

**DONORE PROJECT,
DONORE AVENUE,
DUBLIN 8**

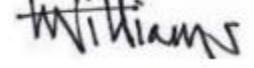
STRUCTURAL REPORT – PLANNING PERMISSION APPLICATION

THE LAND DEVELOPMENT AGENCY

STG-AEC-S1b-00-XX-ZZ-RE-S-0000011-PLANNING REPORT

02 AUGUST 2022

QUALITY INFORMATION

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P01	14/09/2021	Planning Issue	EH	Enda Hoey	Regional Director

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1. Introduction

We, The Land Development Agency, intend to apply to An Bord Pleanála for a ten-year permission under Part X (Section 175) of the Planning & Development Act 2000, as amended, for a residential development at a site located on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women & Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east. The development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha.

The development (GFA of c. 53,234 sqm) contains the following mix of apartments: 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person), 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments), 44 No. 3 bedroom 5-person apartments, together with retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys.
- Block DCC3 comprises 247 No. apartments in a block of 6-15 storeys.
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys.
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys.

The proposed development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The proposed development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1no. accessible bay (between DCC5 & DCC6)
- 1no. short stay bay (between DCC5 & DCC6)
- 1no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1no. set-down / loading bay (northern side of DCC5)
- 1no. set-down/loading bay (northern side of DCC3)
- 10no. short stay spaces (north-east of DCC1)



FIGURE 1 PROPOSED SITE LAYOUT

In addition, 4no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

1. Introduction

This document summarises proposed site wide structures, primarily necessary retaining walls and typical sub-structure details for all blocks, forming the proposed residential development scheme.

Please note this report is based on a preliminary design and should be treated as such. The information contained herein is subject to further development as the project proceeds.

The site topography is relatively flat in nature, with existing ground levels at circa 19-20mAOD.

There is need for a possible temporary situation where proposed ground levels are higher than the neighbouring ground level along the Bailey Gibson boundary. For this reason, a below ground retaining wall structure has been designed to accommodate this difference in level.

A review of the existing site conditions has been carried out, allowing the preparation of design methodologies for the proposed works.

2. Geotechnical Site Investigation

A Ground Investigation has been completed for purposes of informing preliminary building and boundary structure designs and for surface water management system designs. A copy of the the Ground Investigation Report is contained in Appendix B. The following is a summary of the different site investigations undertaken:

- Carry out 7 No. Trial Pits to a maximum depth of 3.90m BGL
- Carry out 3 No. Slit Trenches to locate existing services
- Carry out 1 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 11 No. Window Sample Boreholes to recover soil samples
- Carry out 16 No. Cable Percussion boreholes to a maximum depth of 4.70m BGL
- Carry out 16 No. Rotary Core follow-on boreholes to a maximum depth of 12.70m BGL
- Carry out 1 No. Rotary Core borehole from ground level to a depth of 12.70m BGL
- Carry out 3 No. Plate Bearing Tests to determine the modulus subgrade reaction and equivalent CBR design value
- Carry out 5 No. TRL DCP tests to determine a CBR design value for pavements
- Installation of 11 No. Groundwater/gas monitoring wells

The main findings of the ground investigations are:

- The sequence of strata encountered were consistent across the site and generally comprise:
 - Topsoil/Fill (maximum of 0.5m BGL)
 - Made ground (present to variable depths of 0.70m - 2.30m BGL)
 - Cohesive deposits
 - Bedrock (depth to rock encountered varied from 4.20m to a max 6.60m BGL) (Rare visible pyrite veins and calcite veins were noted during logging which are typically present within the Lucan formation)
- Due to the presence of soft and compressible cohesive and made ground deposits beneath the footprint of the proposed structures, piled foundations will be the most economical substructure solution.
- The ground slab is recommended to be suspended.
- The type, size and depth of the pile foundations will be confirmed by the specialist piling contractor.
- No special precautions are required for concrete foundations to prevent sulphate attack. The samples tested were below the limits of DS1 in the BRE Special Digest 1:2005.



FIGURE 2 GROUND INVESTIGATION OVERVIEW

3. Building Foundations and Site Wide Retaining Walls

3.1 Building Foundations

The site topography is relatively flat in nature, with existing ground levels at circa 19-20mAOD.

Adjusted site wide levels will be implemented (levels are indicated on Civil Engineers drawings).

In general, buildings will be supported on piled foundations. Continuous flight auger (CFA) piles will likely be chosen, with a minimum diameter of 450mm, to depth of circa 2-3m into bedrock, all to the specialist piling contractor detail. Detailed design of foundations will progress in the next stage of the project.

Structural columns will be supported on a number of piles, depending on loads. Typically, 6-7 storeys columns and lower will be supported on two-pile pile caps. Typically structures over 7 storeys will have columns supported on four-pile pile caps. Pile caps will typically be 1000mm deep.

Ground floor slabs will be suspended and supported on a grid of ground beams which will span between pile caps. Ground beams will typically be 450mm wide by 600mm deep, with top of concrete of ground beams matching top of concrete of pile caps.

