ASSESSMENT FINDINGS IN THE DEVELOPMENT OF THEIR RAMS, BEFORE UNDERTAKING ANY WORKS.
PLEASE ALSO NOTE THE FOLLOWING :-

DIFFICULT TO MANAGE

THESE MAY BE COMMON RISKS BUT BE IN AWKWARD LOCATIONS, EG. SCAFFOLDING, DELIVERIES, PROXIMITY OF GAS MAINS OR POWER LINES, WORKING IN CLOSE PROXIMITY TO THE PUBLIC ETC.

NOT KNOWN AT THIS TIME

UNUSUAL

THESE MAY BE COMMON RISKS OCCURRING IN UNUSUAL CIRCUMSTANCES. THEY MIGHT ALSO BE UNUSUAL BECAUSE OF THE NATURE OF THE CONSTRUCTION METHOD OR SITE CONDITIONS, EG. UNSTABLE OR CONTAMINATED GROUND, ASBESTOS, LEAD PAINT, SILICA DUST ETC

NOT KNOWN AT THIS TIME

NOT LIKELY TO BE OBVIOUS TO CONTRACTOR OR DESIGNER

THE CONTRACTOR, AT THE PRICING STAGE, AS WELL AS DURING THE DESIGN CYCLE MAY NOT BE AWARE OF SOME OF THE LESS OBVIOUS RISKS EG. STRUCTURAL ISSUES ASSOCIATED WITH WORKING AROUND EXISTING FOUNDATIONS, FRAGILE ROOFS OR FRAGILE SURFACES ETC.

NOT KNOWN AT THIS TIME

OPERATIONAL ACCESS

ARE THERE SIGNIFICANT ISSUES REGARDING ACCESS (HORIZONTAL, VERTICAL, PEDESTRIAN, VEHICLE / PLANT)? IF YES OUTLINE BELOW OR REFER TO APPROPRIATE DOCUMENT ETC.

NOT KNOWN AT THIS TIME

OPERATIONAL HANDLING / LIFTING STRATEGY

HAVE YOU IN SO FAR AS REASONABLY PRACTICABLE REDUCED MANUAL LIFTING? IDENTIFY ANY ITEMS THAT MAY REQUIRE EXCESSIVE LIFTING ARRANGEMENTS TO BE PUT IN PLACE AS WELL AS IDENTIFY ANY UNUSUAL RISKS ASSOCIATED WITH HANDLING AND LIFTING.

NOT KNOWN AT THIS TIME

HEALTH AND SAFETY FILE INCLUSIONS

IDENTIFY ANY HAZARDS / SIGNIFICANT RISKS ASSOCIATED WITH MAINTENANCE OR REMOVAL / DEMOLITION OF THE CONTENTS OF THIS DRAWING AT A LATER DATE.

NOT KNOWN AT THIS TIME

KEY

- SURFACE WATER DRAINAGE
- MH6 — SURFACE WATER MANHOLE
- FOUL WATER DRAINAGE
- MHF6 — FOUL WATER MANHOLE
- RWP — RAIN WATER PIPE

NOTES

HOLDS

1. CABLE TUNNEL/TRENCHES LOCATION AND ROUTING TO BE FINALISED

REFERENCE DRAWINGS & REPORTS

O129074-P02-EP-XX-DR-C-0002 SITE LAYOUT PLAN
O129074-P02-EP-XX-DR-C-0003 SITE UTILITIES PLAN
O129074-P00-EP-XX-DR-E-1009 OVERALL CABLE ROUTING
11069-2010 TOBIN PROPOSED SITE DRAINAGE

O129074-P02-EP-BG-RP-C-0006 FOUL & SURFACE WATER DRAINAGE DESIGN

WORK IN PROGRESS

SURFACE WATER MANHOLE SCHEDULE

Pipe Number	US MH Name	DS MH Name	Pipe Length (m)	Slope (1:X)	US/IL (m)	DS/IL (m)	US/CL (m)	Pipe DIA (mm)	US D.Depth (m)	US Manhole Size (mm)
1.000	1	2	19.70	300	73.561	73.495	74.650	300	0.789	1200
1.001	2	3	14.10	300	73.495	73.448	74.650	300	0.855	1200
1.002	3	4	22.70	300	73.448	73.373	74.650	300	0.902	1200
1.003	4	HW1	24.00	300	73.373	73.293	74.650	300	0.977	1200
1.004	HW1	HW2	10.40	300	73.293	73.259	74.650	300	1.057	1200
1.005	HW2	5	8.80	350	73.109	73.084	74.650	450	1.091	1350
1.006	5	6	35.00	350	73.084	72.986	74.525	450	0.991	1350
1.007	6	7	98.20	350	72.986	72.706	74.525	450	1.089	1350
2.000	10	11	39.00	300	73.325	73.195	74.525	300	0.900	1200
3.000	15	16	57.60	300	73.417	73.225	74.650	300	0.933	1200
3.001	16	11	9.10	300	73.225	73.195	74.650	300	1.125	1200
2.001	11	14	9.10	300	73.195	73.165	74.525	300	1.030	1200
4.000	12	13	40.20	300	73.331	73.197	74.650	300	1.019	1200
4.001	13	14	9.50	300	73.197	73.165	74.650	300	1.153	1200
2.002	14	17	47.30	300	73.165	73.007	74.650	300	1.185	1200
2.003	17	18	19.60	300	73.007	72.942	74.650	300	1.343	1200
5.000	19	20	50.50	300	73.162	72.994	74.650	300	1.188	1200
5.001	20	18	15.60	300	72.994	72.942	74.525	300	1.231	1200
2.004	18	7	53.30	300	72.942	72.764	74.650	300	1.408	1200
1.008	7	8	6.40	300	72.706	72.685	74.650	300	1.644	1350
1.009	8	HW3/OUTFALL	14.50	300	72.358	72.31	74.650	225	2.067	1200

NOTE:
CELLS HIGHLIGHTED INDICATE PIPES TO BE ENCASED IN CONCRETE, WHERE COVER IS LESS THAN 1.20m.

PIPE 2.005 IS INCLUDE IN THE MICRODRAINAGE CALCULATIONS AS A "DUMMY PIPE" PURELY FOR MODELLING PURPOSES. THEREFORE IT IS NOT INCLUDED IN THE PIPE SCHEDULE.

PIPE 1.010 IS INCLUDED IN THE CALCULATIONS AS A "DUMMY PIPE" TO MODEL THE OUTFALL. THEREFORE IT IS NOT INCLUDED IN THE PIPE SCHEDULE.

FOUL WATER MANHOLE SCHEDULE

Pipe Number	US MH Name	DS MH Name	Pipe Length (m)	Slope (1:X)	US/IL (m)	DS/IL (m)	US/CL (m)	Pipe DIA (mm)	US D.Depth (m)	US Manhole Size (mm)
1.000	MHF1	MHF2	13.1	80	73.087	72.923	74.650	150	1.413	1200
1.001	MHF2	MHF3	28.4	80	72.923	72.568	74.525	150	1.452	1200
1.002	MHF3	MHF4	28.4	80	72.568	72.213	74.525	150	1.807	1200
1.003	MHF4	MHF5	15.1	80	72.213	71.949	74.525	150	2.162	1200
1.004	MHF5	MHF6	5.9	80	71.949	71.876	74.525	225	2.351	1200
1.005	MHF6	MHF7	22.3	80	71.876	71.597	74.650	225	2.549	1200
1.006	MHF7	MHF8	22.3	80	71.597	71.318	74.650	225	2.828	1200

DRAWN	CHECKED	APPROVED

wsp
Manchester First Street, Manchester, M15 4RP, UK
T+ 44 (0) 161 200 5000, F+ 44 (0) 161 200 5001
wsp.com

REV	DATE	DESCRIPTION	DRN	CAD QA	CHK	APP
P02	12/01/23	MH3 - 4 POSITION AMENDED	RD	RD	IW	PA
P01	14/12/22	INFORMATION	RD	RD	IW	PA

centrica Business Solutions
Edison House
2 Daniel Adamson Road
Manchester, M50 1DT, UK
Tel: +44 (0) 161 745 7450
CentricaBusinessSolutions.com

PROJECT: PROFILE PARK
TITLE: FOUL & SURFACE WATER DRAINAGE GA

DATE	14.12.22	SCALE	1:500	SHEET	A1	CBS-S

WORK IN PROGRESS | STATUS: S0 | STAGE: 0 | REV: P02

DRG-NUMBER: O129074-P02-EP-BG-DR-C-0005

Appendix C – Soakaway Design

Soakaway Design:

Infiltration rate calculated as 0.00162 mm/sec from Site Investigation Report.

Soakaway measurements:

- Width 5m
- Depth 2.5m
- Length 10m

HARDSTANDING AREA BREAKDOWN

Drainage Area	Sq.m	Co-Efficient	Sq.m
Road	157	0.9	141.3
Roof	126	0.9	113.4
Rock Fill	723	0.6	433.8
Permeable Car Parking	50	0.6	30
Concrete Platform	259	0.9	233.1
Footway	44	0.9	39.6
Total:			991.2

MET EIREANN RAINFALL DATA

30yr Return Period
360min Storm Duration (worst case scenario)
Rainfall Depth = 55.5mm

INFLOW (I):

I = A x R

- A ; impermeable Ara to be drained to soakaway (sq.m)
- R: Total rainfall in design (m)

991.2sq.m x 0.0555 = 55.0cu.m = I

- As50 : Internal Surface area of Soakaway pit to 50% effective depth (excluding base)
- F : Soil Infiltration Rate
- D : Storm Duration

Soakaway Outflow (O):

O = As50 x F x D

[(10x2.5)+(5x2.5)x2] x 0.00162 x [(360 x 60)/1000] = 2.62cu.m

Storage (S) = I – O

55 – 2.62 = 52.37cu.m

SOAKAWAY VOLUME REQUIRED

Void Ratio = 0.3 Volume = 52.37/0.3 = 174.58cu.m.

Soakaway size beneath car park = 5 x 10 x 2.5 x 0.3 = 37.5cu.m.

Due to the Soakaway volume being smaller than the required volume an overflow is being provided into the neighbouring power plant site. The Discharge will be maintained at 2.0l/s.

Appendix D – QBar Calculation

It is proposed to attenuated runoff from the proposed development to Greenfield Runoff or Q_{bar} as per the recommendations of the GDSDS. Q_{bar} is estimated at 5.1l/s using the *Institute of Hydrology* equation.

$$Q_{bar[rural]} = 0.00108\ x\ AREA^{0.89} x SAAR^{1.17} x\ SPR^{\ 2.17}$$

Were.

$Q_{bar[rural]}$ = is the mean annual flood flow from a rural catchment

$AREA$ = the area of the catchment in ha. = 50ha

$SAAR$ = is the standard average annual rainfall = 780

SPR = Standard Percentage Runoff coefficient for the soil category, where SPR values for the 5 soil types are as follows; Soil 1 = 0.1; Soil 2 = 0.3; Soil 3 =0.37; Soil 4 = 0.47; Soil 5 = 0.53

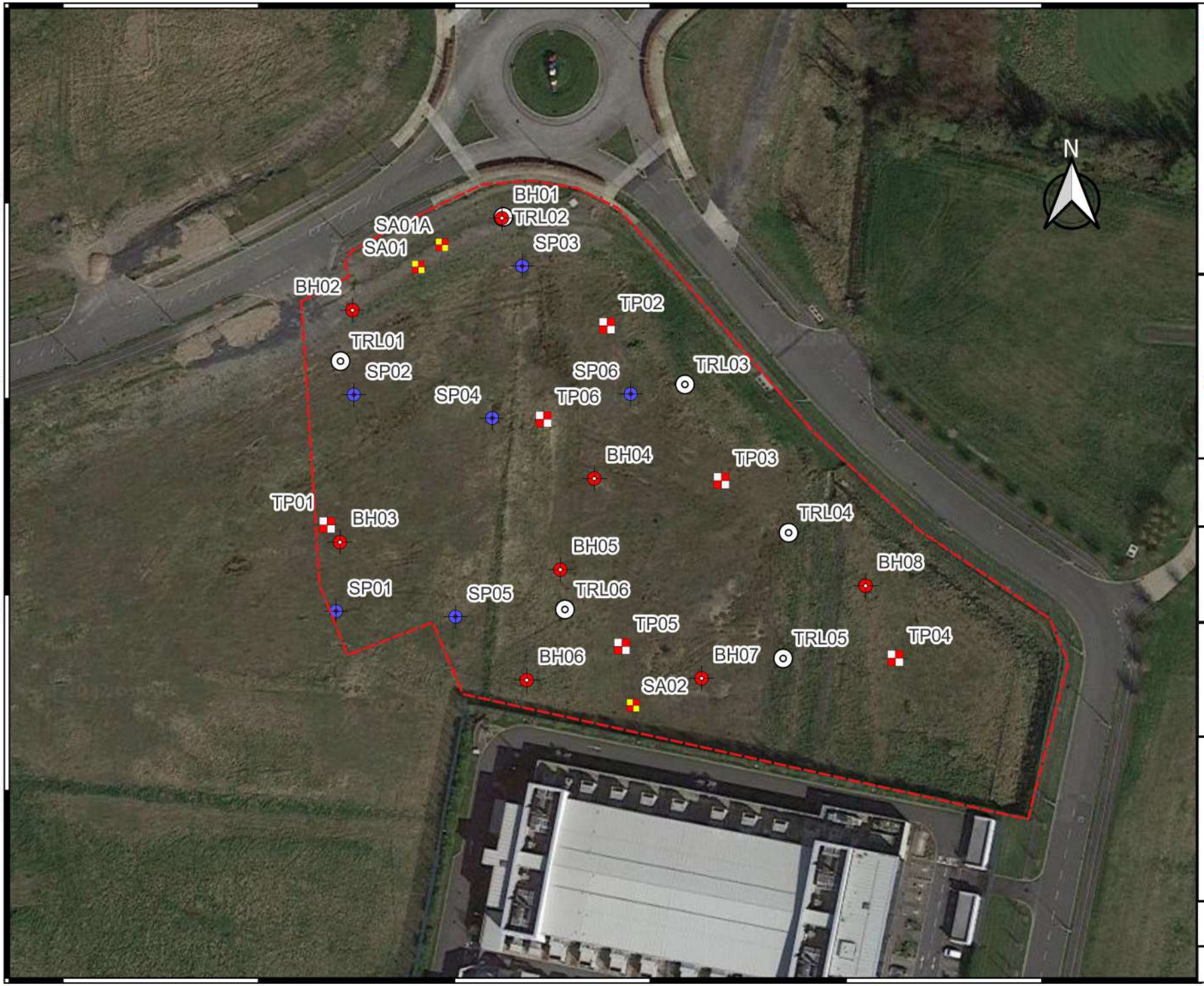
A SPR value of 0.3 (Soil Type 2) has been applied for the subject site.

$$Q_{bar[rural]} = 0.00108\ x\ 50^{0.89} x 780^{1.17} x\ 0.3^{2.17}$$

$$Q_{bar[rural]} = 103.42 l/s\ for\ 50ha\ or\ \ 0.34 l/s\ for\ an\ area\ of\ 0.162ha$$

Proposed discharge rate of 2.0l/s as per Greater Dublin Regional Code of Practice.

Appendix E – Site Investigation Results



Indicative Site Boundary
Trial Pit
Soakaway Pit
Borehole
Stockpile Sample
TRL DCP

Engineer:

centrica

Project Code:
11930-06-22

Project Title:
GIL Profile Park

Drawing Title:
Figure 2 SI Plan

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 9 18 27 36 45 m

Drawn By:	Date:
CMP	25/07/2022

Ground Investigations Ireland Ltd
www.gii.ie

Site GIL, Profile Park			**Trial Pit Number** TP01
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 3.50m x 0.50m x 1.50m (L x W x D)	**Ground Level (mOD)** 73.96	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703717.4 E 730517.4 N	**Dates** 24/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				73.86	(0.10) 0.10	Possible MADE GROUND: Brown slightly sandy slightly gravelly Clay		
0.50	HV 160kPa					Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse.		
0.50	B				(0.60)			
0.50	HVR 38kPa							
0.50	ES			73.26	0.70	Grey clayey sandy subangular fine to coarse GRAVEL		
					(0.20)			
				73.06	0.90	Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse		
1.00	HV 116kPa		120, 148, 80/Av. 116.00					
1.00	ES				(0.40)			
1.00	HVR 26.33kPa		24, 33, 22/Av. 26.33					
				72.66	1.30	Possible Weathered Bedrock recovered as: Dark grey clayey sandy subangular fine to coarse GRAVEL with occasional subangular cobbles		
					(0.20)			
1.50	B			72.46	1.50	Obstruction; presumed bedrock		
						Complete at 1.50m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP01

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Site GIL, Profile Park			**Trial Pit Number** TP02
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 3.20m x 0.50m x 1.80m (L x W x D)	**Ground Level (mOD)** 73.33	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703788.9 E 730568.3 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				73.28	0.05	TOPSOIL		
						Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.65)			
0.50	HV 124kPa		110, 140, 122/Av. 124.00					
0.50	ES							
0.50	HVR 24.67kPa		10, 35, 29 /Av. 24.67	72.63	0.70			
						Stiff dark brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.40)			
1.00	HV 142.67kPa		150, 140, 138/Av. 142.67					
1.00	B			72.23	1.10			
1.00	HVR 36.33kPa		30, 38, 41/Av. 36.33			Black slightly sandy clayey subangular fine to coarse GRAVEL with occasional subangular cobbles		
1.00	ES							
					(0.70)			
1.50	B							
			Medium ingress(1) at 1.65m.					▽1
						Obstruction; presumed bedrock		
				71.53	1.80			
						Complete at 1.80m		

Plan

Remarks

Groundwater encountered at 1.65m BGL; medium ingress
Trial pit unstable; side walls spalling
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP02

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Site GIL, Profile Park			**Trial Pit Number** TP03
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 3.20m x 0.50m x 1.50m (L x W x D)	**Ground Level (mOD)** 72.77	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703818.1 E 730528.8 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				72.67	(0.10) 0.10	TOPSOIL		
					(0.30)	MADE GROUND: Brown slightly sandy slightly gravelly Clay		
				72.37	0.40			
0.50	HV 196.67kPa		200, 200, 190/Av. 196.67			Firm to stiff black and brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles. Gravel is subangular to subrounded fine to coarse		
0.50	B							
0.50	HVR 35.33kPa		44, 35, 27/Av. 35.33		(0.50)			
0.50	ES							
				71.87	0.90			
1.00	HV 125.33kPa		100, 134, 142/Av. 125.33			Stiff black slightly sandy slightly gravelly CLAY with occasional subangular cobbles. Gravel is subangular to subrounded fine to coarse		
1.00	ES				(0.35)			
1.00	HVR 40.67kPa		30, 50, 42/Av. 40.67					▽1
1.20	B		Medium ingress(1) at 1.20m.	71.52	1.25			
					(0.25)	Black angular to subangular fine to coarse GRAVEL with many subangular cobbles Obstruction; presumed bedrock		
				71.27	1.50			
						Complete at 1.50m		