Refer to Appendix A for a typical section through a full Block indicating the substructure set out, AECOM drawing STG-ACM-S1b-00-00-DR-S-00-100001.

3.2 Site Wide Retaining Walls

A retaining wall structure is required along the boundary line between the proposed development and the northern boundary of the Bailey Gibson site, which has an existing warehouse structure on this boundary. As the landscaping levels are increasing the site level along this boundary, a retaining wall is required. Refer to the Landscape Architectural drawings for length and extent of the retaining wall. Figure 3 over shows a typical detail through the wall.

Refer to Appendix A for this drawing STG-AEC-S1b-ZZ-XX-ZZ-SK-S-000009.

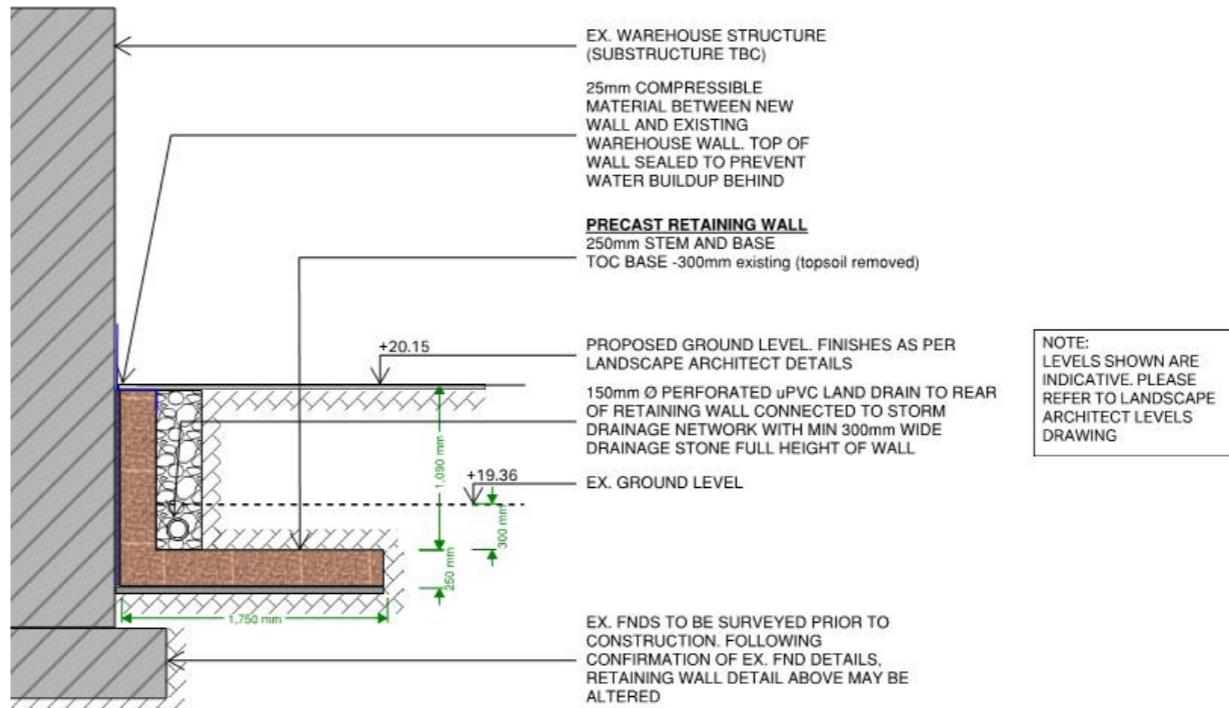


FIGURE 3 RETAINING WALL SECTION DETAIL

Appendix A

Typical Foundation and Retaining Wall Details

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Donore Avenue,
Dublin 8.

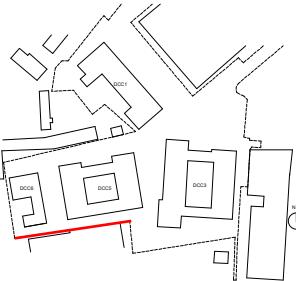
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Keyplan**Issue/Revision**