Plan

Remarks

Groundwater encountered at 1.20m BGL; medium ingress
Trial pit stable
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP03

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Site GIL, Profile Park			**Trial Pit Number** TP04
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 4.00m x 0.70m x 3.20m (L x W x D)	**Ground Level (mOD)** 75.34	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703862.6 E 730483.4 N	**Dates** 24/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.30	ES					MADE GROUND: Brown slightly sandy gravelly Clay with some cobbles and boulders with granular lens and rare fragments of plastic, fabric and tarmac		
0.50-1.00	B				(1.30)			
1.30-1.60	ES			74.04	1.30	Possible MADE GROUND: Brown slightly sandy slightly gravelly CLAY with occasional cobbles		
1.50	B		Fast ingress(1) at 1.55m.		(0.30)			▽1
				73.74	1.60	Possible MADE GROUND: Brown slightly clayey slightly sandy subangular fine to coarse GRAVEL with some cobbles and pockets of clay		
					(0.25)			
				73.49	1.85	Firm brown slightly sandy gravelly CLAY with occasional subangular cobbles. Gravel is subangular to subrounded fine to coarse		
2.50 2.50 2.50	HV 75kPa B HVR 22kPa				(0.85)			
				72.64	2.70	Stiff dark grey mottled brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles. Gravel is subangular fine to coarse		
3.00 3.00 3.00	HV 146kPa B HVR 44kPa				(0.50)			
				72.14	3.20	Obstruction; presumed bedrock		
						Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 1.55m BGL; fast ingress
Trial pit unstable; side walls spalling
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP04

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Site GIL, Profile Park			**Trial Pit Number** TP05
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 3.20m x 0.50m x 1.70m (L x W x D)	**Ground Level (mOD)** 73.35	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703792.8 E 730486.4 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Possible MADE GROUND: Brown slightly sandy slightly gravelly Clay		
				73.15	0.20			
					(0.30)	Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
0.50	HV 115kPa			72.85	0.50			
0.50	B					Stiff black slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium		
0.50	HVR 26kPa							
0.50	ES				(0.80)			
1.00	B							
1.00	ES							
			Medium ingress(1) at 1.30m.	72.05	1.30	Dark grey slightly sandy fine to coarse GRAVEL with occasional subangular cobbles		▽1
1.50	B				(0.40)			
						Obstruction; presumed bedrock		
				71.65	1.70	Complete at 1.70m		

Plan

Remarks

Groundwater encountered at 1.30m BGL; medium ingress
Trial pit stable
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP05

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Site GIL, Profile Park			**Trial Pit Number** TP06
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 3.50m x 0.50m x 2.10m (L x W x D)	**Ground Level (mOD)** 73.77	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703772.7 E 730544.4 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				73.57	0.20	Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.30)			
0.50	HV 131.67kPa		143, 143, 109/Av. 131.67	73.27	0.50	Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
0.50	ES							
0.50	HVR 43.33kPa		50, 55, 25/Av. 43.33					
					(0.80)			
1.00	HV 142kPa		130, 144, 152/Av. 142.00					
1.00	B							
1.00	HVR 35.33kPa		34, 35, 37/Av. 35.33					
1.00	ES							
				72.47	1.30	Stiff black slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.20)			
1.50-2.00	B			72.27	1.50	Black slightly sandy silty subangular to subrounded fine to coarse GRAVEL with occasional angular to subangular cobbles		
					(0.60)			
			seepage(1) at 2.00m.			Obstruction; presumed bedrock		▽1
				71.67	2.10	Complete at 2.10m		

Plan

Remarks

Groundwater encountered at 2.00m BGL; seepage
Trial pit stable
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.TP06

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Site GIL, Profile Park			**Trial Pit Number** SA01
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 2.80m x 0.45m x 1.50m (L x W x D)	**Ground Level (mOD)** 74.76	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703740.6 E 730583.3 N	**Dates** 24/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	MADE GROUND: Dark brown and black slightly sandy gravelly Clay with some cobbles and rare fragmebts of fabric and rubber		
				74.16	0.60			
					(0.15)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rootlets		
				74.01	0.75			
					(0.60)	MADE GROUND: Grey slightly silty slightly gravelly sandy Clay with occasional roots		
				73.41	1.35			
					(0.15)	MADE GROUND: Grey very sandy subangular to subrounded fine to coarse Gravel Obstruction; concrete		
				73.26	1.50	Complete at 1.50m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Soakaway test carried out in pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.SA01

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Site GIL, Profile Park			**Trial Pit Number** SA01A
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 2.80m x 0.45m x 2.00m (L x W x D)	**Ground Level (mOD)** 74.66	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703746.7 E 730589 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rootlets		
				74.16	0.50			
					(0.60)	MADE GROUND: Black and grey slightly sandy gravelly Clay with some cobbles and rare fragments of metal		
				73.56	1.10			
					(0.60)	MADE GROUND: Brownish grey slightly sandy slightly gravelly Clay		
				72.96	1.70			
					(0.30)	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
				72.66	2.00	Complete at 2.00m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Soakaway test carried out in pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.SA01A

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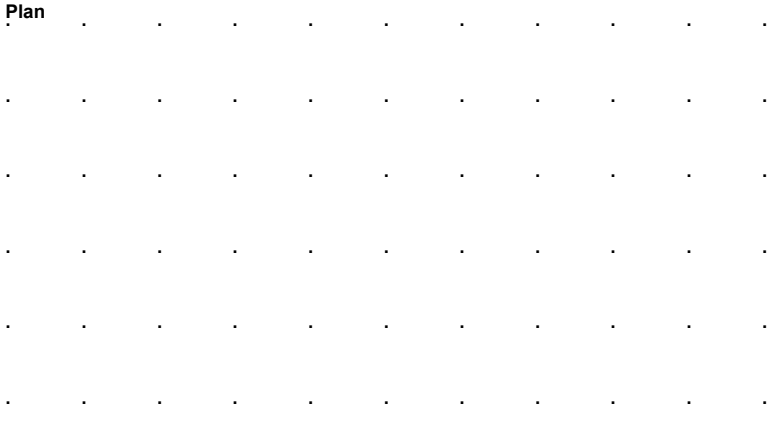
Site GIL, Profile Park			**Trial Pit Number** SA02
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 2.00m x 0.40m x 1.70m (L x W x D)	**Ground Level (mOD)** 73.28	**Client** GIL	**Job Number** 11930-06-22
	Location (dGPS) 703795.5 E 730471.5 N	**Dates** 23/06/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	TOPSOIL		
				73.13	0.15	Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.35)			
				72.78	0.50	Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(0.80)			
			Fast ingress(1) at 1.25m.	71.98	1.30			▽1
					(0.20)	Brown clayey sandy subangular to subrounded fine to coarse GRAVEL		
				71.78	1.50			
					(0.20)	Stiff black slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
				71.58	1.70	Complete at 1.70m		

Plan



Remarks

Groundwater encountered at 1.25m BGL; fast ingress
Trial pit stable
Soakaway test carried out in pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	FOD	11930-06-22.SA02

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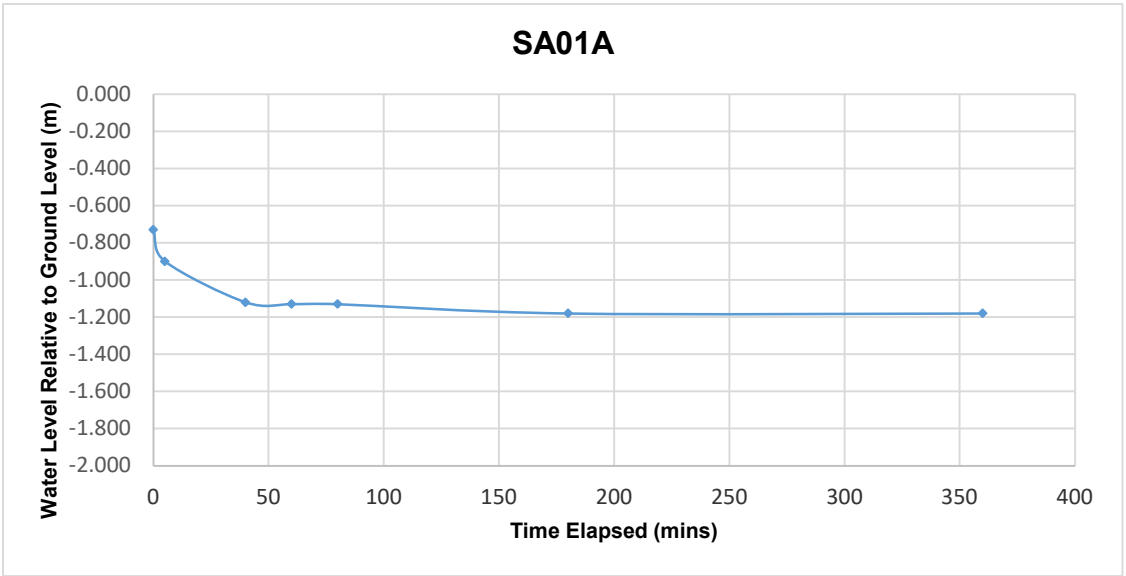
SA01A

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.80m x 0.45m x 2.00m (L x W x D)

Date	Time	Water level (m bgl)
23/07/2022	0	-0.730
23/07/2022	5	-0.900
23/07/2022	40	-1.120
23/07/2022	60	-1.130
23/07/2022	80	-1.130
23/07/2022	180	-1.180
23/07/2022	360	-1.180

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.73	2.000	1.270	1.0475	1.6825



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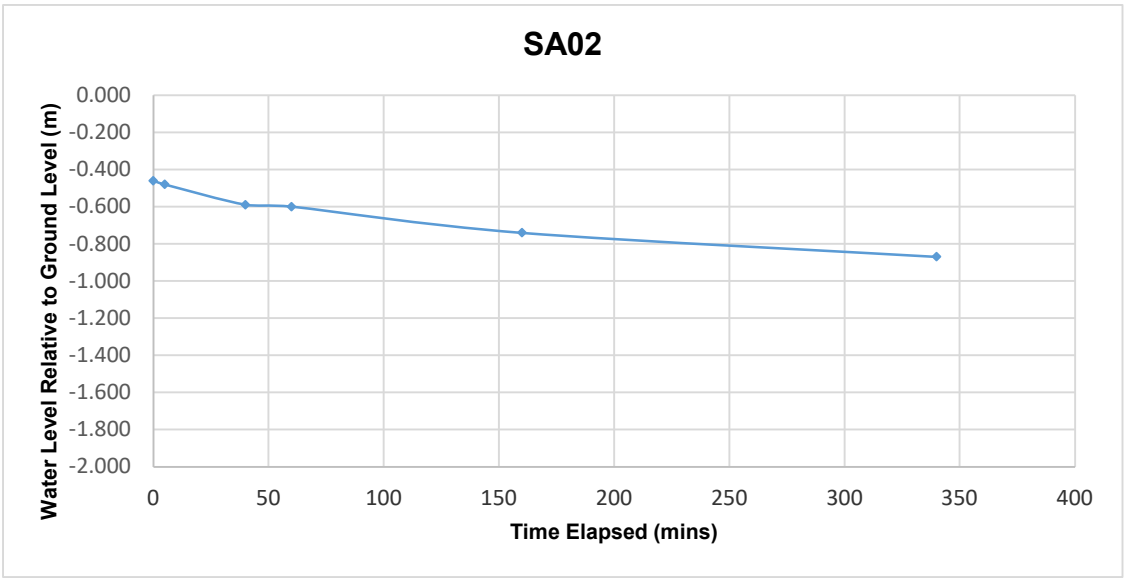
SA02

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.00m x 0.40m x 1.70m (L x W x D)

Date	Time	Water level (m bgl)
23/07/2022	0	-0.460
23/07/2022	5	-0.480
23/07/2022	40	-0.590
23/07/2022	60	-0.600
23/07/2022	160	-0.740
23/07/2022	340	-0.870

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.46	1.700	1.240	0.77	1.39



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Site	Borehole Number
GIL, Profile Park	BH-RC01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 0.70m 96mm cased to 7.00m	74.45	GIL	11930-06-22
	Location (dGPS) 703762.1 E 730596 N	**Dates** 29/06/2022-08/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.70 0.00-0.70					B ES	74.35	0.10 (0.60)	TOPSOIL with occasional plant rootlets, wood and fragments of red brick MADE GROUND: Dark grey sandy angular to subangular fine to coarse Gravel with occasional cobbles and fragments of concrete			
0.70 0.70-0.85	50	13	7		25/50 SPT(C) 50/0	73.75	0.70 (1.10)	Recovery consists of dark grey slightly sandy slightly gravelly Clay with occasional cobbles			
1.80 2.30	83	27	10	NI		72.65	1.80 (2.40)	Driller notes possible weathered bedrock. Recovered as cobbles and boulders of thinly bedded dark grey Limestone and Mudstone with black slightly sandy slightly gravelly Clay			
3.80 4.20	91	37	28	NI		70.25	4.20 (0.80)	Strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak to medium strong thinly laminated black calcaereous Mudstone. Distinctly weathered 4.20m to 5.00m BGL - Mostly non-intact			
5.00 5.30	100	84	31	9		69.45	5.00 (2.00)	Strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of medium strong thinly laminated black calcaereous Mudstone. Partially weathered 5.00m to 7.00m BGL - Two fracture sets: F1: 30 to 50 degrees closely to medium spaced planar smooth with clay smearing. F2: 70 to 90 degrees very close to medium spaced stepped rough			
6.30				20							
7.00						67.45	7.00	Complete at 7.00m			

Remarks
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a flush cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.RC01

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Site	Borehole Number
GIL, Profile Park	BH-RC02

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	96mm cased to 7.00m 88mm cased to 0.10m	74.36	GIL	11930-06-22
	Location (dGPS) 703723.9 E 730572.5 N	**Dates** 29/06/2022-08/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
	24					74.26	0.10	TOPSOIL with occasional plant rootlets, wood and fragments of red brick Recovery consists of MADE GROUND: Grey slightly sandy rounded to subangular fine to coarse Gravel. Driller notes fill onto tar onto soft brown clay with cobbles			
							(2.20)				
2.30 2.30-2.75	88	0	0		5,7/7,8,9,9 SPT(C) N=33	72.06	2.30 (0.40)	Very stiff brown mottled grey slightly sandy slightly gravelly CLAY			
						71.66	2.70 (0.50)	Very stiff dark grey slightly sandy slightly gravelly CLAY			
3.20						71.16	3.20	Very weak to weak thinly laminated black calcaereous MUDSTONE with occasional beds of medium strong thinly bedded dark grey fine grained argillaceous Limestone. Distinctly weathered to residual. 3.20m to 4.90m BGL - Mostly non intact			
3.80	97	17	7	NI			(1.70)				
4.90						69.46	4.90	Medium strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak to strong thinly laminated black calcaereous Mudstone. Partially to distinctly weathered with clay smearing. Rare calcite veins and pyrite lenses present.			
5.30	100	87	67	7			(2.10)	4.90m to 7.00m BGL - Two fracture sets - F1: 80 to 90 degrees medium to wide planar rough. F2: 30 to 50 degrees very close to medium spaced planar smooth			
6.80	100	100	50								
7.00						67.36	7.00	Complete at 7.00m			

Remarks
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.RC02

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Site	Borehole Number
GIL, Profile Park	BH-RC03

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 1.50m 96mm cased to 7.00m	73.97	GIL	11930-06-22
	Location	**Dates**	**Engineer**	**Sheet**
	703720.7 E 730513.3 N	30/06/2022-08/07/2022	Centrica	1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.45 0.00-0.45					B ES	73.67	(0.30) 0.30	POSSIBLE MADE GROUND: Brown slightly sandy slightly gravelly Clay with many plant rootlets			
0.45-1.20 0.45-1.20					B ES	73.52	(0.15) 0.45	Brown slightly clayey sandy angular fine to coarse GRAVEL			
							(0.55)	Brown mottled grey slightly sandy slightly gravelly CLAY		▽1	
1.00-1.45					4,4/5,9,11,9 Seepage (1) at 1.00m. SPT(C) N=34	72.97	1.00 (0.20)				
1.50 1.50-1.65	83	0	0	NI	20,5/50 SPT(C) 50/0	72.77	1.20 (0.30)	Very stiff brown mottled grey slightly sandy slightly gravelly CLAY			
2.10						72.47	1.50	Dense dark grey slightly clayey sandy angular to subangular fine to coarse GRAVEL (possible weathered bedrock)			
3.00	91	61	33				(1.60)	Medium strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occassional beds of weak thinly laminated black calcaereous Mudstone. Partially to distinctly weathered with clay smearing. Rare calcite veins and pyrite lenses present. 1.50m to 3.10m - Mostly non intact			
3.80	99	95	65	6		70.87	3.10	Medium strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occassional beds of weak thinly laminated black calcaereous Mudstone. Mostly unweathered with clay smearing. Rare calcite veins and pyrite lenses present.			
5.30	95	93	64				(3.90)				
6.80	100	100	75					2.10m to 7.00m - Two fracture sets; F1: 30 to 50 degrees very closely to widely steped to planar smooth to rough. F2: 70 to 90 degrees widely spaced planar smooth			
7.00						66.97	7.00	Complete at 7.00m			

Remarks
Groundwater strike at 1.00m BGL
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.BH-RC03

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Site	Borehole Number
GIL, Profile Park	BH-RC04

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	96mm cased to 7.00m 88mm cased to 1.30m	73.10	GIL	11930-06-22
	Location (dGPS) 703785.6 E 730529.6 N	**Dates** 11/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.90 0.00-0.90					B ES	73.00	0.10	Brown mottled grey slightly sandy slightly gravelly CLAY with occasional plant rootlets			
							(0.80)	Brown mottled grey slightly sandy slightly gravelly CLAY with occasional cobbles			
0.90-1.30 0.90-1.30 1.00-1.45					2,6/9,7,18,16 B ES SPT(C) N=50	72.20 72.10	0.90 1.00	Dark grey slightly sandy slightly gravelly silty CLAY			
1.30							(0.30)				
1.50	64	25	10			71.80	1.30 (0.20)	Very stiff dark grey slightly sandy slightly gravelly silty CLAY			
						71.60	1.50	Recovery consists of brown slightly sandy gravelly CLAY. Driller notes brown Clay with gravels and cobbles			
2.30	94	85	21	NI			(2.10)	Weak to medium strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak to weak thinly laminated black calcaereous Mudstone. Distinctly weathered with clay smearing			
3.60						69.50	3.60				
3.80	99	91	70					Medium strong to strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak thinly laminated black calcaereous Mudstone. Mostly unweathered with clay smearing. Rare calcite veins and pyrite lenses present.			
5.30	96	96	44	6			(3.40)				
6.80	100	100	55					1.30m to 7.00m BGL - Two fracture sets; F1: 0 to 20 degrees very closely to closely spaced planar smooth. F2: 70 to 90 degrees medium to widely spaced planar smooth to rough			
7.00						66.10	7.00	Complete at 7.00m			

Remarks
Groundwater strike at 1.10m BGL
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.RC04

Ground Investigations Ireland Ltd
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Site	Borehole Number
GIL, Profile Park	BH-RC05

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 2.00m 96mm cased to 7.00m	73.55	GIL	11930-06-22
	Location (dGPS) 703777 E 730506.3 N	**Dates** 29/06/2022-11/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.00					ES	73.30	(0.25) 0.25	Brown slightly sandy slightly gravelly CLAY with occasional plant rootlets			
0.50-1.00					B	73.05	(0.25) 0.50	Brown mottled grey slightly sandy slightly gravelly CLAY			
1.00-1.45					2,2/1,3,2,4 SPT(C) N=10	72.55	(0.50) 1.00	Brown mottled grey slightly sandy gravelly CLAY Firm brown slightly sandy sligthly gravelly CLAY			
1.50-2.00					B	72.05	(0.50) 1.50	Stiff dark grey slightly sandy gravelly slity CLAY		▽1	
2.00 2.00-2.15	70	32	0	NI	20,5/50 Seepage(1) at 1.90m. SPT(C) 25*/100 50/50	71.55	(0.50) 2.00	Medium strong to strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak to medium strong thinly laminated black calcaereous Mudstone. Partially weathered to distinctly weathered with clay smearing			
2.30 2.80	93	79	69				(2.80)	2.00m to 4.80m BGL - Two fracture sets; F1: 0 to 20 degrees very closely to closely spaced planar smooth. F2: 70 to 90 degrees closely to medium spaced planar rough			
3.80	97	91	55	13		68.75	4.80	Strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak to medium strong thinly laminated black calcaereous Mudstone. Partially weathered			
4.80 5.30				11			(1.20)	4.80m to 7.00m BGL - One fracture set; F1: 30 to 50 degrees very close to medium spaced planar smooth			
6.00	100	97	62	2		67.55	6.00	Strong thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of medium strong thinly laminated black calcaereous Mudstone. Mostly unweathered			
6.80 7.00	100	100	0			66.55	(1.00) 7.00	Complete at 7.00m			

Remarks
Groundwater strike at 1.90m BGL
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.RC05

Ground Investigations Ireland Ltd
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Site	Borehole Number
GIL, Profile Park	BH-RC06

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 1.40m 96mm cased to 7.00m	73.92	GIL	11930-06-22
	Location (dGPS) 703768.4 E 730478.1 N	**Dates** 29/06/2022-11/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.65					B		(0.50)	Brown slightly sandy slightly gravelly CLAY with occasional plant rootlets			
						73.42	0.50				
							(0.15)	Brown slightly clayey slightly gravelly SAND			
0.65-1.00					ES	73.27	0.65				
					2,2/2,3,12,30 SPT(C) N=47		(0.35)	Brown mottled grey slightly sandy slightly gravelly CLAY			
1.00-1.45					ES	72.92	1.00				
1.00-1.40							(0.40)	Very stiff brown mottled grey slightly sandy slightly gravelly CLAY			
1.40					25/50 SPT(C) 50/0	72.52	1.40				
1.40-1.55	90	31	20	9				Strong thinly laminated to thinly bedded dark grey fine grained argillaceous LIMESTONE with occasional beds of weak thinly laminated black calcaereous Mudstone. Partially weathered. Rare calcite veins and pyrite lenses present.			
2.30	91	84	60	13							
3.80	100	95	44	11			(5.60)	1.40m to 7.00m - Two fracture sets: F1: 0 to 15 degrees very close to medium spaced planar smooth. F2: 70 to 90 degrees close to medium spaced stepped smooth to rough			
5.30	100	90	67	7							
6.80	100	100	100								
7.00						66.92	7.00	Complete at 7.00m			

Remarks
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.BH-RC06

Ground Investigations Ireland Ltd
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Site	Borehole Number
GIL, Profile Park	BH-RC07

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 1.50m 96mm cased to 7.00m	73.18	GIL	11930-06-22
	Location (dGPS) 703813.1 E 730478.6 N	**Dates** 29/06/2022-12/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.50					ES	72.93	(0.25) 0.25	MADE GROUND: Dark grey slightly clayey slightly sandy angular to subangular fine to coarse Gravel with occasional cobbles			
0.20-0.50					B	72.68	(0.25) 0.50	Grey mottled brown slightly sandy silty CLAY			
0.50-1.00					B		(0.50)	Dark grey slightly sandy slightly gravelly CLAY		▽1	
1.00-1.45 1.00-1.50					4,10/6,7,5,12 Seepage(1) at 1.00m. SPT(C) N=30	72.18	1.00	Dense dark grey/brown slightly sandy clayey angular to subangular fine to coarse GRAVEL (possible weathered bedrock)			
1.50 1.50-1.88	76	26	5	NI	B 15,10/17,12,16,5 SPT(C) 50/225	71.68	(0.50) 1.50	Strong thinly laminated to thinly bedded dark grey fine grained argillaceous LIMESTONE with occassional beds of weak thinly laminated black calcaereous Mudstone. Partially to distinctly weathered with clay smearing. Rare calcite veins and pyritic lenses present.			
2.30							(1.10)	1.50m to 2.60m BGL - Two fracture sets; F1: 0 to 15 degrees very close to medium spaced planar smooth F2: 30 to 50 degrees close to medium planar to undulating smooth to rough			
2.60	90	48	21			70.58	2.60	Strong thinly laminated to thinly bedded dark grey fine grained argillaceous LIMESTONE with occassional beds of weak thinly laminated black calcaereous Mudstone. Partially weathered with clay smearing. Rare calcite veins and pyritic lenses present.			
3.80	92	92	24	12			(4.40)	2.60m to 7.00m BGL - One fracture set; F1: 30 to 50 degrees close to medium spaced planar smooth			
5.30	90	90	58	9							
5.75											
6.80	100	100				66.18	7.00	Complete at 7.00m			
7.00											

Remarks
Groundwater strike at 1.00m BGL
Complete at 7.00m BGL
50mm slotted standpipe with pea gravel surround installed from 7.00m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.BH-RC07

Ground Investigations Ireland Ltd
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Site	Borehole Number
GIL, Profile Park	BH-RC08

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Percussive Borehole with Rotary Core Follow on	88mm cased to 3.00m 68mm cased to 3.60m 96mm cased to 9.80m	74.94	GIL	11930-06-22
	Location (dGPS) 703854.9 E 730502.2 N	**Dates** 29/06/2022-12/07/2022	**Engineer** Centrica	**Sheet** 1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-2.00 0.10-0.65					ES B	74.84	0.10 (0.55)	TOPSOIL MADE GROUND: Dark brown slightly sandy gravelly Clay with occasional fragments of concrete			
0.65-2.10					B	74.29	0.65	MADE GROUND: Grey slightly sandy gravelly Clay with occasional fragments of concrete and granular fill			
1.00-1.45					4,5/5,5,4,6 SPT(C) N=20		(1.45)				
2.00-2.45 2.10-3.10					4,3/6,10,10,11 SPT(C) N=37 B	72.84	2.10	Stiff dark brown mottled grey slightly sandy slightly gravelly CLAY			
2.50					ES		(1.00)				
3.00-3.45 3.10-3.60 3.20					2,2/3,4,4,5 SPT(C) N=16 B ES Seepage(1) at 3.40m.	71.84	3.10 (0.50)	Stiff dark grey slightly sandy slightly gravelly CLAY		▽1	
3.60 3.60-3.98	90	0	0	NI	10,16/14,15,20,1 SPT(C) 50/225	71.34	3.60	Driller notes possible weathered bedrock. Recovered as cobbles and boulders of thinly bedded dark grey Limestone and Mudstone with black slightly sandy slightly gravelly Clay. 3.60m to 5.50m BGL - Mostly non intact			
5.30 5.50	97	94	73	7		69.44	(1.90) 5.50	Medium strong to strong thinly bedded dark grey fine grained argillaceous LIMESTONE with beds of weak thinly laminated black calcaereous Mudstone. Partially weathered with clay smearing. Rare calcite veins and pyrite lenses present.			
6.80 7.00	100	100	15				(4.30)				
8.30	100	93	38	13				5.50m to 9.80m BGL - Two fracture sets; F1: 20 to 40 degrees closely to widely spaced planar rough to smooth. F2: 60 to 90 degrees widely to very widely spaced planar rough to smooth			
9.80						65.14	9.80	Complete at 9.80m			

Remarks
Groundwater strike at 3.40m BGL
Complete at 9.80m BGL
50mm slotted standpipe with pea gravel surround installed from 9.80m BGL to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL with a raised cover.

Scale (approx)	Logged By
1:50	FOD

Figure No.
11930-06-22.RC08

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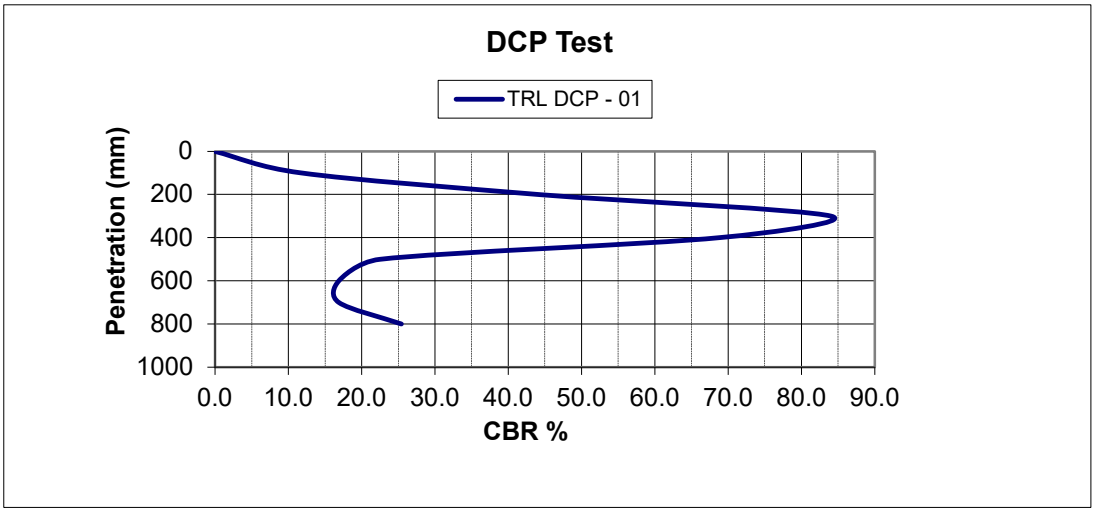
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 01
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	6	16.7	11.7
200	17	5.9	44.4
300	28	3.6	84.0
400	24	4.2	69.0
500	10	10.0	22.5
600	8	12.5	16.9
700	8	12.5	16.9
800	11	9.1	25.4
900	7	14.3	14.2
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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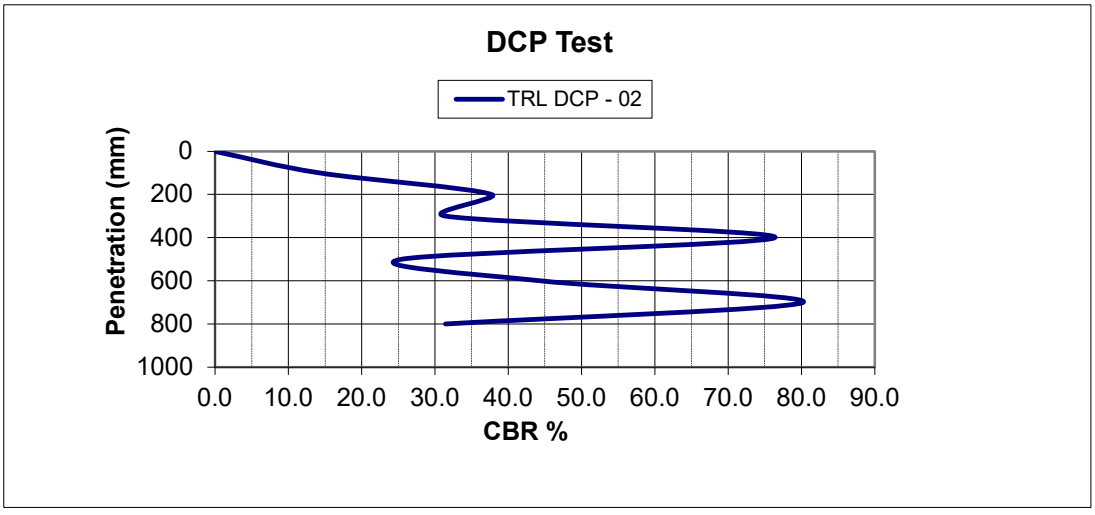
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 02
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	7	14.3	14.2
200	15	6.7	37.8
300	13	7.7	31.5
400	26	3.8	76.4
500	11	9.1	25.4
600	17	5.9	44.4
700	27	3.7	80.2
800	13	7.7	31.5
900	14	7.1	34.6
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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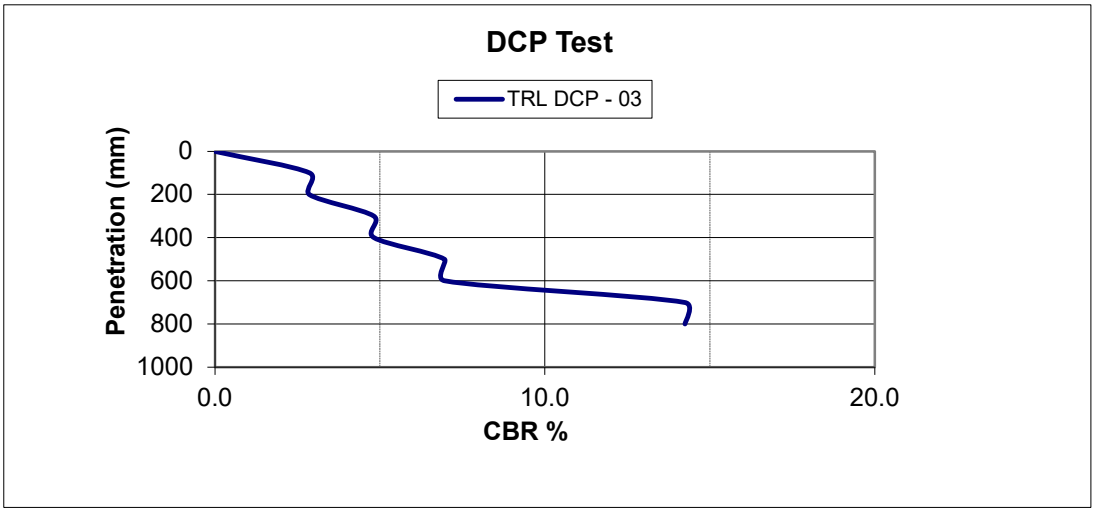
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 03
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	2	50.0	2.9
200	2	50.0	2.9
300	3	33.3	4.8
400	3	33.3	4.8
500	4	25.0	7.0
600	4	25.0	7.0
700	7	14.3	14.2
800	7	14.3	14.2
900	9	11.1	19.7
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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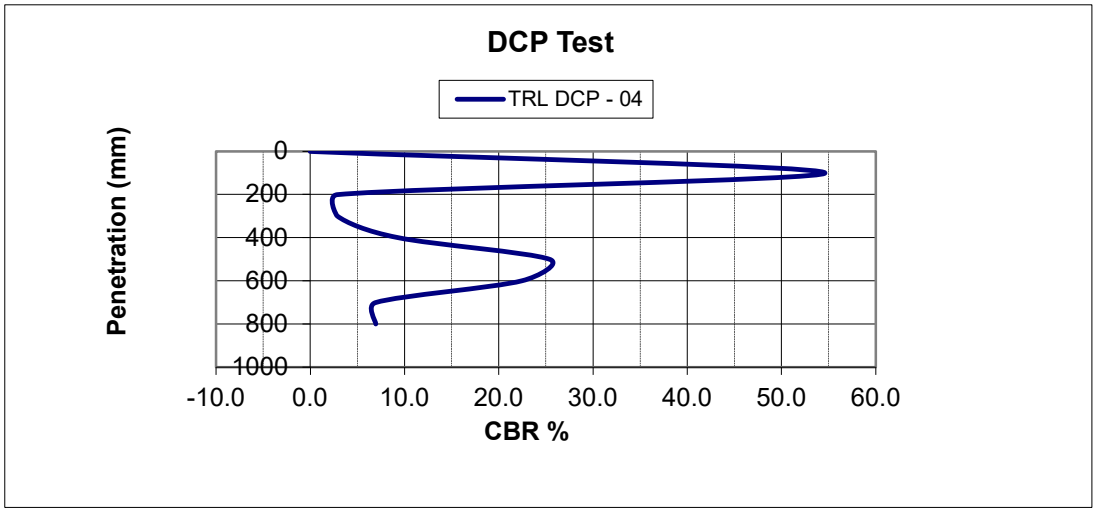
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 04
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	20	5.0	54.6
200	2	50.0	2.9
300	2	50.0	2.9
400	5	20.0	9.3
500	11	9.1	25.4
600	10	10.0	22.5
700	4	25.0	7.0
800	4	25.0	7.0
900	5	20.0	9.3
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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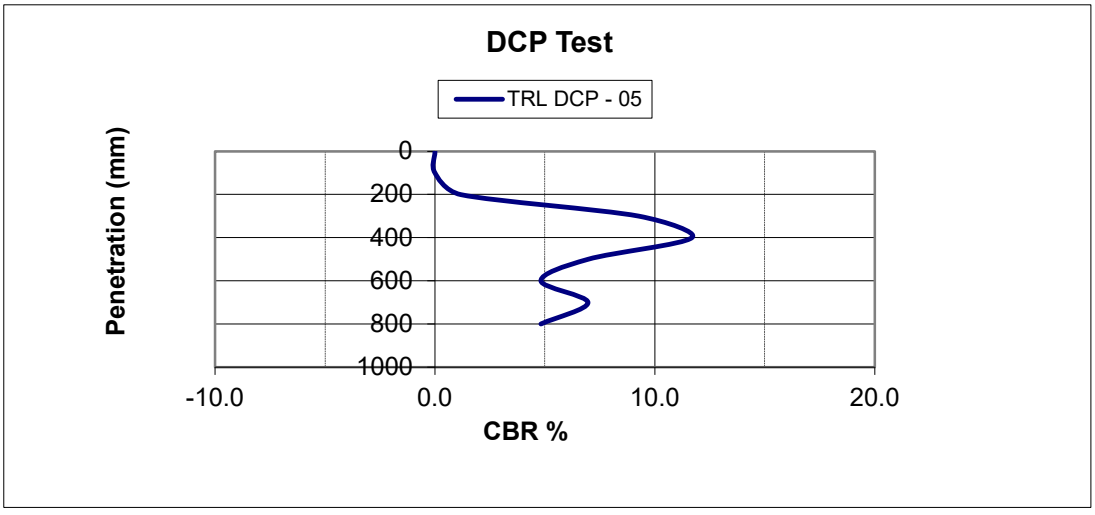
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 05
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	0	#DIV/0!	#DIV/0!
200	1	100.0	1.2
300	5	20.0	9.3
400	6	16.7	11.7
500	4	25.0	7.0
600	3	33.3	4.8
700	4	25.0	7.0
800	3	33.3	4.8
900	5	20.0	9.3
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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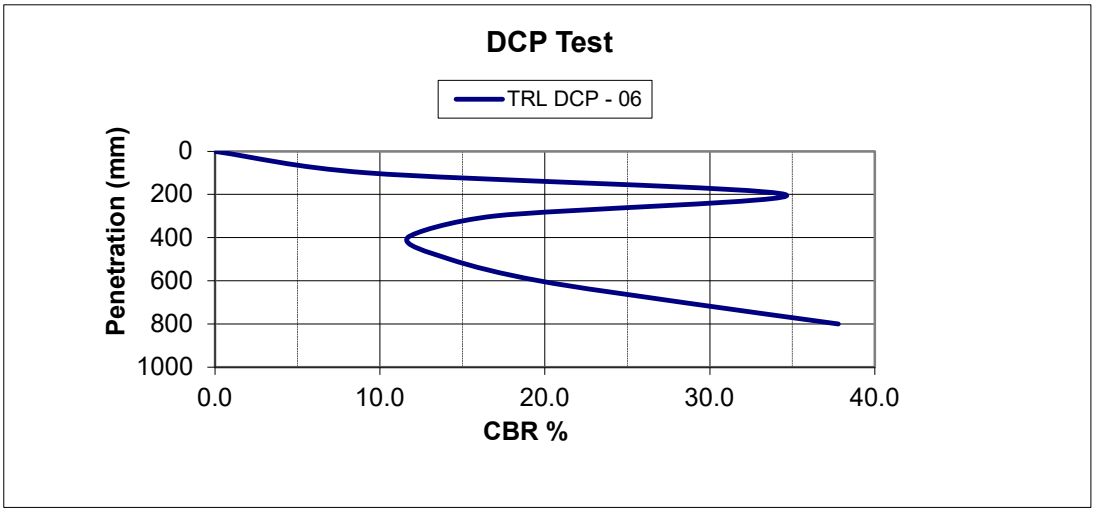
Job Name	GIL Profile Park	**Test Type**	Dynamic Cone Penetration Test
Job No.	11930-06-22	**Test Reference**	TRL DCP - 06
Client	GIL	**By**	S Graydon
Engineer	Centrica	**Date**	24/07/2022
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	5	20.0	9.3
200	14	7.1	34.6
300	8	12.5	16.9
400	6	16.7	11.7
500	7	14.3	14.2
600	9	11.1	19.7
700	12	8.3	28.4
800	15	6.7	37.8
900	13	7.7	31.5
1000	-		
1100	-		
1200	-		
1300	-		
1400	-		
1500	-		