P01	14/09/22 PLANNING ISSUE	CM/EH/EH
Rev.	Date	Description
		Dm/Chk/Apr

Purpose Of Issue
FOR INFORMATION

Project Number

60648061

Sheet Title

RETAINING WALL ALONG
BAILEY GIBSON BOUNDARY

Sheet Number

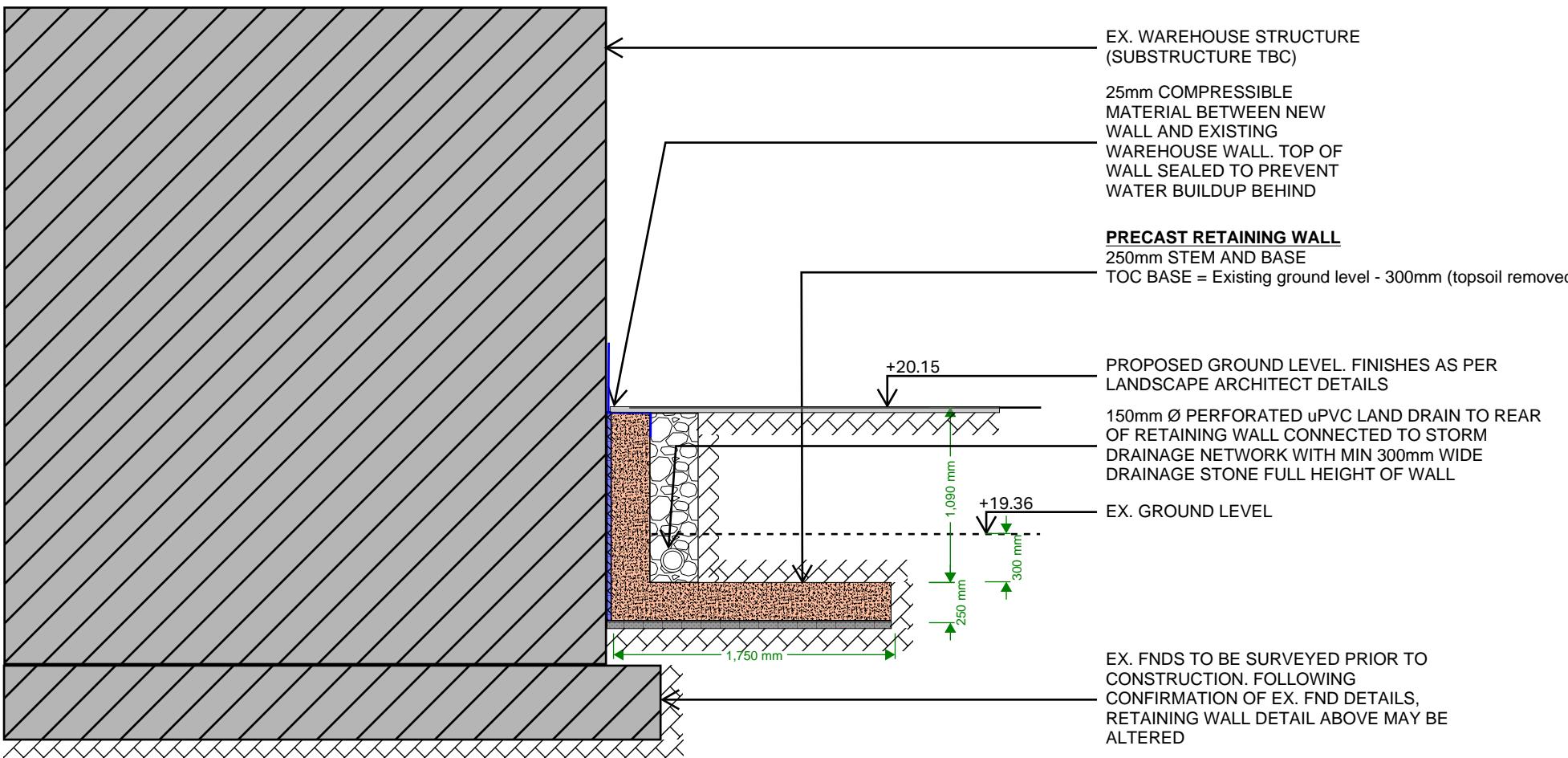
STG-AEC-S1b-ZZ-XX-ZZ-SK-S-00009

Scale: @A1

Rev: P02



Part Plan along Bailey Gibson Boundary



Section Detail

PROJECT

DONORE PROJECT,
DONORE AVENUE,
DUBLIN 8.

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P01	14/09/22	PLANNING ISSUE

PROJECT NUMBER

60648061

SHEET TITLE

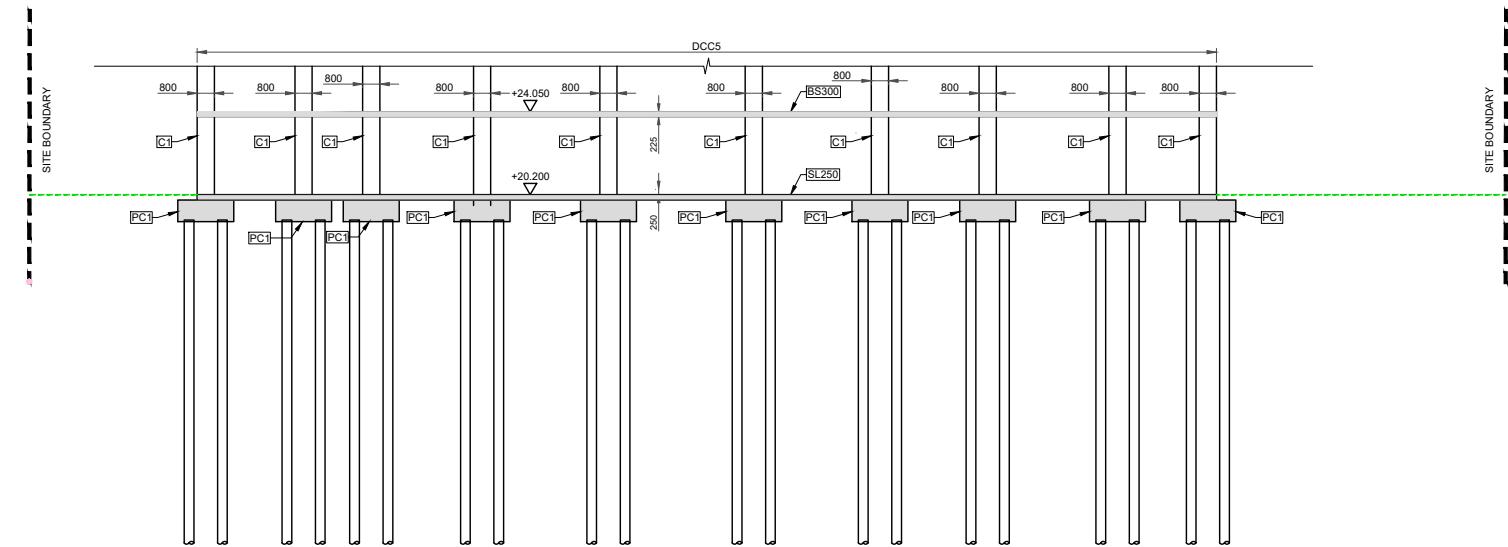
TYPICAL FOUNDATION
SECTIONS & DETAILS
SHEET 1