Reference **Kleyn and Van Heerden (60° Cone)**
Formula Log10 (CBR) = 2.632 - 1.28 Log10 (mm/blow)



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Attention :	Barry Sexton
Date :	15th July, 2022
Your reference :	-
Our reference :	Test Report 22/10562 Batch 1
Location :	Profile Park
Date samples received :	28th June, 2022
Status :	Final Report
Issue :	1

Eighteen samples were received for analysis on 28th June, 2022 of which fifteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	25-28	33-36	37-40	41-44	49-52	LOD/LOR	Units	Method No.
Sample ID	TP01	TP01	TP02	TP02	TP03	TP04	TP05	TP05	TP06	SP01			
Depth	0.50	1.00	0.50	1.00	0.50	0.00-1.30	0.40	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022			
Antimony	1	-	1	-	3	2	2	-	2	3	<1	mg/kg	TM30/PM15
Arsenic #	5.1	-	7.5	-	14.2	43.9	10.4	-	13.8	11.9	<0.5	mg/kg	TM30/PM15
Barium #	34	-	33	-	49	336	66	-	94	40	<1	mg/kg	TM30/PM15
Cadmium #	0.6	-	0.8	-	2.6	2.2	1.4	-	1.6	1.6	<0.1	mg/kg	TM30/PM15
Chromium #	23.3	-	25.6	-	29.6	36.3	30.9	-	38.3	20.3	<0.5	mg/kg	TM30/PM15
Copper #	17	-	24	-	36	42	25	-	24	28	<1	mg/kg	TM30/PM15
Lead #	7	-	11	-	17	48	16	-	18	18	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.4	-	3.3	-	4.8	3.5	3.5	-	4.4	5.5	<0.1	mg/kg	TM30/PM15
Nickel #	28.7	-	43.1	-	49.1	38.9	38.9	-	39.6	40.1	<0.7	mg/kg	TM30/PM15
Selenium #	1	-	1	-	3	1	1	-	2	4	<1	mg/kg	TM30/PM15
Sulphur as S	-	-	-	-	-	-	-	-	-	0.74	<0.01	%	TM30/PM15
Total Sulphate as SO4 BRE	-	-	-	-	-	-	-	-	-	0.99	<0.01	%	TM50/PM29
Zinc #	41	-	59	-	109	308	71	-	89	85	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	-	<0.04	-	<0.04	<0.04	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	-	<0.03	-	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	-	<0.04	-	<0.04	<0.04	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	-	<0.03	-	<0.03	<0.03	<0.03	-	<0.03	0.04	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	-	<0.04	-	<0.04	<0.04	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	-	<0.03	-	<0.03	0.06	<0.03	-	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	-	<0.03	-	<0.03	0.04	<0.03	-	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	-	<0.06	-	<0.06	0.08	<0.06	-	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	-	<0.02	-	<0.02	0.04	<0.02	-	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	-	<0.07	-	<0.07	0.10	<0.07	-	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	-	<0.04	-	<0.04	0.06	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	-	<0.04	-	<0.04	0.07	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	-	<0.04	-	<0.04	<0.04	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	-	<0.04	-	<0.04	0.06	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	-	<0.04	-	<0.04	<0.04	<0.04	-	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	-	<0.22	-	<0.22	0.35	<0.22	-	<0.22	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	-	<0.64	-	<0.64	<0.64	<0.64	-	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	-	<0.05	-	<0.05	0.07	<0.05	-	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	-	<0.02	-	<0.02	0.03	<0.02	-	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	-	<1	-	<1	<1	<1	-	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	107	-	106	-	93	101	105	-	107	108	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	-	<30	-	<30	<30	<30	-	<30	<30	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	25-28	33-36	37-40	41-44	49-52	LOD/LOR	Units	Method No.
Sample ID	TP01	TP01	TP02	TP02	TP03	TP04	TP05	TP05	TP06	SP01			
Depth	0.50	1.00	0.50	1.00	0.50	0.00-1.30	0.40	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022			
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	<4	-	<4	-	<4	<4	<4	-	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	-	<26	-	<26	<26	<26	-	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	-	<10	-	<10	<10	<10	-	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	-	<10	-	<10	<10	<10	-	<10	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	-	<4	-	<4	<4	<4	-	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	-	<7	-	<7	<7	<7	-	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	-	<26	-	<26	<26	<26	-	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	-	<52	-	<52	<52	<52	-	<52	<52	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	<0.1	-	<0.1	-	<0.1	<0.1 SV	<0.1	-	<0.1	<0.1 SV	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	-	<10	-	<10	<10	<10	-	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	-	<10	-	<10	<10	<10	-	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
Benzene#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
Toluene#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
m/p-Xylene#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
o-Xylene#	<5	-	<5	-	<5	<5 SV	<5	-	<5	<5 SV	<5	ug/kg	TM36/PM12
PCB 28#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 52#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 101#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 118#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 138#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 153#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 180#	<5	-	<5	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs#	<35	-	<35	-	<35	<35	<35	-	<35	<35	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	25-28	33-36	37-40	41-44	49-52	LOD/LOR	Units	Method No.
Sample ID	TP01	TP01	TP02	TP02	TP03	TP04	TP05	TP05	TP06	SP01			
Depth	0.50	1.00	0.50	1.00	0.50	0.00-1.30	0.40	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022	23/06/2022	23/06/2022	23/06/2022	24/06/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022			
Natural Moisture Content	13.0	-	13.0	-	13.4	10.7	15.1	-	17.4	10.9	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.5	-	11.5	-	11.8	9.6	13.1	-	14.8	9.8	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	-	<0.3	-	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0103	-	0.0140	-	-	-	0.0082	-	1.5730	<0.0015	g/l	TM38/PM20
Chromium III	23.3	-	25.6	-	29.6	36.3	30.9	-	38.3	20.3	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.31	-	0.73	-	0.40	0.14	0.39	-	0.26	0.87	<0.02	%	TM21/PM24
pH #	8.68	8.78	8.66	8.68	8.46	8.05	8.57	8.78	8.28	7.85	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1058	-	0.1247	-	0.1048	0.1007	0.0997	-	0.1033	0.0976		kg	NONE/PM17
Mass of dried test portion	0.09	-	0.09	-	0.09	0.09	0.09	-	0.09	0.09		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	53-56	57-60	61-64	65-68	69-72							
Sample ID	SP02	SP03	SP04	SP05	SP06							
Depth												
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T							
Sample Date	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1							
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022							

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Antimony	3	2	2	3	3						<1	mg/kg	TM30/PM15
Arsenic #	9.7	14.8	13.2	10.5	11.1						<0.5	mg/kg	TM30/PM15
Barium #	35	85	93	42	42						<1	mg/kg	TM30/PM15
Cadmium #	1.5	1.8	1.6	1.8	1.5						<0.1	mg/kg	TM30/PM15
Chromium #	17.9	29.2	36.3	19.3	19.0						<0.5	mg/kg	TM30/PM15
Copper #	25	31	33	23	25						<1	mg/kg	TM30/PM15
Lead #	16	32	30	16	18						<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Molybdenum #	5.0	3.7	4.2	6.4	6.0						<0.1	mg/kg	TM30/PM15
Nickel #	37.9	42.9	42.7	38.0	40.4						<0.7	mg/kg	TM30/PM15
Selenium #	4	2	3	5	5						<1	mg/kg	TM30/PM15
Sulphur as S	0.62	0.06	0.09	0.60	0.32						<0.01	%	TM30/PM15
Total Sulphate as SO4 BRE	0.96	0.07	0.10	0.76	0.23						<0.01	%	TM50/PM29
Zinc #	75	108	128	90	82						<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.05	<0.03	<0.03	0.12	0.07						<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.03	<0.03	0.12	<0.03						<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.03	<0.03	0.09	<0.03						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06						<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	0.03	0.02	0.05	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	<0.22						<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64						<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1						<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	102	106	108	106	106						<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	<30	<30	<30	<30						<30	mg/kg	TM5/PM8/PM16

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	53-56	57-60	61-64	65-68	69-72						LOD/LOR	Units	Method No.
Sample ID	SP02	SP03	SP04	SP05	SP06								
Depth													
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022								
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	<4	<4	<4	<4	<4						<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4	<4	<4	<4						<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	<26						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	<52						<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV						<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
MTBE#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
Benzene#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
Toluene#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
Ethylbenzene#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
m/p-Xylene#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
o-Xylene#	<5 SV	<5 SV	<5 SV	<5 SV	<5 SV						<5	ug/kg	TM36/PM12
PCB 28#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 52#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 101#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 118#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 138#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 153#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 180#	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
Total 7 PCBs#	<35	<35	<35	<35	<35						<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	53-56	57-60	61-64	65-68	69-72								
Sample ID	SP02	SP03	SP04	SP05	SP06								
Depth													
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022								

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Natural Moisture Content	12.7	15.1	20.2	9.8	15.2						<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.3	13.1	16.8	8.9	13.2						<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3						<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	1.6514	0.0286	0.1177	1.7112	1.7141						<0.0015	g/l	TM38/PM20
Chromium III	17.9	29.2	36.3	19.3	19.0						<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.97	0.98	0.33	1.04	0.31						<0.02	%	TM21/PM24
pH #	7.82	8.47	7.76	7.97	7.77						<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1054	0.098	0.1042	0.0963	0.1007							kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09							kg	NONE/PM17

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	9-12	17-20	25-28	33-36	41-44	49-52	53-56	57-60	61-64	LOD/LOR	Units	Method No.
Sample ID	TP01	TP02	TP03	TP04	TP05	TP06	SP01	SP02	SP03	SP04			
Depth	0.50	0.50	0.50	0.00-1.30	0.40	0.50							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	24/06/2022	23/06/2022	23/06/2022	24/06/2022	23/06/2022	23/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022			
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0027	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.027	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	<0.003	0.055	<0.003	<0.003	0.024	0.024	0.004	0.009	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	<0.03	0.55	<0.03	<0.03	0.24	0.24	0.04	0.09	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.003	0.010	0.011	0.011	0.005	0.003	0.035	0.032	0.009	0.008	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.03	0.10	0.11	0.11	0.05	0.03	0.35	0.32	0.09	0.08	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.002	<0.002	0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.5	0.4	0.4	<0.3	0.5	0.5	<0.3	<0.3	0.5	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	5	4	4	<3	5	5	<3	<3	5	<3	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	1.2	2.1	3.8	67.6	1.0	<0.5	673.7	906.1	7.9	18.8	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	12	21	38	676	10	<5	6737	9059	79	188	<5	mg/kg	TM38/PM0
Chloride #	1.5	0.9	0.9	0.9	0.4	0.8	0.7	0.9	1.0	2.2	<0.3	mg/l	TM38/PM0
Chloride #	15	9	9	9	4	8	7	9	10	22	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2	<2	<2	<2	3	<2	<2	3	9	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20	<20	<20	<20	30	<20	<20	30	90	<20	mg/kg	TM60/PM0
pH	6.53	6.81	6.92	6.92	7.16	7.39	6.98	7.17	7.76	7.87	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	46	45	51	146	45	66	1091	1398	96	183	<35	mg/l	TM20/PM0
Total Dissolved Solids #	460	450	510	1461	450	660	10910	13978	960	1830	<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	65-68	69-72									LOD/LOR	Units	Method No.
Sample ID	SP05	SP06											
Depth													
COC No / misc													
Containers	V J T	V J T											
Sample Date	24/06/2022	24/06/2022											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	28/06/2022	28/06/2022											
Dissolved Antimony #	0.003	<0.002									<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.03	<0.02									<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025									<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025									<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.031	0.022									<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.31	0.22									<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005									<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005									<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015									<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015									<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007									<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07									<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005									<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05									<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.066	0.032									<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.66	0.32									<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002									<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02									<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	0.004	<0.003									<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	0.04	<0.03									<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.004									<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.04									<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001									<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001									<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01									<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1									<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3									<0.3	mg/l	TM173/PM0
Fluoride	<3	<3									<3	mg/kg	TM173/PM0
Sulphate as SO4 #	405.3	267.6									<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	4054	2676									<5	mg/kg	TM38/PM0
Chloride #	1.2	0.4									<0.3	mg/l	TM38/PM0
Chloride #	12	4									<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2									<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20									<20	mg/kg	TM60/PM0
pH	7.32	7.75									<0.01	pH units	TM73/PM0
Total Dissolved Solids #	694	460									<35	mg/l	TM20/PM0
Total Dissolved Solids #	6942	4600									<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	9-12	17-20	25-28	33-36	41-44	49-52	53-56	57-60	61-64						
Sample ID	TP01	TP02	TP03	TP04	TP05	TP06	SP01	SP02	SP03	SP04						
Depth	0.50	0.50	0.50	0.00-1.30	0.40	0.50										
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	24/06/2022	23/06/2022	23/06/2022	24/06/2022	23/06/2022	23/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1						
Date of Receipt	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	0.31	0.73	0.40	0.14	0.39	0.26	0.87	0.97	0.98	0.33	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025 SV	<0.025	<0.025	<0.025 SV	<0.025 SV	<0.025 SV	<0.025 SV	6	-	-	<0.025	mg/kg	TM36/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	0.35	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.027	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	<0.03	0.55	<0.03	<0.03	0.24	0.24	0.04	0.09	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03	0.10	0.11	0.11	0.05	0.03	0.35	0.32	0.09	0.08	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	460	450	510	1461	450	660	10910	13978	960	1830	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	<20	<20	<20	<20	30	<20	<20	30	90	500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	84.8	71.9	85.6	89.6	89.9	86.9	91.8	85.0	91.9	86.8	-	-	-	<0.1	%	NONE/PM4
Moisture Content 105C (% Dry Weight)	17.9	39.0	16.9	11.6	11.3	15.1	8.9	17.6	8.8	15.3	-	-	-	<0.1	%	PM4/PM0
pH #	8.68	8.66	8.46	8.05	8.57	8.28	7.85	7.82	8.47	7.76	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	4	4	<3	5	5	<3	<3	5	<3	10	150	500	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	12	21	38	676	10	<5	6737	9059	79	188	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	15	9	9	9	4	8	7	9	10	22	800	15000	25000	<3	mg/kg	TM38/PM0

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton
EMT Job No: 22/10562

Report : **EN12457_2**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	65-68	69-72									Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	SP05	SP06														
Depth																
COC No / misc																
Containers	V J T	V J T														
Sample Date	24/06/2022	24/06/2022														
Sample Type	Soil	Soil														
Batch Number	1	1														
Date of Receipt	28/06/2022	28/06/2022														
Solid Waste Analysis																
Total Organic Carbon #	1.04	0.31									3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 SV	<0.025 SV									6	-	-	<0.025	mg/kg	TM36/PM12
Sum of 7 PCBs #	<0.035	<0.035									1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30									500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22									-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64									100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025									0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.31	0.22									20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005									0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015									0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07									2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001									0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.66	0.32									0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02									0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05									0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.03	<0.02									0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	0.04	<0.03									0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.04									4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	6942	4600									4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	<20									500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	93.5	89.1									-	-	-	<0.1	%	NONE/PM4
Moisture Content 105C (% Dry Weight)	7.0	12.3									-	-	-	<0.1	%	PM4/PM0
pH #	7.97	7.77									-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1									1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3									10	150	500	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	4054	2676									1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	12	4									800	15000	25000	<3	mg/kg	TM38/PM0

Client Name: Ground Investigations Ireland

Reference: -

Location: Profile Park

Contact: Barry Sexton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/10562	1	TP01	0.50	1-4	No Interpretation Possible
22/10562	1	TP02	0.50	9-12	No Interpretation Possible
22/10562	1	TP03	0.50	17-20	No Interpretation Possible
22/10562	1	TP04	0.00-1.30	25-28	No Interpretation Possible
22/10562	1	TP05	0.40	33-36	No Interpretation Possible
22/10562	1	TP06	0.50	41-44	No Interpretation Possible
22/10562	1	SP01		49-52	No Interpretation Possible
22/10562	1	SP02		53-56	No Interpretation Possible
22/10562	1	SP03		57-60	No Interpretation Possible
22/10562	1	SP04		61-64	No Interpretation Possible
22/10562	1	SP05		65-68	No Interpretation Possible
22/10562	1	SP06		69-72	No Interpretation Possible

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/10562	1	TP01	0.50	4	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Brown soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	TP02	0.50	12	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Brown soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	TP03	0.50	20	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Brown soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	TP04	0.00-1.30	28	Remigiusz Blichowski	11/07/2022	**General Description (Bulk Analysis)**	Brown sand
					Remigiusz Blichowski	11/07/2022	**Asbestos Fibres**	NAD
					Remigiusz Blichowski	11/07/2022	**Asbestos ACM**	NAD
					Remigiusz Blichowski	11/07/2022	**Asbestos Type**	NAD
22/10562	1	TP05	0.40	36	Anthony Carman	11/07/2022	**General Description (Bulk Analysis)**	Brown Soil
					Anthony Carman	11/07/2022	**Asbestos Fibres**	NAD
					Anthony Carman	11/07/2022	**Asbestos ACM**	NAD
					Anthony Carman	11/07/2022	**Asbestos Type**	NAD
22/10562	1	TP06	0.50	44	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Brown soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	SP01		52	Anthony Carman	11/07/2022	**General Description (Bulk Analysis)**	Brown Soil/Stones
					Anthony Carman	11/07/2022	**Asbestos Fibres**	NAD
					Anthony Carman	11/07/2022	**Asbestos ACM**	NAD
					Anthony Carman	11/07/2022	**Asbestos Type**	NAD
22/10562	1	SP02		56	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Grey soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/10562	1	SP03		60	Anthony Carman	11/07/2022	**General Description (Bulk Analysis)**	Brown Soil/Stones
					Anthony Carman	11/07/2022	**Asbestos Fibres**	NAD
					Anthony Carman	11/07/2022	**Asbestos ACM**	NAD
					Anthony Carman	11/07/2022	**Asbestos Type**	NAD
22/10562	1	SP04		64	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Brown soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	SP05		68	Matthew Turner	11/07/2022	**General Description (Bulk Analysis)**	Grey soil/Stone
					Matthew Turner	11/07/2022	**Asbestos Fibres**	NAD
					Matthew Turner	11/07/2022	**Asbestos ACM**	NAD
					Matthew Turner	11/07/2022	**Asbestos Type**	NAD
22/10562	1	SP06		72	Catherine Coles	12/07/2022	**General Description (Bulk Analysis)**	grey sand, clay
					Catherine Coles	12/07/2022	**Asbestos Fibres**	NAD
					Catherine Coles	12/07/2022	**Asbestos ACM**	NAD
					Catherine Coles	12/07/2022	**Asbestos Type**	NAD

Client Name: Ground Investigations Ireland
Reference: -
Location: Profile Park
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/10562						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/10562

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 22/10562

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.			AD	Yes

EMT Job No: 22/10562

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

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Ground Investigations Ireland
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Ireland

Attention :	James Cashen
Date :	26th July, 2022
Your reference :	11930-06-22
Our reference :	Test Report 22/11230 Batch 1
Location :	GIL Profile Park
Date samples received :	8th July, 2022
Status :	Final Report
Issue :	1

Nine samples were received for analysis on 8th July, 2022 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

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Company Registration No: 11371415

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen
EMT Job No: 22/11230

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	9-12	17-20	29							LOD/LOR	Units	Method No.
Sample ID	BH01	BH03	BH04	BH06									
Depth	0.00-0.70	0.45-1.20	0.90-1.30	1.00-1.40									
COC No / misc													
Containers	V J T	V J T	V J T	T									
Sample Date	05/07/2022	05/07/2022	05/07/2022	05/07/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	08/07/2022	08/07/2022	08/07/2022	08/07/2022									
Antimony	2	1	1	2							<1	mg/kg	TM30/PM15
Arsenic #	8.3	7.3	5.8	8.4							<0.5	mg/kg	TM30/PM15
Barium #	29	31	22	75							<1	mg/kg	TM30/PM15
Cadmium #	0.4	1.0	<0.1	1.9							<0.1	mg/kg	TM30/PM15
Chromium #	21.3	26.0	19.9	39.8							<0.5	mg/kg	TM30/PM15
Copper #	22	26	22	27							<1	mg/kg	TM30/PM15
Lead #	13	9	7	14							<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM30/PM15
Molybdenum #	3.0	4.2	2.7	6.1							<0.1	mg/kg	TM30/PM15
Nickel #	31.7	36.8	35.0	41.3							<0.7	mg/kg	TM30/PM15
Selenium #	1	<1	2	3							<1	mg/kg	TM30/PM15
Zinc #	51	60	34	75							<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06							<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.02	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22							<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64							<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1							<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	106	103	89	86							<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	<30	<30	<30							<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen
EMT Job No: 22/11230

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	9-12	17-20	29							LOD/LOR	Units	Method No.
Sample ID	BH01	BH03	BH04	BH06									
Depth	0.00-0.70	0.45-1.20	0.90-1.30	1.00-1.40									
COC No / misc													
Containers	V J T	V J T	V J T	T									
Sample Date	05/07/2022	05/07/2022	05/07/2022	05/07/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	08/07/2022	08/07/2022	08/07/2022	08/07/2022									
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	<0.2	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	<4	<4	<4	<4							<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26							<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10							<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10							<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4	<4	<4							<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26							<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52							<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10							<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10							<10	mg/kg	TM5/PM8/PM16
MTBE#	<5 SV	<5	<5 SV	<5							<5	ug/kg	TM36/PM12
Benzene#	<5 SV	<5	<5 SV	<5							<5	ug/kg	TM36/PM12
Toluene#	<5 SV	7	<5 SV	<5							<5	ug/kg	TM36/PM12
Ethylbenzene#	<5 SV	<5	<5 SV	<5							<5	ug/kg	TM36/PM12
m/p-Xylene#	<5 SV	<5	<5 SV	<5							<5	ug/kg	TM36/PM12
o-Xylene#	<5 SV	<5	<5 SV	<5							<5	ug/kg	TM36/PM12
PCB 28#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 52#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 101#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 118#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 138#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 153#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
PCB 180#	<5	<5	<5	<5							<5	ug/kg	TM17/PM8
Total 7 PCBs#	<35	<35	<35	<35							<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen
EMT Job No: 22/11230

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	9-12	17-20	29							LOD/LOR	Units	Method No.
Sample ID	BH01	BH03	BH04	BH06									
Depth	0.00-0.70	0.45-1.20	0.90-1.30	1.00-1.40									
COC No / misc													
Containers	V J T	V J T	V J T	T									
Sample Date	05/07/2022	05/07/2022	05/07/2022	05/07/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	08/07/2022	08/07/2022	08/07/2022	08/07/2022									
Natural Moisture Content	6.5	14.0	19.7	14.3							<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	6.1	12.3	16.5	12.5							<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3							<0.3	mg/kg	TM38/PM20
Chromium III	21.3	26.0	19.9	39.8							<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.76	0.23	0.76	0.31							<0.02	%	TM21/PM24
pH #	8.56	8.71	8.79	8.50							<0.01	pH units	TM73/PM11
Mass of raw test portion	0.0974	0.1051	0.1085	0.1001								kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09								kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen
EMT Job No: 22/11230

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	9-12	17-20	29							LOD/LOR	Units	Method No.
Sample ID	BH01	BH03	BH04	BH06									
Depth	0.00-0.70	0.45-1.20	0.90-1.30	1.00-1.40									
COC No / misc													
Containers	V J T	V J T	V J T	T									
Sample Date	05/07/2022	05/07/2022	05/07/2022	05/07/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	08/07/2022	08/07/2022	08/07/2022	08/07/2022									
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002							<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02							<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025							<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025							<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	<0.003	<0.003							<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005							<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005							<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015							<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015							<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007							<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07							<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005							<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05							<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.019	0.008	0.008	0.012							<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.19	0.08	0.08	0.12							<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002							<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02							<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003							<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003							<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03							<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001							<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001							<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01							<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	0.3							<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	<3							<3	mg/kg	TM173/PM0
Sulphate as SO4 #	18.4	<0.5	2.8	0.6							<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	184	<5	28	6							<5	mg/kg	TM38/PM0
Chloride #	1.0	0.7	0.8	0.7							<0.3	mg/l	TM38/PM0
Chloride #	10	7	8	7							<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	2	<2	<2	<2							<2	mg/l	TM60/PM0
Dissolved Organic Carbon	20	<20	<20	<20							<20	mg/kg	TM60/PM0
pH	6.82	6.95	6.95	6.93							<0.01	pH units	TM73/PM0
Total Dissolved Solids #	67	<35	37	49							<35	mg/l	TM20/PM0
Total Dissolved Solids #	670	<350	370	490							<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen
EMT Job No: 22/11230

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	9-12	17-20	29							Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	BH01	BH03	BH04	BH06												
Depth	0.00-0.70	0.45-1.20	0.90-1.30	1.00-1.40												
COC No / misc																
Containers	V J T	V J T	V J T	T												
Sample Date	05/07/2022	05/07/2022	05/07/2022	05/07/2022												
Sample Type	Soil	Soil	Soil	Soil												
Batch Number	1	1	1	1												
Date of Receipt	08/07/2022	08/07/2022	08/07/2022	08/07/2022												
Solid Waste Analysis																
Total Organic Carbon #	0.76	0.23	0.76	0.31							3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 SV	<0.025	<0.025 SV	<0.025							6	-	-	<0.025	mg/kg	TM36/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035							1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30							500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22							-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64							100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025							0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	<0.03	<0.03							20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005							0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015							0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07							2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001							0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.19	0.08	0.08	0.12							0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02							0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05							0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02							0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03							0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03							4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	670	<350	370	490							4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	20	<20	<20	<20							500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	92.7	85.5	83.1	90.4							-	-	-	<0.1	%	NONE/PM4
Moisture Content 105C (% Dry Weight)	7.9	16.9	20.4	10.6							-	-	-	<0.1	%	PM4/PM0
pH #	8.56	8.71	8.79	8.50							-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1							1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	<3	<3							10	150	500	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	184	<5	28	6							1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	10	7	8	7							800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 11930-06-22

Location: GIL Profile Park

Contact: James Cashen

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/11230	1	BH01	0.00-0.70	1-4	No Interpretation Possible
22/11230	1	BH03	0.45-1.20	9-12	No Interpretation Possible
22/11230	1	BH04	0.90-1.30	17-20	No Interpretation Possible
22/11230	1	BH06	1.00-1.40	29	No Interpretation Possible

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: GIL Profile Park
Contact: James Cashen

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/11230	1	BH01	0.00-0.70	4	Simon Postlewhite	18/07/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	18/07/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos Type**	NAD
22/11230	1	BH03	0.45-1.20	12	Simon Postlewhite	18/07/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	18/07/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos Type**	NAD
22/11230	1	BH04	0.90-1.30	20	Simon Postlewhite	18/07/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	18/07/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos Type**	NAD
22/11230	1	BH06	1.00-1.40	29	Simon Postlewhite	18/07/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	18/07/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	18/07/2022	**Asbestos Type**	NAD

Client Name: Ground Investigations Ireland

Reference: 11930-06-22

Location: GIL Profile Park

Contact: James Cashen

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
22/11230	1	BH06	1.00-1.40	29	EPH	Sample received in inappropriate container

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/11230

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 22/11230

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes

EMT Job No: 22/11230

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	James Cashen
Date :	10th August, 2022
Your reference :	11930-06-22
Our reference :	Test Report 22/12300 Batch 1
Location :	Profile Park
Date samples received :	28th July, 2022
Status :	Final Report
Issue :	1

Eight samples were received for analysis on 28th July, 2022 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: Profile Park
Contact: James Cashen
EMT Job No: 22/12300

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48			LOD/LOR	Units	Method No.
Sample ID	BH - 01	BH - 02	BH - 03	BH - 04	BH - 05	BH - 06	BH - 07	BH - 08					
Depth													
COC No / misc													
Containers	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G					
Sample Date	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022					
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022					
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5	4.3	<2.5	<2.5	<2.5			<2.5	ug/l	TM30/PM14
Dissolved Boron	40	28	23	37	42	45	27	32			<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5	1.7	<1.5	<1.5	<1.5			<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7	<7	<7	<7	<7			<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/l	TM30/PM14
Dissolved Manganese #	153	99	52	58	97	89	28	106			<2	ug/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM30/PM14
Dissolved Nickel #	6	7	9	4	5	8	3	3			<2	ug/l	TM30/PM14
Dissolved Phosphorus #	<5	<5	<5	<5	13	<5	<5	<5			<5	ug/l	TM30/PM14
Dissolved Potassium #	1.4	0.8	1.1	0.7	0.6	2.0	1.4	1.0			<0.1	mg/l	TM30/PM14
Dissolved Zinc #	4	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Acenaphthene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Fluorene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Phenanthrene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Anthracene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Fluoranthene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005			<0.005	ug/l	TM4/PM30
Pyrene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005			<0.005	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005			<0.005	ug/l	TM4/PM30
Chrysene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005			<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008			<0.008	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	ug/l	TM4/PM30
PAH 16 Total #	<0.173	<0.173	<0.173	<0.173	<0.173	<0.173	<0.173	<0.173			<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008			<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008			<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	69 SV	65 SV	62 SV	80	75	73	69 SV	79			<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	106	116	113	99	99	101	101	100			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	109	119	113	100	98	101	101	99			<0	%	TM15/PM10

Element Materials Technology

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Reference: 11930-06-22
Location: Profile Park
Contact: James Cashen
EMT Job No: 22/12300

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48			LOD/LOR	Units	Method No.
Sample ID	BH - 01	BH - 02	BH - 03	BH - 04	BH - 05	BH - 06	BH - 07	BH - 08					
Depth													
COC No / misc													
Containers	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G					
Sample Date	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022					
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022					
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/TM36/PM12/PM16/PM30
Phenol #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	mg/l	TM26/PM0
Sulphate as SO4 #	384.2	194.7	68.4	71.5	83.0	64.0	91.7	66.1			<0.5	mg/l	TM38/PM0
Chloride #	22.1	10.9	8.5	10.0	11.3	34.4	84.0	58.7			<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	0.4	0.4	0.5	0.4	0.7	1.3	1.2	0.4			<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	<0.02	<0.02	<0.02	<0.02	<0.02	0.37	<0.02	<0.02			<0.02	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	mg/l	TM89/PM0
Ammoniacal Nitrogen as NH3 #	0.09	0.08	0.13	0.07	0.05	0.12	0.05	0.07			<0.03	mg/l	TM38/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006			<0.006	mg/l	TM38/PM0
Electrical Conductivity @25C #	1217	796	555	679	742	654	900	788			<2	uS/cm	TM76/PM0
pH #	7.54	7.63	7.70	7.63	7.57	7.69	7.73	7.67			<0.01	pH units	TM73/PM0

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Client Name: Ground Investigations Ireland
Reference: 11930-06-22
Location: Profile Park
Contact: James Cashen
EMT Job No: 22/12300

VOC Report : **Liquid**

EMT Sample No.	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48			LOD/LOR	Units	Method No.
Sample ID	BH - 01	BH - 02	BH - 03	BH - 04	BH - 05	BH - 06	BH - 07	BH - 08					
Depth													
COC No / misc													
Containers	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G	V H HNUF P G					
Sample Date	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022	25/07/2022					
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022	28/07/2022					
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	106	116	113	99	99	101	101	100			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	109	119	113	100	98	101	101	99			<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 11930-06-22
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Contact: James Cashen

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/12300						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/12300

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/12300

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			

EMT Job No: 22/12300

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 258
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

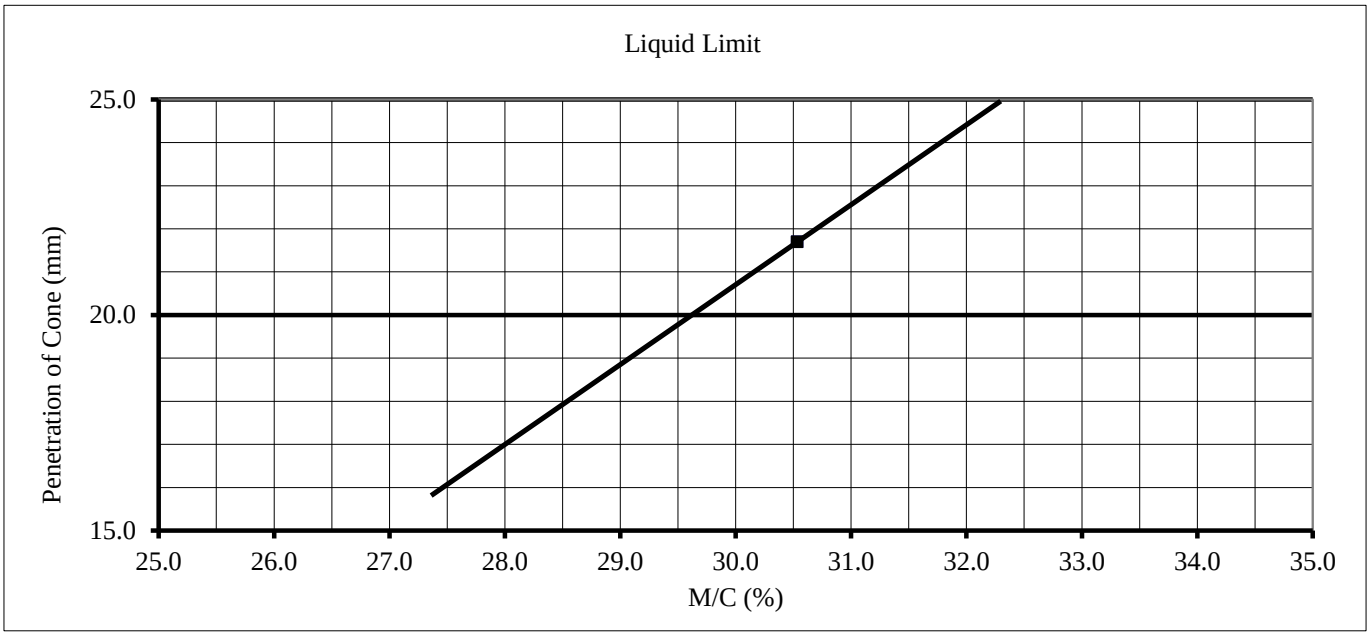
to BS EN 17892-12:2018

Report No. *SA258 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA258
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP01 _ @ 0.50m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP01 _ @ 0.50m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	45 **%**
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	30.5				19.9	19.9
Average Penetration	21.7				19.9	



Test	**Test Result**
Liquid Limit	**30**
Plastic Limit	**20**
Plastic Index	**10**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

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Results relate only to the sample tested and apply to sample as receieved.