SHEET NUMBER

STG-ACM-S1b-00-00-DR-S-00-100001

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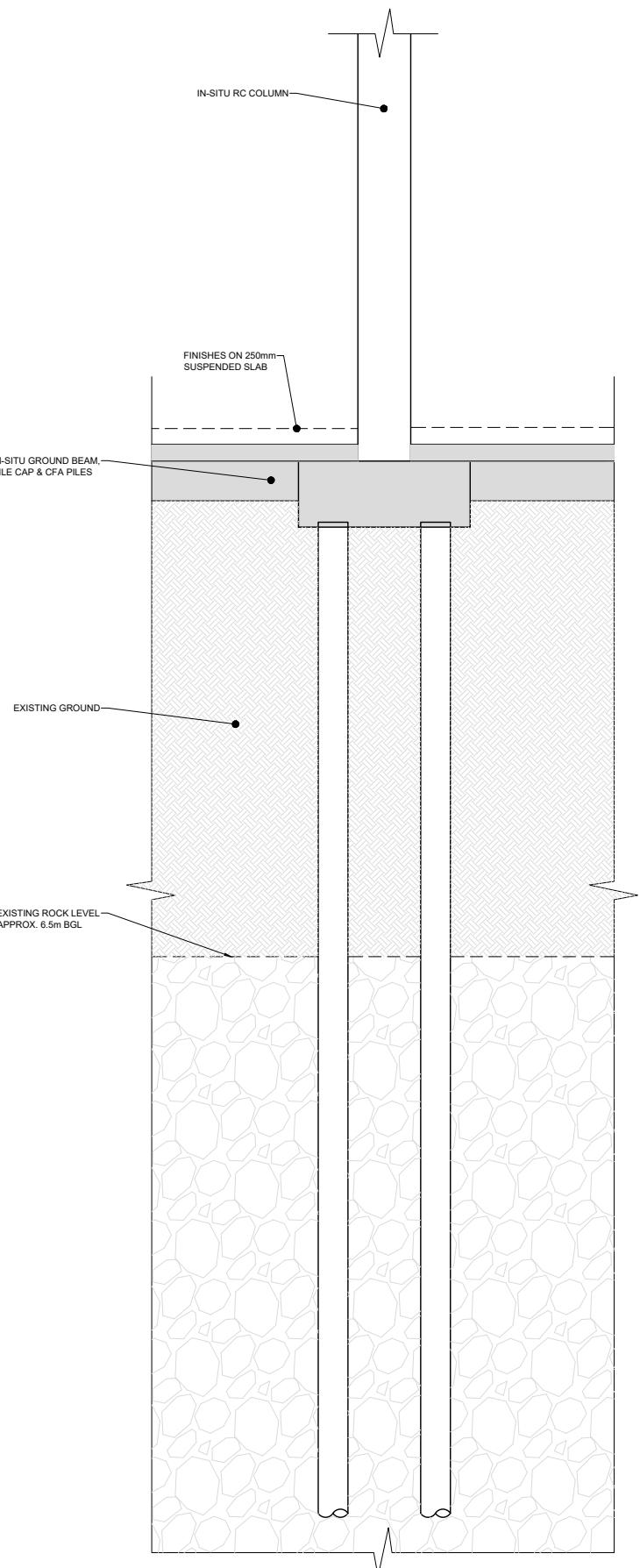
STRUCTURAL DESIGN IS SCHEME STAGE
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ST1 | SCHEMATIC FOUNDATION DETAIL FOR TYPICAL APARTMENT BLOCK 'DCC5'
100002

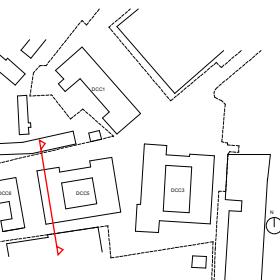
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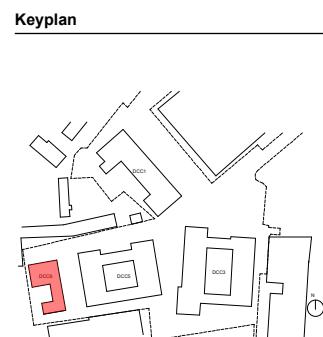
LEGEND: SCHEME STRUCTURAL SIZES (SUBJECT TO CHANGE AT DETAILED DESIGN STAGE)	
PC1	= 1000mm Dp INSITU RC PILECAP WITH 450Ø CFA PILES MIN. 15m LENGTH
SL225	= 225mm Dp INSITU RC FLAT SLAB
SL250	= 250mm Dp INSITU RC GROUND SLAB
C1	= 800x300mm INSITU RC COLUMN



ST2 | TYPICAL PILE FOUNDATION DETAIL

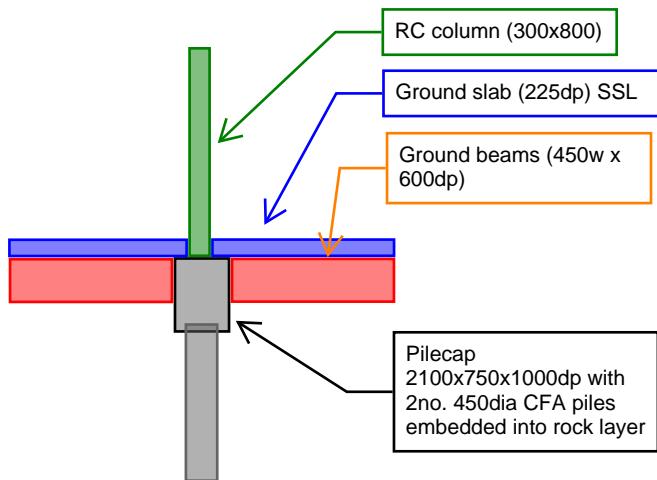
100001 Scale: 1:50





2100x750x1000dp Pilecap with
2no. 450dia CFA piles
embedded into rock layer

Plan Detail



Section Detail

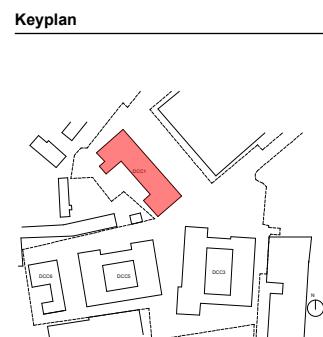
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Sheet Title
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FOUNDATION LAYOUT
Sheet Number
STG-AEC-S1b-DCC1-XX-ZZ-SK-S-01-000002
Scale: @A1 **Rev:** P01

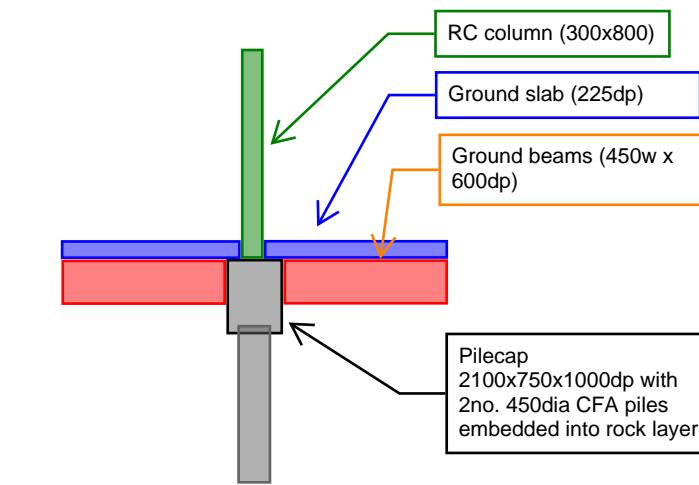
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DCC1 FOUNDATION LAYOUT



2100x750x1000dp Pilecap with
2no. 450dia CFA piles
embedded into rock layer

Plan Detail



Section Detail

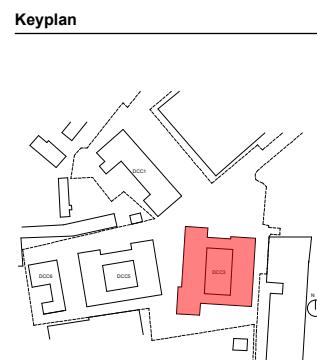
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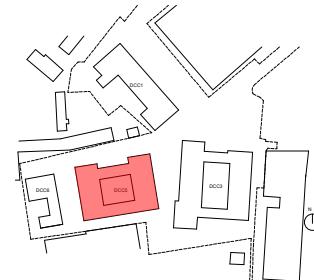
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Keyplan



Issue/Revision

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DCC5
FOUNDATION LAYOUT

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STG-AEC-S1b-DCC5-XX-ZZ-SK-S-01-000004