*Sample information above has been provided by the client.

Signed: _____

Date: ____ 25/08/2022

Authorised signatories
G .Reilly -Laboratory Manager

for Geotechnical and Soil Testing Services .

End of Report

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 259
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

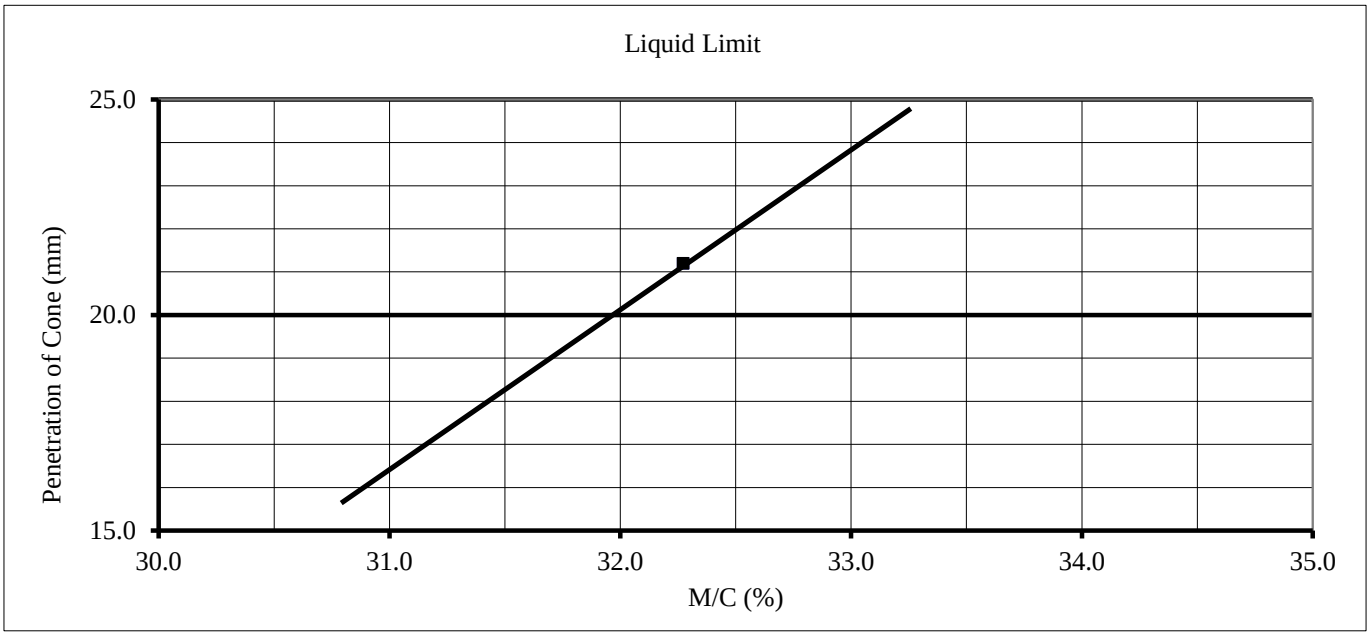
to BS EN 17892-12:2018

Report No. *SA259 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA259
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP02 _ @ 1.00m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP02 _ @ 1.00m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	51 %
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	32.3				19.0	18.4
Average Penetration	21.2				18.7	



Test	**Test Result**
Liquid Limit	**32**
Plastic Limit	**19**
Plastic Index	**13**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

Notes:

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Date: ____ 25/08/2022

Authorised signatories
G .Reilly -Laboratory Manager

for Geotechnical and Soil Testing Services .

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 262
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

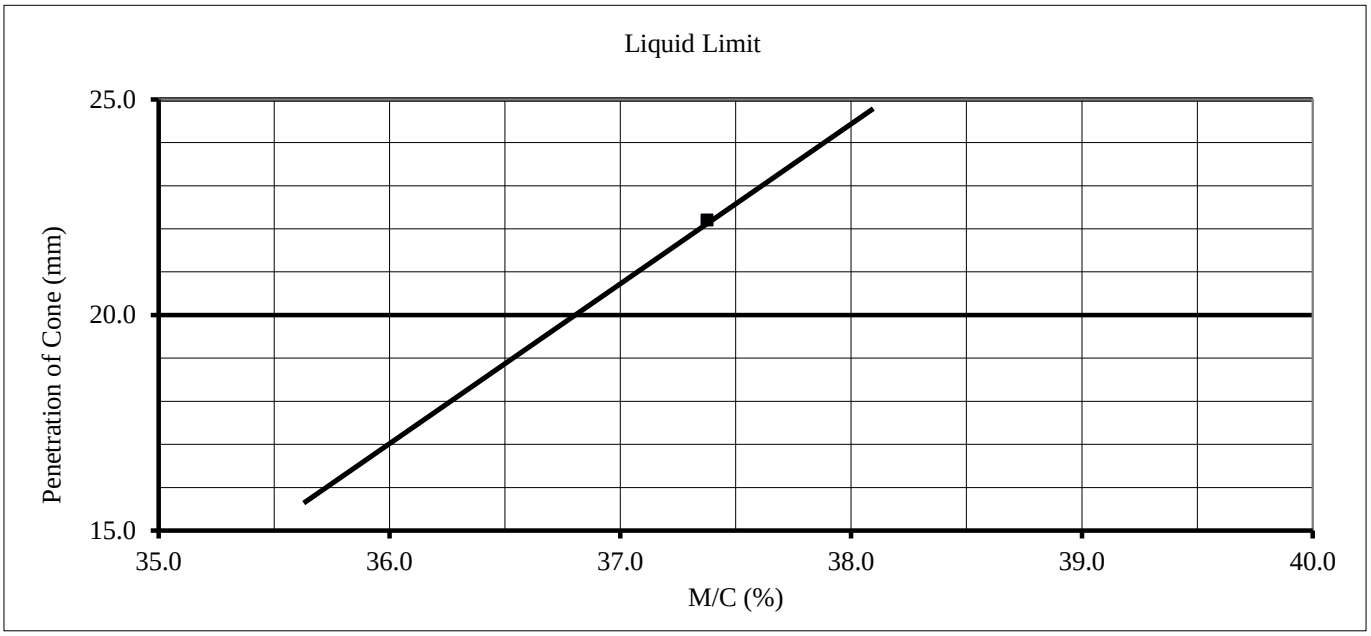
to BS EN 17892-12:2018

Report No. *SA262 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA262
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP04 _ @ 2.50m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP04 _ @ 2.50m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	43 %
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	37.4				21.1	20.8
Average Penetration	22.2				20.9	



Test	**Test Result**
Liquid Limit	**37**
Plastic Limit	**21**
Plastic Index	**16**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

Notes:

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Signed: _____

Date: ____ 25/08/2022

Authorised signatories
G .Reilly -Laboratory Manager

for Geotechnical and Soil Testing Services .

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 263
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

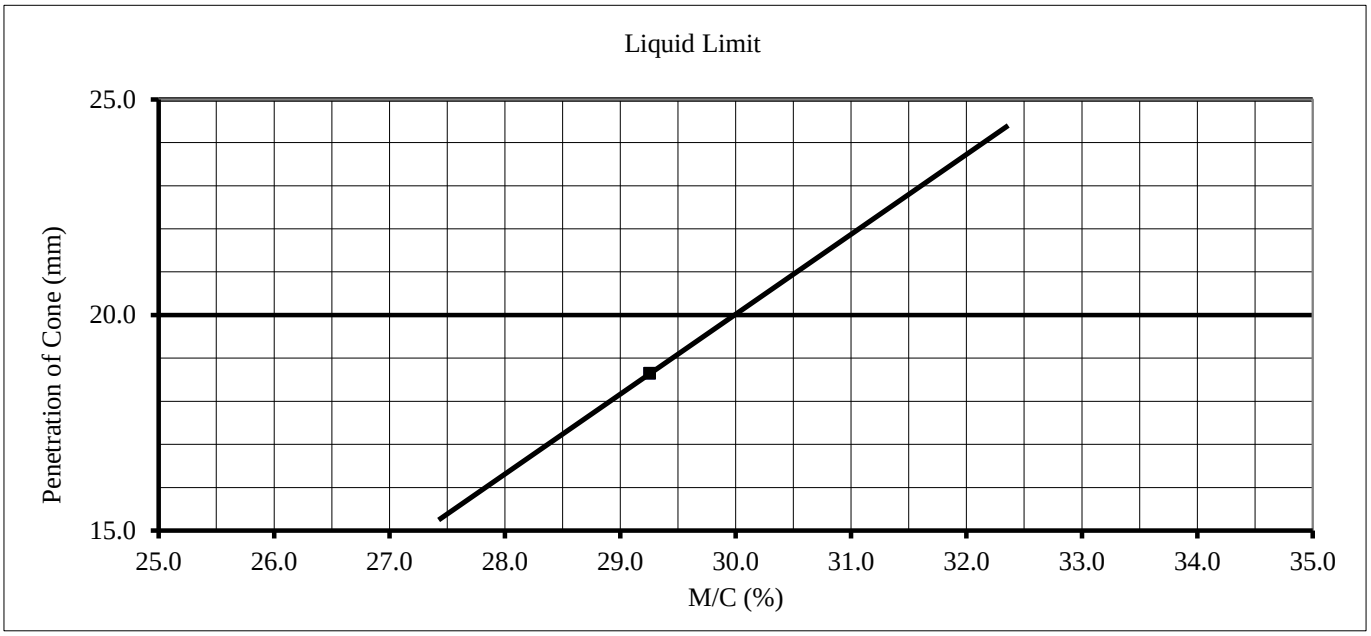
to BS EN 17892-12:2018

Report No. *SA263 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA263
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP04 _ @ 3.00m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP04 _ @ 3.00m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	83 **%**
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	29.3				16.9	16.5
Average Penetration	18.7				16.7	



Test	**Test Result**
Liquid Limit	**30**
Plastic Limit	**17**
Plastic Index	**13**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

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Notes:

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Signed: _____

Date: ____ 25/08/2022

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G .Reilly -Laboratory Manager

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 264
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

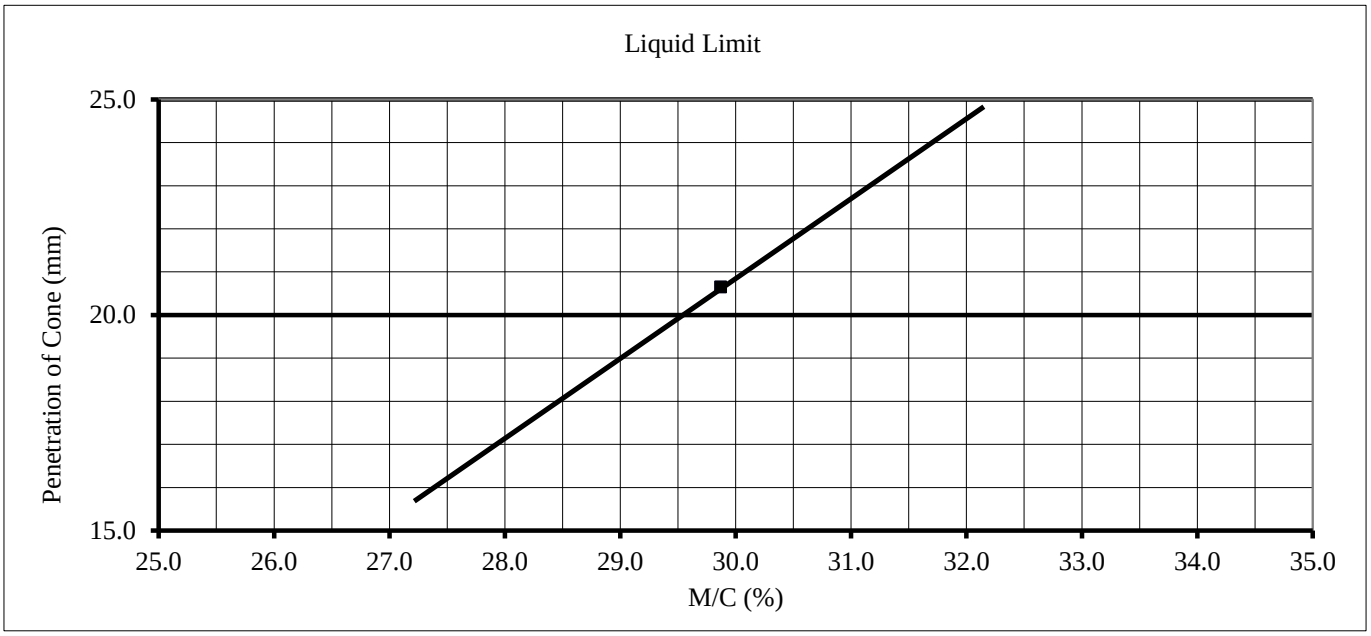
to BS EN 17892-12:2018

Report No. *SA264 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA264
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP05 _ @ 1.00m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP05 _ @ 1.00m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	61 %
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	29.9				20.7	20.5
Average Penetration	20.7				20.6	



Test	**Test Result**
Liquid Limit	**30**
Plastic Limit	**21**
Plastic Index	**9**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

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*Sample information above has been provided by the client.

Signed: _____

Date: ____ 25/08/2022

Authorised signatories
G .Reilly -Laboratory Manager

for Geotechnical and Soil Testing Services .

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Geotechnical and Soil Testing Services Ltd

Job No. GII 089
Sample No. SA 266
Contract: GIL Project Park
Client Ground Investigations Ireland
Address: Catherinestown Hazelhatch, Newcastle

Test Report for Determination of Liquid Limit & Plastic Limit

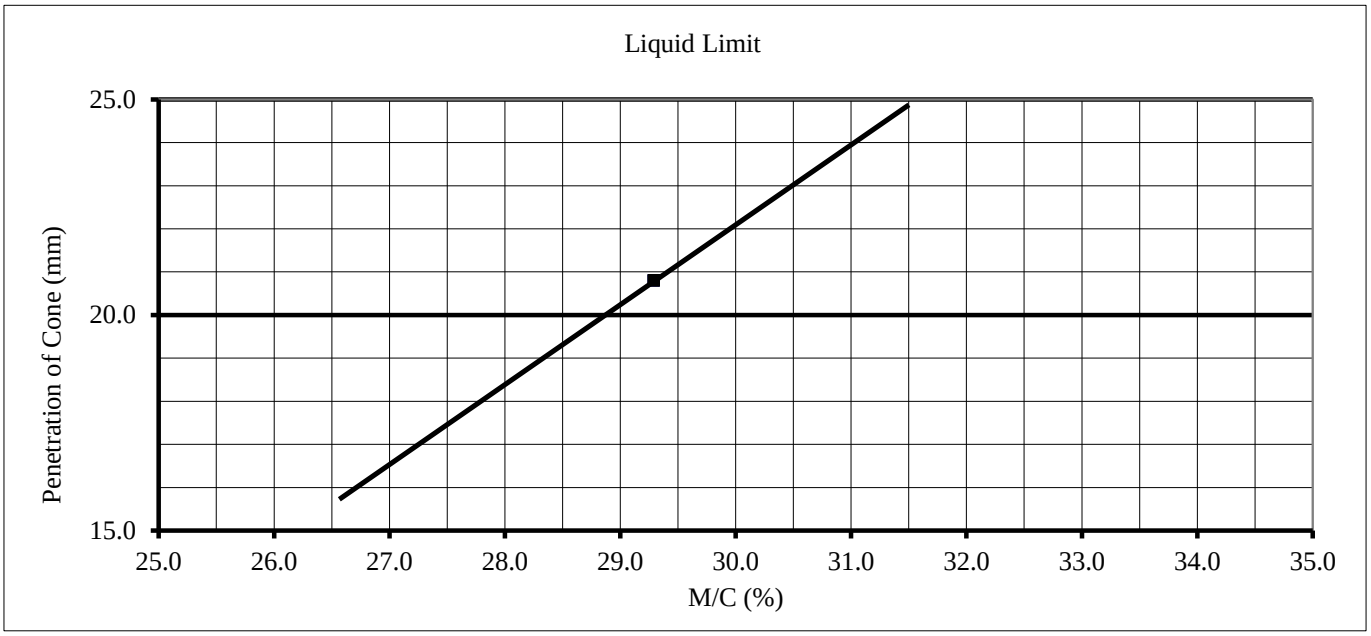
to BS EN 17892-12:2018

Report No. *SA266 PI*

Description of Soil	:	Silty, sandy, gravelly CLAY brown	**Sample Number**	:	SA266
Supplier *	:	Ground Investigation Ireland	**Site Ref. No. ***	:	TP06 _ @ 1.00m
Source *	:	GIL Profile Park	**Date Sampled ***	:	15/07/2022
Location *	:	TP06 _ @ 1.00m	**Date Received**	:	04/08/2022
Off-Set / Level (m) *	:	Trial Pit	**Date Tested**	:	25/08/22

Cone Type		30°	**Cone Penetration**	:	4 Point
Sample Preparation	:	Washed on 425 µm	**Passing 425µm**	:	58 **%**
History		Oven dried @ 50^{0}C	**Water Content Requirements**	:	Increasing

Type of Test	**Liquid Limit**				**Plastic Limit**	
Test No	**1**	**2**	**3**	**4**	**1**	**2**
Moisture Content (%)	29.3				15.9	16.0
Average Penetration	20.8				15.9	



Test	**Test Result**
Liquid Limit	**29**
Plastic Limit	**16**
Plastic Index	**13**
Linear Shrinkage	**ND**
Linear Shrinkage observation	

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Notes:

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*Sample information above has been provided by the client.

Signed: _____

Date: ____ 25/08/2022

Authorised signatories
G .Reilly -Laboratory Manager

for Geotechnical and Soil Testing Services .

End of Report

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Geotechnical and Soil Testing Services Ltd

Sample No. **SA 258**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

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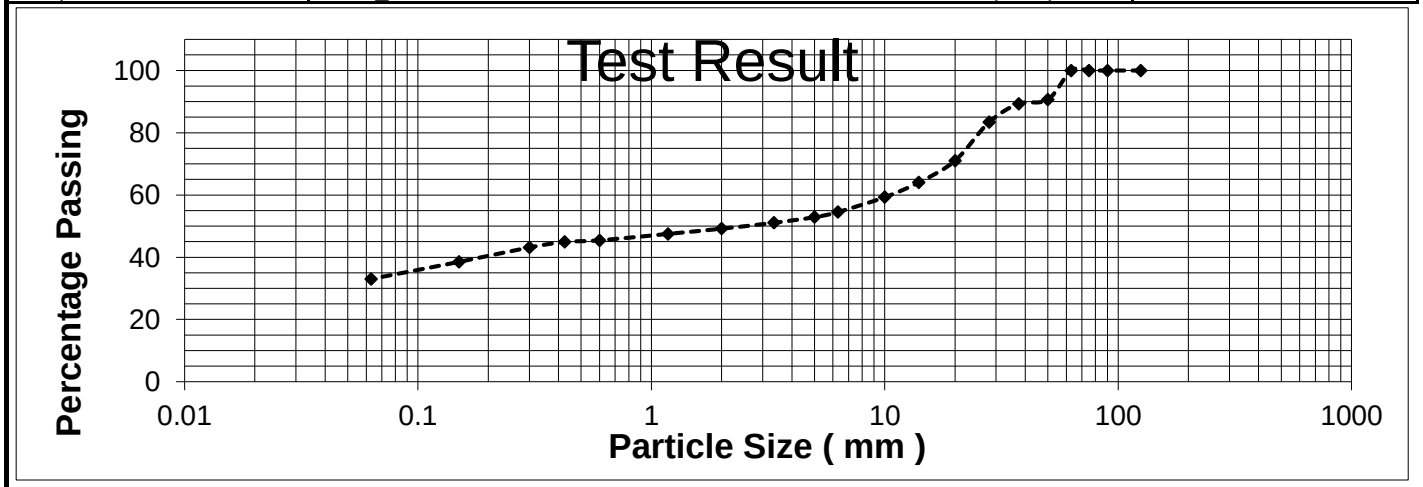
TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 258 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA258**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP01 _ @ 0.50m	Date Tested	11/08/22
Sample Ref. *	TP01 _ @ 0.50m	Moisture Content (All in)	13.1 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	33.0	16	51		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	91	
37.5 mm	89	
28 mm	83	
20 mm	71	
14 mm	64	
10 mm	59	
6.3 mm	55	
5 mm	53	
3.35 mm	51	
2 mm	49	
1.18 µm	48	
600 µm	45	
425 µm	45	
300 µm	43	
150 µm	39	
63 µm	**33.0**	

Sample Certificate No.: ***SA258***

Notes: This test report shall not be reproduced except in full,without the prior written approval of the laboratory.
Results relate only to the sample tested and apply to sample as receieved.
(*) Denotes Sample information above has been provided by the client.

Authorised signatories

Signed: _____
for Geotechnical and Soil Testing Services Ltd

Date: 25/08/2022

G . Reilly - Laboratory Manager

Page 1 of 1 **End of Report**

Old School Building
Ughtyneill
Moynalty
Co. Meath

Geotechnical and Soil Testing Services Ltd

Sample No. **SA 259**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

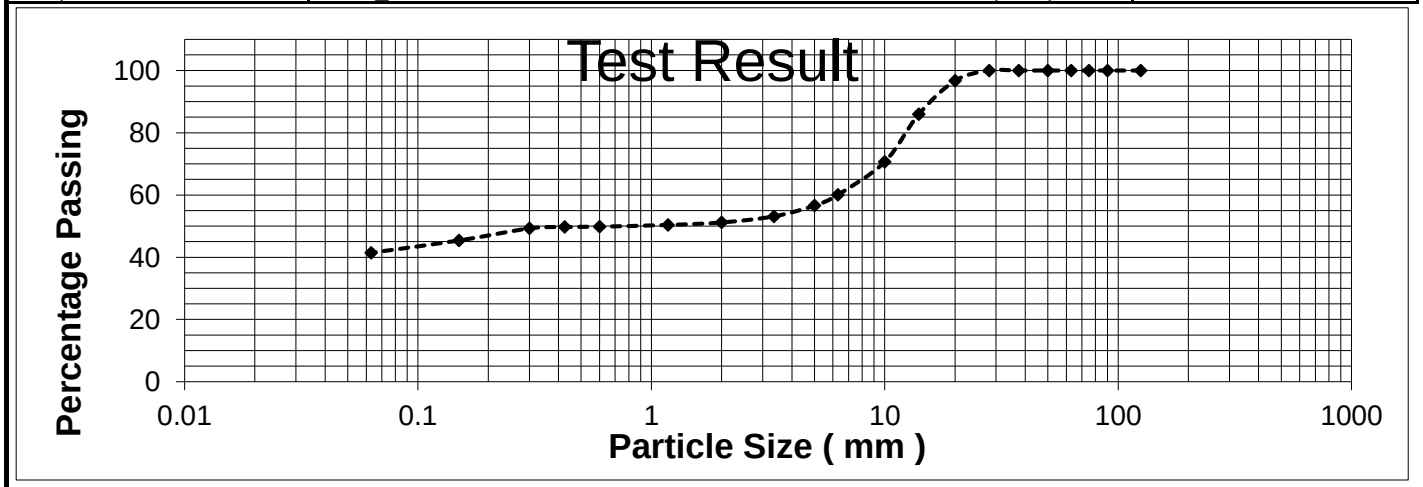
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 259 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA259**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP02 _ @ 1.00m	Date Tested	11/08/22
Sample Ref. *	TP02 _ @ 1.00m	Moisture Content (All in)	12.3 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	41.4	10	49		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	100	
20 mm	97	
14 mm	86	
10 mm	71	
6.3 mm	60	
5 mm	57	
3.35 mm	53	
2 mm	51	
1.18 µm	50	
600 µm	50	
425 µm	50	
300 µm	49	
150 µm	45	
63 µm	**41.4**	

Sample Certificate No.: ***SA259***

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Sample No. **SA 260**
Job No. **GII 089**
Client No. **C028**

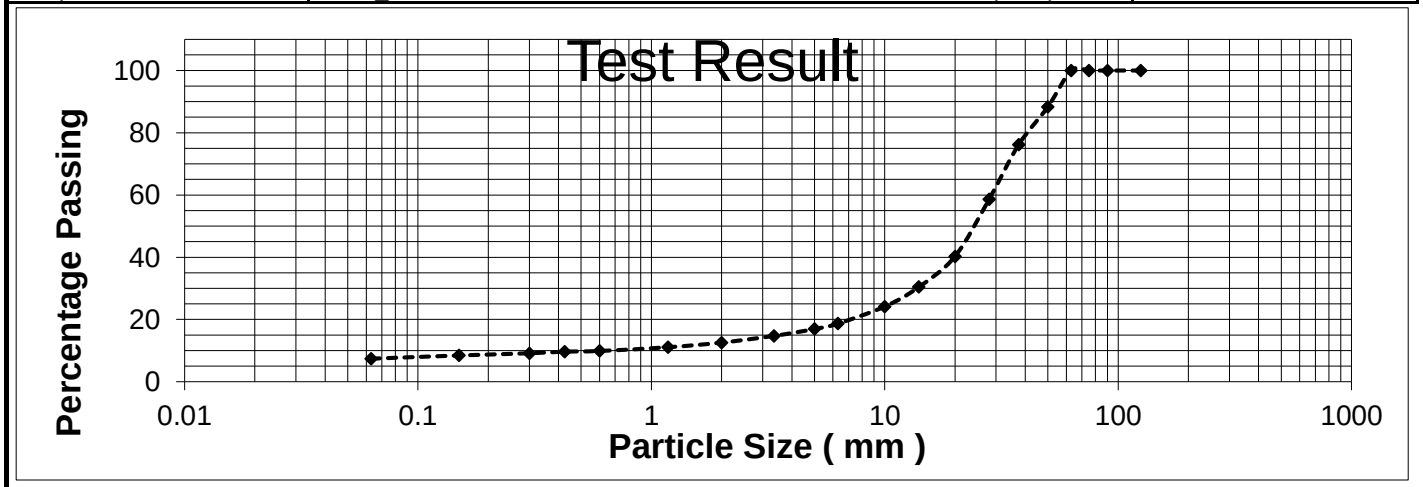
Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 260 PSD

Description of Soil	Silty, sandy,clayey GRAVEL brown	Sample Number	**SA260**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP02 _ @ 1.50m	Date Tested	11/08/22
Sample Ref. *	TP02 _ @ 1.50m	Moisture Content (All in)	4.7 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	7.4	5	87		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	88	
37.5 mm	76	
28 mm	59	
20 mm	40	
14 mm	30	
10 mm	24	
6.3 mm	19	
5 mm	17	
3.35 mm	15	
2 mm	13	
1.18 µm	11	
600 µm	10	
425 µm	10	
300 µm	9	
150 µm	8	
63 µm	**7.4**	

Sample Certificate No.: ***SA260***

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G . Reilly - Laboratory Manager

Page 1 of 1 **End of Report**

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Geotechnical and Soil Testing Services Ltd

Sample No. **SA 261**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

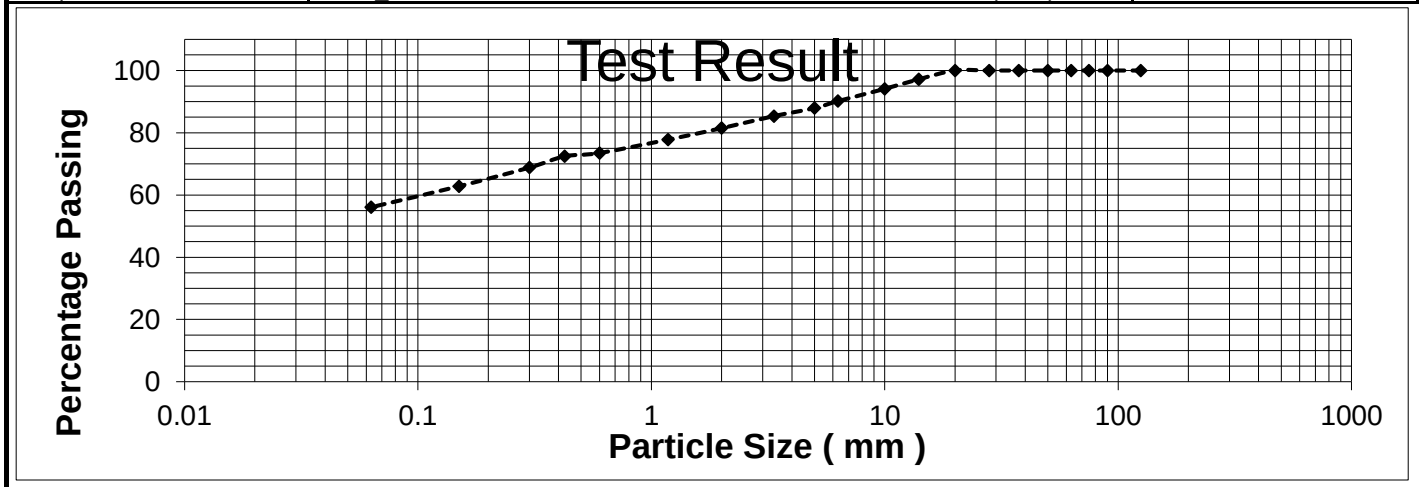
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 261 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA261**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP03 _ @ 0.50m	Date Tested	19/08/22
Sample Ref. *	TP03 _ @ 0.50m	Moisture Content (All in)	15.3 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	56.1	25	19		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	100	
20 mm	100	
14 mm	97	
10 mm	94	
6.3 mm	90	
5 mm	88	
3.35 mm	85	
2 mm	81	
1.18 µm	78	
600 µm	73	
425 µm	72	
300 µm	69	
150 µm	63	
63 µm	**56.1**	

Sample Certificate No.: ***SA261***

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Page 1 of 1 **End of Report**

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Geotechnical and Soil Testing Services Ltd

Sample No. **SA 262**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

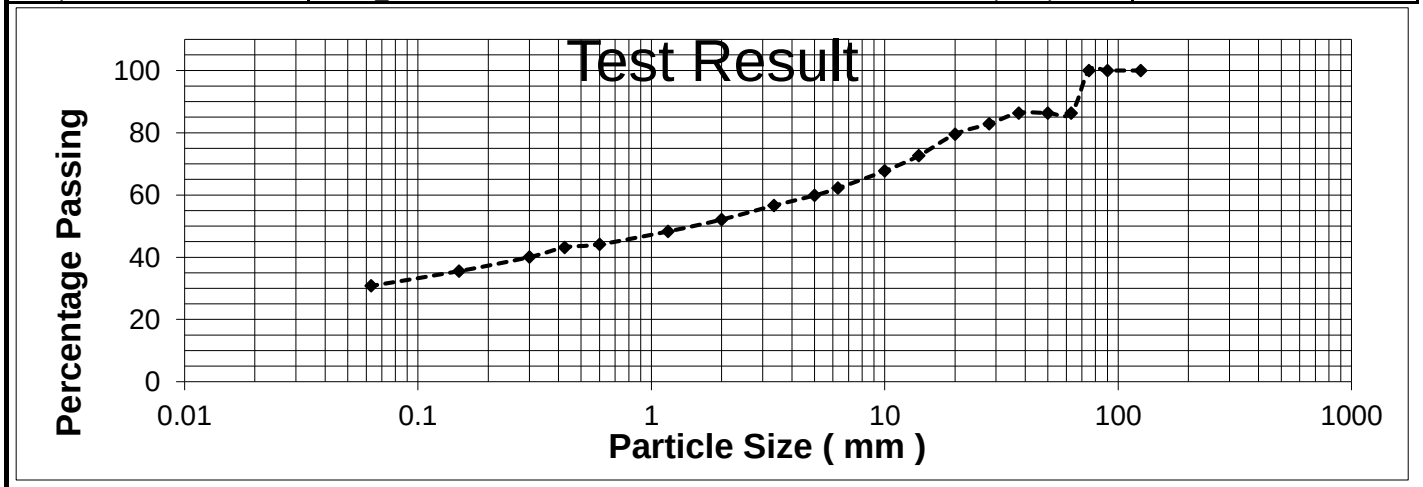
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 262 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA262**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP04 _ @ 2.50m	Date Tested	19/08/22
Sample Ref. *	TP04 _ @ 2.50m	Moisture Content (All in)	17.6 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	30.8	21	34	14	

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	86	
50 mm	86	
37.5 mm	86	
28 mm	83	
20 mm	80	
14 mm	73	
10 mm	68	
6.3 mm	62	
5 mm	60	
3.35 mm	57	
2 mm	52	
1.18 µm	48	
600 µm	44	
425 µm	43	
300 µm	40	
150 µm	36	
63 µm	**30.8**	

Sample Certificate No.: ***SA262***

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Page 1 of 1 **End of Report**

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Ughtyneill
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Sample No. **SA 263**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

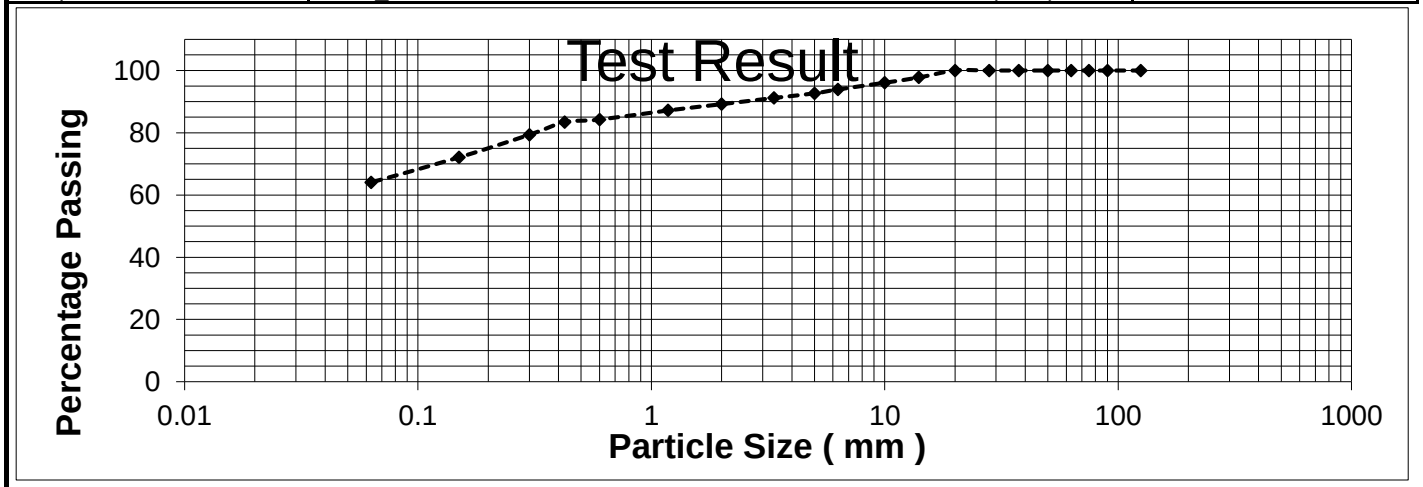
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 263 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA263**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP04 _ @ 3.00m	Date Tested	19/08/22
Sample Ref. *	TP04 _ @ 3.00m	Moisture Content (All in)	17.9 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	64.0	25	11		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	100	
20 mm	100	
14 mm	98	
10 mm	96	
6.3 mm	94	
5 mm	93	
3.35 mm	91	
2 mm	89	
1.18 µm	87	
600 µm	84	
425 µm	83	
300 µm	79	
150 µm	72	
63 µm	**64.0**	

Sample Certificate No.: ***SA263***

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Sample No. **SA 264**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