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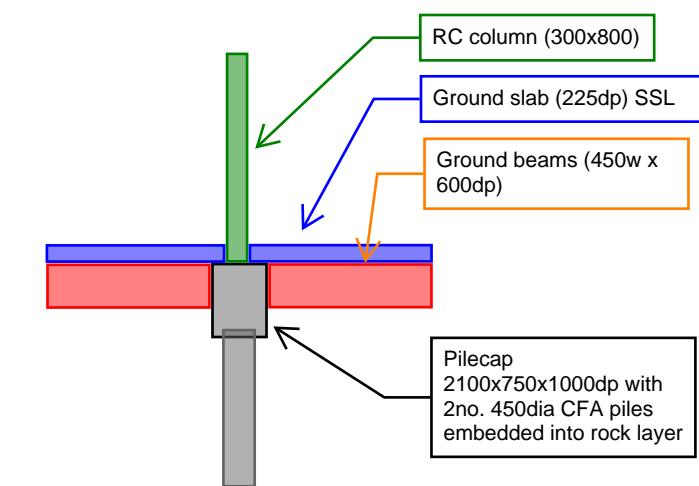
Rev: P01



DCC5 FOUNDATION LAYOUT

2100x750x1000dp Pilecap with
2no. 450dia CFA piles
embedded into rock layer

Plan Detail



Section Detail

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Appendix B

GII Ground Investigation



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Ground Investigations Ireland

St. Teresa's Gardens

AECOM

Ground Investigation Report

December 2021



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DOCUMENT CONTROL SHEET

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Document Title	Ground Investigation Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
B	Final	J Cashen	C Finnerty	B Sexton	Dublin	09 December 2021

Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client. The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.



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Appendix 2	Trial Pit Records
Appendix 3	Slit Trench Records
Appendix 4	Soakaway Pit Records
Appendix 5	Window Sample Records
Appendix 6	Cable Percussion and Rotary Core Borehole Records
Appendix 7	Plate Test Records
Appendix 8	TRL Dynamic Cone Penetrometer Records
Appendix 9	Laboratory Testing
Appendix 10	Groundwater Monitoring
Appendix 11	Gas Monitoring

1.0 Preamble

On the instructions of AECOM Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between May and December 2021 at the site of the proposed residential development in St Teresa's Garden, Dublin 8.

2.0 Overview

2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. The site is brownfield, with a previous residential development consisting of multiple apartment blocks having been demolished prior to Ground Investigations Ireland's arrival to site. The proposed construction is envisaged to consist of deep foundations and pavement make up with some local excavations for services and plant.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 7 No. Trial Pits to a maximum depth of 3.90m BGL
- Carry out 3 No. Slit Trenches to locate existing services
- Carry out 1 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 11 No. Window Sample Boreholes to recover soil samples
- Carry out 16 No. Cable Percussion boreholes to a maximum depth of 4.70m BGL
- Carry out 16 No. Rotary Core follow-on boreholes to a maximum depth of 12.70m BGL
- Carry out 1 No. Rotary Core borehole from ground level to a depth of 12.70m BGL
- Carry out 3 No. Plate Bearing Tests to determine the modulus subgrade reaction and equivalent CBR design value
- Carry out 5 No. TRL DCP tests to determine a CBR design value for pavements
- Installation of 11 No. Groundwater/gas monitoring wells
- Geotechnical and environmental laboratory testing
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Trial Pits

The trial pits were excavated using a JCB 3CX and a 13 tonne excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

3.3. Slit Trenching

The slit trenches were excavated using a JCB 3CX excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The soil was slowly stripped using a spotter on the trench to alert the driver if any services were seen, to avoid damage to any underlying services. The slit trenches were sampled, logged, and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the slit trench records which are provided in Appendix 3 of this Report.

3.4. Soakaway Testing

The soakaway testing was carried out in a selected trial pit at the location shown in the exploratory hole location plan in Appendix 1. This pit was carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pit was allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pit was logged prior to completing the soakaway test and were backfilled with arising's upon completion. The soakaway test result is provided in Appendix 4 of this Report.

3.5. Window Sampling

The window sampling was carried out at the locations shown in the location plan in Appendix 1 using a Tecopsa SPT Tec 10 percussion drilling rig. The window sampling consists of a 1m long steel tube with a cutting edge and an internal plastic liner which is mechanically driven into the ground utilising a 50kg weight falling a height of 500mm. Upon completion of the 1m sample, the tube is withdrawn and the plastic liner removed and sealed for logging and sub sampling by a Geotechnical Engineer/Engineering Geologist. The tube is replaced in the borehole and a subsequent 1m sample can be recovered. Occasionally outer casing or a reduced diameter tube is utilised to enable the window sample to progress in difficult drilling conditions. Geotechnical or environmental soil samples can be recovered from each of the liners following logging. The window sample records are provided in Appendix 5 of this Report.

3.6. Cable Percussion Boreholes

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.

The standard method of boring in soil for site investigation is known as the Cable Percussion method. It consists of using a Shell in non-cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the Shell. Where ground conditions made it necessary, the borehole was lined with 200mm diameter steel casing. While the use of the Cable Percussion method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason, thin lenses of granular material may not be noticed. Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.

Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60° cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The cable percussion borehole logs are provided in Appendix 6 of this Report.

3.7. Rotary Boreholes

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown on the location plan in Appendix 1. The rotary boreholes were completed from the ground surface or

alternatively, where noted on the individual borehole log, from the base of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring.

The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the "overshoot" recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit, and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids.

It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered. The rotary borehole logs are provided in Appendix 6 of this Report.

3.8. Surveying

The exploratory hole locations have been recorded using a Trimble R10 GNSS System which records the coordinates and elevation of the locations to ITM as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.9. Groundwater/Gas Monitoring Installations

Groundwater and/or Gas Monitoring Installations were installed upon the completion of the window samples and boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm uPVC/HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report.

3.10. Insitu Plate Bearing Test

The plate bearing tests were carried out using a 600mm diameter plate at the locations shown on the site plan in Appendix 1. The plate was loaded in increments using a hydraulic jack and an excavator to provide a reaction and the displacement was monitored in accordance with BS1377 Part 9 using independently mounted digital strain gauges. The settlement of the plate, the constrained modulus and

equivalent CBR value are calculated in accordance with HD29/75 and are provided on the test reports in Appendix 7 of this Report.

3.11. TRL Dynamic Cone Penetrometer

The TRL DCP tests were carried out at locations specified by the Consulting Engineer to determine a CBR design value for the design of external pavements. The testing was carried out below the Topsoil or existing pavement at the depths detailed on the test report. The test consists of dropping a 10kg weight on an anvil to drive a small diameter cone and recording the blows for a given penetration. The results of the DCP testing are included in Appendix 8 of this Report.

3.12. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.

Environmental & Chemical testing as required by the specification, including the Suite D and Suite I from Engineer's Ireland "*Specification and Related Documents for Ground Investigation in Ireland*", was carried out by Element Materials Technology Laboratory in the UK. Suite I testing includes both Solid Waste and Leachate Waste Acceptance Criteria.

Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), hydrometer, and Moisture Condition Value (MCV) were carried out by Professional Soils Laboratory (PSL) in the UK.

Rock strength testing including Point Load (Is_{50}) and Unconfined Compressive Strength (UCS) testing was carried out by James Fisher Testing Services in Portlaoise, Co. Laois.

The results of the laboratory testing are included in Appendix 9 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were consistent across the site and generally comprised;

- Topsoil/Fill
- Made Ground
- Cohesive Deposits
- Bedrock

TOPSOIL: Topsoil was encountered in the majority of exploratory holes and was present to a maximum depth of 0.20m BGL.

Fill: Granular Fill was encountered at exploratory holes completed within the Coombe Hospital building site and staff car park. These exploratory holes included WS01, WS02, WS03, WS04, BH06, BH08, BH09 and BH10. The deposit was present to a maximum depth of 0.50m BGL.

MADE GROUND: Made Ground deposits were encountered either from ground level or beneath the Topsoil/Fill and were present to variable depths of between 0.70m and 2.30m BGL. These deposits were described generally as *dark brown slightly sandy slightly gravelly Clay with occasional cobbles and boulders* and contained *occasional fragments/pieces of concrete, brick, metal, glass, ceramic and plastic*. At BH07 and BH11, possible made ground deposits were noted to a depth of 3.00m BGL. They have been referred to as possible made ground due to their low strength, however, no anthropogenic material was observed within these deposits.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground and were described typically as *brown/dark brown slightly sandy gravelly CLAY with occasional cobbles and boulders* overlying a *stiff dark grey/black slightly sandy 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 stiff or very stiff below 3.00m BGL at most borehole locations. These deposits had occasional, some or many cobble and boulder content, where noted on the exploratory hole logs.

BEDROCK: The rotary core boreholes recovered *medium strong to strong thinly laminated dark grey fine grained argillaceous LIMESTONE interbedded with a medium strong to strong dark grey/black calcareous Mudstone*. This is typical of the Lucan Formation, which is noted on the Geological Survey of Ireland's mapping of the proposed site. Rare visible pyrite veins and calcite veins were noted during logging which are typically present within the Lucan formation.

The depth to rock varies from 4.20m BGL in BH12, to a maximum of 6.60m BGL in BH05 and BH10. 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.

4.2. Geotechnical Design Parameters

Preliminary geotechnical design parameters for the materials encountered during the ground investigation have been summarised in Table 1 Geotechnical Design Parameters. Both laboratory test and SPT N results, using standard empirical relationships, have been used to determine the geotechnical parameters of the overburden strata.

Shear strength parameters have been determined using laboratory testing and established empirical relationships for the relevant materials. Based on the relationship published by Stroud, the correlation

of $C_u = f_1 \times N$ is used to estimate the undrained shear strength of the cohesive deposits, where f_1 is determined using a correlation with the plasticity index.

The shear strength parameters from the granular stratum are provided using the effective shear strength parameters determined from the uncorrected SPT N values after Peck et al. reported by Tomlinson Foundation Design and Construction 7th Ed. (2001).

A range is provided for the compressibility parameter m_v based on correlations with the SPT N value based on the relationship published by Stroud, the correlation of $M_v = 1/(f_2 \times N)$ where f_2 is determined using a correlation with the plasticity index.