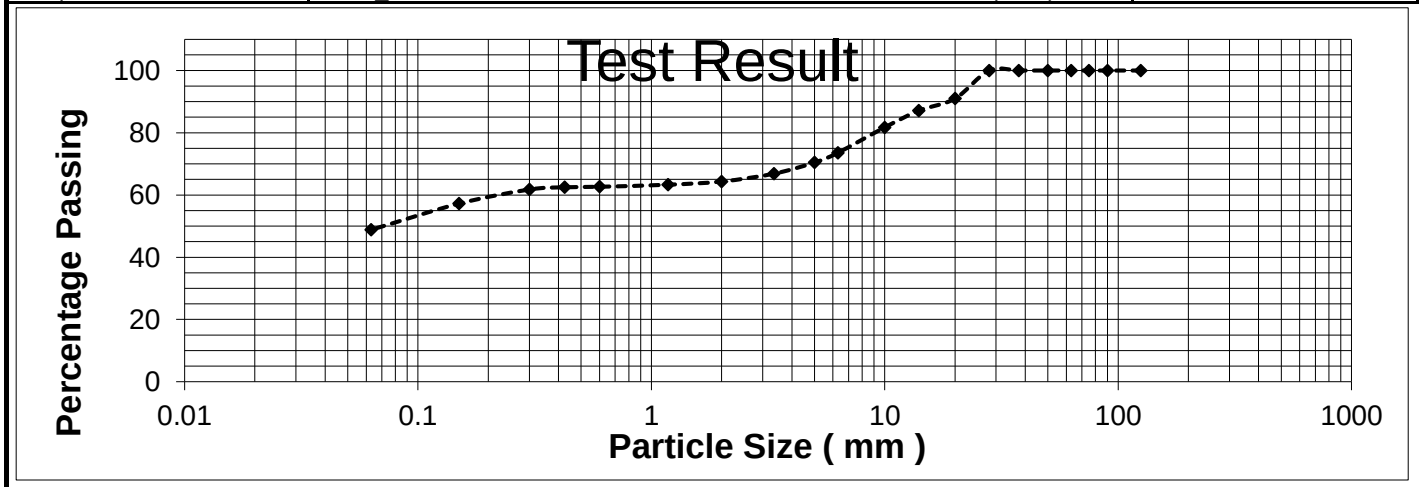
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 264 PSD

Description of Soil		Silty, sandy, gravelly CLAY brown	Sample Number	**SA264**
Supplier	*	Ground Investigation Ireland	Date Sampled	15/07/2022
Source	*	GIL Profile Park	Date Received	04/08/2022
Deposition	*	TP05 _ @ 1.00m	Date Tested	19/08/22
Sample Ref.	*	TP05 _ @ 1.00m	Moisture Content (All in)	15.7 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	48.8	16	36		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	100	
20 mm	91	
14 mm	87	
10 mm	82	
6.3 mm	74	
5 mm	70	
3.35 mm	67	
2 mm	64	
1.18 µm	63	
600 µm	63	
425 µm	62	
300 µm	62	
150 µm	57	
63 µm	**48.8**	

Sample Certificate No.: ***SA264***

Notes: This test report shall not be reproduced except in full,without the prior written approval of the laboratory.
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Geotechnical and Soil Testing Services Ltd

Sample No. **SA 265**
Job No. **GII 089**
Client No. **C028**

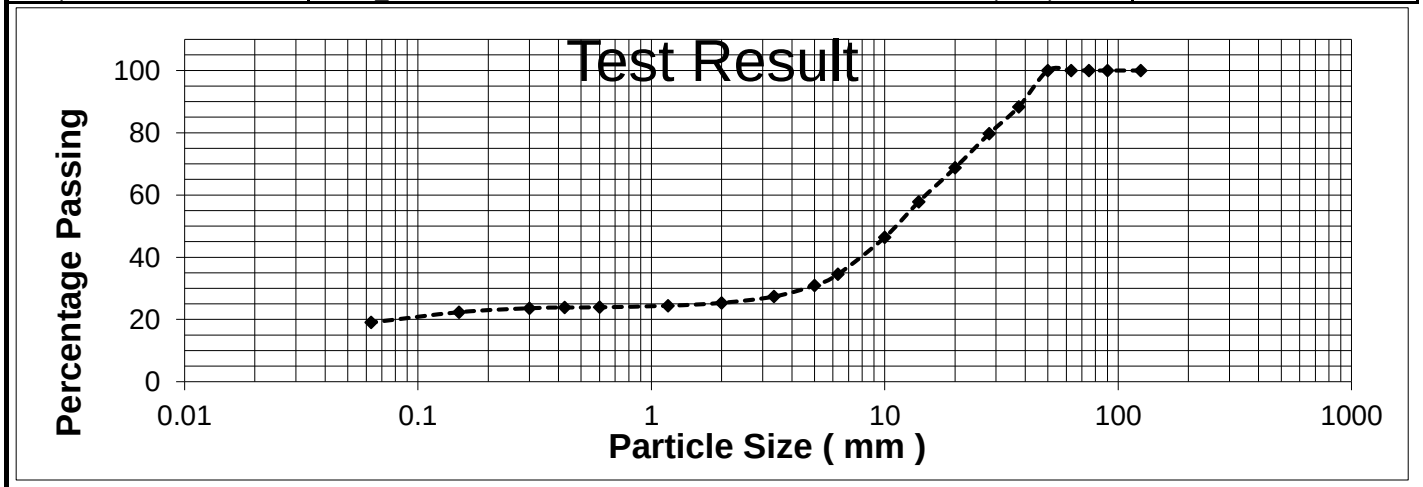
Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 265 PSD

Description of Soil	Silty, sandy, clayey GRAVEL, brown	Sample Number	**SA265**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP05 _ @ 1.50m	Date Tested	19/08/22
Sample Ref. *	TP05 _ @ 1.50m	Moisture Content (All in)	10.8 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	19.0	6	75		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	88	
28 mm	80	
20 mm	69	
14 mm	58	
10 mm	46	
6.3 mm	35	
5 mm	31	
3.35 mm	27	
2 mm	25	
1.18 µm	24	
600 µm	24	
425 µm	24	
300 µm	24	
150 µm	22	
63 µm	**19.0**	

Sample Certificate No.: ***SA265***

Notes: This test report shall not be reproduced except in full,without the prior written approval of the laboratory.
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Geotechnical and Soil Testing Services Ltd

Sample No. **SA 266**
Job No. **GII 089**
Client No. **C028**

Contract: GIL Project Park
Client: Ground Investigations Ireland
Client address: Catherinestown House
Hazelhatch Road
Newcastle D22 YD52

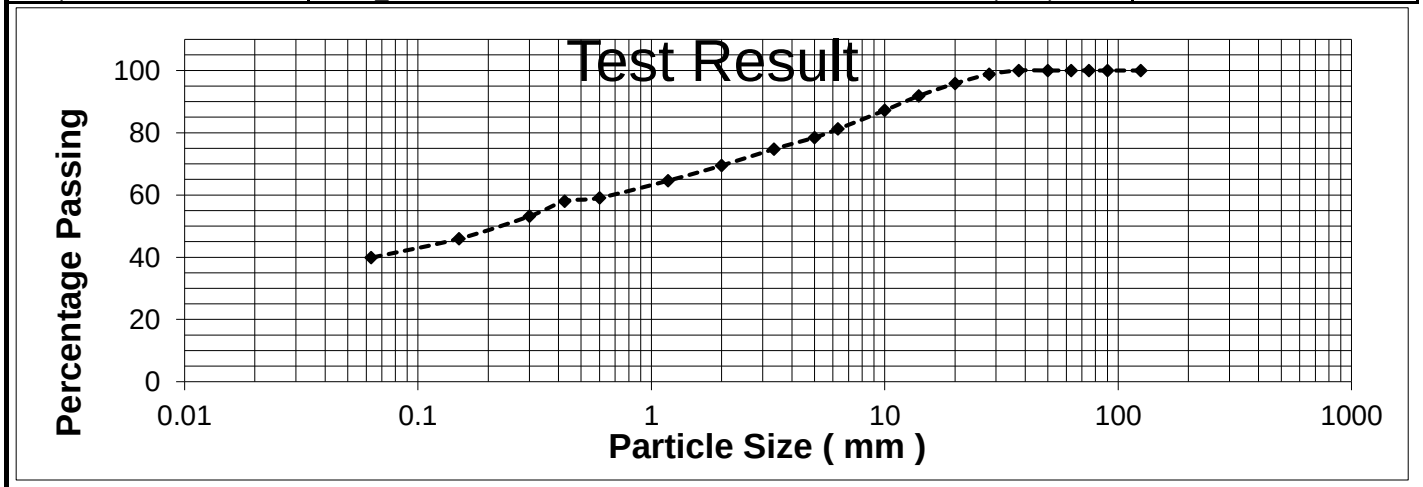
ISO 17025 T IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.386T

TEST REPORT FOR SOILS - PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 - 9.2 / 9.3 (Wet / Dry sieving method)

Report No: SA 266 PSD

Description of Soil	Silty, sandy, gravelly CLAY brown	Sample Number	**SA266**
Supplier *	Ground Investigation Ireland	Date Sampled	15/07/2022
Source *	GIL Profile Park	Date Received	04/08/2022
Deposition *	TP06 _ @ 1.00m	Date Tested	19/08/22
Sample Ref. *	TP06 _ @ 1.00m	Moisture Content (All in)	12.1 %



CLAY	Fine Med Coarse	Fine Med Coarse	Fine Med Coarse	Cobbles	Boulders
	Silt	Sand	Gravel		
	39.8	30	31		

BS Sieve	% Passing	Spec
125 mm	100	
90 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	99	
20 mm	96	
14 mm	92	
10 mm	87	
6.3 mm	81	
5 mm	78	
3.35 mm	75	
2 mm	69	
1.18 µm	65	
600 µm	59	
425 µm	58	
300 µm	53	
150 µm	46	
63 µm	**39.8**	

Sample Certificate No.: ***SA266***

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James Fisher Testing Services
Materials Laboratory, Unit D
Zone 5, Clonminam Business Park
Portlaoise, Co. Laois

James Fisher Testing Services

Laboratory Test Report
Point Load Strength Index

Project :	Profile Park	**Job Number**	11930-06-22
Client :	Ground Investigations Ireland	**Lab Ref No**	ST 19234
	Catherinestown House, Hazelhatch Road	**Date Received**	09/08/2022
	Newcastle, Co. Dublin	**Date Tested**	11/08/2022
Originator	James Cashen	**Date Reported**	15/08/2022

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De² (mm²)	De (mm)	I_s	F	$I_{s(50)}$MN/m²
BH04	3.00-3.10	1	D	⊥	91.0	64.0	15.00	4096	64.0	3.662	1.12	4.09
BH05	2.30-2.45	1	D	⊥	168.0	64.0	21.00	4096	64.0	5.127	1.12	5.73
BH07	3.20-3.30	1	D	⊥	194.0	64.0	18.00	4096	64.0	4.395	1.12	4.91

Description 1 : Blue/Black Rock
Description 2 :
Description 3 :

$I_{s(50)}$MN/m² for	Description 1		
Min	4.09		
Mean	4.91		
Max	5.73		

Test
A = axial
D = diametrical

Relationship to planes of weakness
IL = irregular lump
II = parallel
⊥ = perpendicular

	$I_{s(50)}$MN/m²	U.C.S. MN/m²
Extremely Weak	<0.05	0.6-1.0
Very Weak	0.05-0.20	1.0-5.0
Weak	0.20-0.50	5.0-25.0
Medium Strong	0.50-2.00	25-50
Strong	2.00-4.50	50-100
Very Strong	4.50-9.00	100-250
Extremely Strong	9.00 +	>250

Approved Signature
James Fisher Testing Services Ireland

☐ **James Ward, Operations Manager**

James Fisher Testing Services

James Fisher Testing Services Ltd
Materials Laboratory, Unit D
Zone 5, Clonminam Business Park
Portlaoise, Co. Laois

James Fisher Testing Services

Laboratory Test Report
Uniaxial Compressive Strength

Project:	Profile Park	**Job Number**	11930-06-22
Client:	Ground Investigations Ireland	**Lab Ref No**	ST 19235
	Catherinestown House, Hazelhatch Road	**Date Received**	09/08/2022
	Newcastle. Co. Dublin	**Date Tested**	12/08/2022
Originator:	James Cashen	**Date Reported**	17/08/2022

Sample Reference	Moisture Content	Density (Mg/m^3)	Uniaxial Compressive Strength (N/mm^2)
BH04 2.20-2.25m	0.7	2653	53.7
BH05 3.60-3.80m	1.1	2656	58.3
BH07 2.60-2.80m	1.0	2671	59.6

pp Michelle Phelan
Approved Signature
James Fisher Testing Services Ireland
☐ James Ward, Operations Manager

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GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

GROUNDWATER MONITORING

GIL Profile Park

BOREHOLE	DATE	TIME	GROUNDWATER (m BGL)	Comments
BH-01	25/07/2022	16.45	3.05	
BH-02	25/07/2022	16.00	3.05	
BH-03	25/07/2022	15.00	2.20	
BH-04	26/07/2022	9.05	1.17	
BH-05	26/07/2022	11.00	1.53	
BH-06	26/07/2022	9.55	1.72	
BH-07	26/07/2022	11.35	0.84	
BH-08	26/07/2022	12.30	2.63	
BH-01	03/08/2022	8.00	2.86	
BH-02	03/08/2022	8.15	2.84	
BH-03	03/08/2022	8.30	2.14	
BH-04	03/08/2022	8.45	1.12	
BH-05	03/08/2022	9.00	1.48	
BH-06	03/08/2022	9.15	1.71	
BH-07	03/08/2022	9.30	0.65	
BH-08	03/08/2022	9.45	2.55	

Ground Investigations Ireland Groundwater Monitoring Field Sheet											
	Project Number		11930-06-22				Sample Date		25/07/2022 & 26/07/2022		
	Client		Centrica				Current Weather		Cloudy		
	Site Name		Profile Park				Weather Prev 24 hours		Cloudy		
	Sampler I.D.		CMP				Sampling Method/Type		In-Situ		
Sample I.D.	BH-01	BH-02	BH-03	BH-04	BH-05	BH-06	BH-07	BH-08			
Casing Diameter (mm)	96	96	96	96	96	96	96	96			
Standpipe Diameter (mm)	50	50	50	50	50	50	50	50			
Stick Up (mm)	-	370	370	400	330	260	370	370			
Cover Condition	Good	Good	Good	Good	Good	Good	Good	Good			
Standpipe Type uPVC etc.	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC			
Total Well Depth (m)	7.00	7.00	7.00	7.00	7.00	7.00	7.00	9.80			
Water Level (mBGL)	3.05	3.05	2.20	1.17	1.53	1.72	0.84	2.63			
Odour	-	-	-	-	-	-	-	-			
Time Purging Start	16:45	16:00	15:00	09:05	11:00	09:55	11:35	12:30			
Timer Purging End	16:55	16:10	15:10	09:15	11:10	10:05	11:45	12:40			
Purge Volume (litres)	12	21	15	22	23	15	30	30			
Sampling Time	5 mins	5 mins	5 mins	5 mins	5 mins	5 mins	5 mins	5 mins			
Litres Purged	12	21	15	22	23	15	30	30			
Ph (pH Units)	6.80	6.38	7.49	7.19	6.95	6.99	7.18	7.16			
EC (mS/cm)	1.30	0.92	0.53	0.77	0.74	0.71	0.84	0.77			
Temp (Degrees)	14.70	14.60	15.20	15.00	15.00	13.60	15.40	14.70			
ORP (mV)	17	147	103	72	124	76	115	47			
DO (mg/l)											
Colour	Dark Grey	Dark Grey	Grey	Dark Grey	Dark Grey	Dark Grey	Dark Grey	Grey			
Odour	-	-	-	-	-	-	-	-			
Additional Comments	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy	Cloudy			

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)

Project Number	11930-06-22	Sample Date	27/07/2022	
Client	Centrica	Current Weather	Cloudy	
Site Name	Profile Park	Weather Prev 24 hours	Cloudy	
Sampler I.D.	CMP	Gas Meter Model	GA5000	

Sample I.D.	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08				
Casing Diameter (mm)	96	96	96	96	96	96	96	96				
Standpipe Diameter (mm)	50	50	50	50	50	50	50	50				
Stick Up (mm)	-	370	370	400	330	260	370	370				
Cover Condition	Good	Good	Good	Good	Good	Good	Good	Good				
Standpipe Type uPVC etc.	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC				
Total Well Depth (m)	7.00	7.00	7.00	7.00	7.00	7.00	7.00	9.80				
Water Level (mBBGL)	3.05	3.05	2.20	1.17	1.53	1.72	0.84	2.63				
Odour	No	No	No	No	No	No	No	No				
Gas Valve/Cap Condition	Good	Good	Good	Good	Good	Good	Good	Good				
Flow (litre/hour)	0.10	0.00	0.00	0.10	0.10	0.10	0.10	0.20				
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
CO2 (%)	1.60	6.20	1.60	1.00	0.60	2.80	0.10	0.50				
CO (ppm)	1.00	2.00	1.00	1.00	1.00	1.00	0.00	1.00				
H2S (ppm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
O2 (%)	18.70	13.80	17.60	19.70	20.10	18.10	20.10	20.00				
Barometric Pressure	1012	1012	1013	1013	1013	1013	1013	1012				
Additional Comment												

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)

Project Number		11930-06-22				Sample Date		03/08/2022				
Client		Centrica				Current Weather		Cloudy				
Site Name		Profile Park				Weather Prev 24 hours		Rain				
Sampler I.D.		CMP				Gas Meter Model		GA5000				
Sample I.D.	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08				
Casing Diameter (mm)	96	96	96	96	96	96	96	96				
Standpipe Diameter (mm)	50	50	50	50	50	50	50	50				
Stick Up (mm)	-	370	370	400	330	260	370	370				
Cover Condition	Good	Good	Good	Good	Good	Good	Good	Good				
Standpipe Type uPVC etc.	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC	uPVC				
Total Well Depth (m)	7.00	7.00	7.00	7.00	7.00	7.00	7.00	9.80				
Water Level (mBBGL)	2.86	2.84	2.14	1.12	1.48	1.71	0.65	2.55				
Odour	No	No	No	No	No	No	No	No				
Gas Valve/Cap Condition	Good	Good	Good	Good	Good	Good	Good	Good				
Flow (litre/hour)	0.10	0.00	0.00	0.10	0.10	0.10	0.20	0.10				
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
CO2 (%)	2.30	12.70	2.40	2.00	1.00	3.20	0.10	1.30				
CO (ppm)	1.00	2.00	1.00	4.00	3.00	1.00	0.00	1.00				
H2S (ppm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
O2 (%)	16.90	1.10	16.80	18.50	19.50	18.30	20.70	18.60				
Barometric Pressure	1001	1001	1002	1002	1002	1001	1001	1001				
Additional Comment												

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