Table 1 Recommended Geotechnical Parameters based on GII GI Data

Stratum	Bulk Density (kN/m ³)	SPT 'N' Correlated	Undrained Shear Strength C _u (kN/m ²)	Effective Strength Parameters		Poisson's Ratio v (v _u)	Co-efficient of Compressibility m _v (m ² /MN)
				Cohesion c' (kN/m ²)	ϕ' degrees		
Granular Made Ground Deposits	16 – 20 ^{*1}	1 - 20	n/a	-	28 – 30 ^{*4}	0.1 – 0.3	n/a
Cohesive Made Ground Deposits	16 – 20 ^{*1}	1 - 20	5 – 50 ^{*2}	0	25 - 30 ^{*4}	0.2 (0.5)	0.1-1.5 ^{*3}
Soft Cohesive Deposits	16 – 20 ^{*1}	1 - 8	5 - 40 ^{*2}	0 - 1	25 - 28 ^{*4}	0.2 (0.5)	0.1 – 1.5 ^{*3}
Firm Cohesive Deposits	18 – 20 ¹	8 – 15	40 - 75 ^{*2}	0 - 3	28 – 30 ^{*4}	0.2 (0.5)	0.1 – 0.3 ^{*3}
Stiff Cohesive Deposits	19 – 20 ^{*1}	15 – 25	75 - 150 ^{*2}	0 - 5	30 - 33 ^{*4}	0.2 (0.5)	0.05 – 0.1 ^{*3}
Very Stiff Cohesive Deposits	20 – 22	25+	150+	0 – 5	30 – 33+ ^{*4}	0.2 (0.5)	0.05 – 0.1 ^{*3}

^{*1} Values for bulk density assumed^{*2} Based on correlated SPT N values^{*3} Based on correlated SPT N values and published data. Caution should be exercised when selecting design values for the variable Made Ground Stratum.^{*4} Testing on undisturbed samples is recommended to determine the design value of this parameter for detailed design.

NOTE: The values in Table 1 represent a range of recommended values based on the typical soil types, insitu testing and laboratory testing scheduled by the Consulting Engineer. The values presented are recommended for outline guidance only and specific designs should derive design values based on the exploratory hole logs and lab testing for each specific site. To determine specific design values relevant to the design being undertaken in a particular area, reference should be made to the relevant specific exploratory hole logs. Further testing is recommended to determine the specific geotechnical parameters required for foundation design and temporary works design

4.3. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction, and other factors. For this reason, standpipes were installed in BH01, BH05, BH06, BH14, BH17, WS02, WS04, WS05, WS06, WS07 and WS10 to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 10 of this Report.

4.4. Laboratory Testing

4.4.1. Geotechnical Laboratory Testing

The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be a CLAY of low to intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well-graded with percentages of sands and gravels ranging between 10% and 50% generally with fines contents of 20% to 50%.

Six Moisture Condition Value (MCV) relationship tests at natural moisture were undertaken giving a range of 2.7 to 9.0, at moisture contents between 15% to 54%.

4.4.2. Chemical Laboratory Testing

The pH and sulphate testing carried out indicate that pH results are near neutral and that the water-soluble sulphate results are low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

4.4.3. Environmental Laboratory Testing

A number of samples were analysed for a suite of parameters which allows for the assessment of the sampled material in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous*. The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

As part of the suite a leachate is generated from the solid sample which is analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

While the laboratory report provides a comparison with the waste acceptance criteria limits it does not provide a waste classification of the material sampled nor does it comment on any potentially hazardous properties of the materials tested. The possibility for contamination, not revealed by the testing undertaken should be borne in mind particularly where Made Ground deposits are present, or the previous site use or location indicate a risk of environmental variation. The waste classification and environmental assessment report is included under the cover of a separate report by Ground Investigations Ireland.

4.4.4. Rock Laboratory Testing

The rock testing carried out on samples recovered from the boreholes reported Unconfined Compressive Strength (UCS) values ranging between 16.7 and 79.3 MPa while the point load testing gave Is_{50} values ranging from 0.43 MPa to 5.61 MPa. The Is_{50} results correlate to the UCS values using a factor of approximately 20, giving values of 8.60 MPa and 112.20 MPa. These results correlate to the strength descriptions ranging between medium strong to very strong and confirming the variability of this stratum and the descriptions on the logs.

The results from the completed laboratory testing are included in Appendix 9 of this report.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Foundations

Due to the presence of soft and compressible cohesive and made ground deposits beneath the footprint of the proposed structures, piled foundations may be more economically advantageous for the proposed building. The type, size and depth of the pile foundations should be confirmed by a specialist piling contractor based on the loading from the proposed building. The floor slab is recommended be suspended and also supported on the building piles.

Negative skin friction from the very soft cohesive deposits should be considered in the pile design due to the possibility of loading from working platforms or the adjacent pavement make up.

The pH and sulphate testing completed on samples recovered from the exploratory holes indicates the pH results are near neutral and the sulphate results are low, when compared to the guideline values from BRE Special Digest 1:2005. No special precautions are required for concrete foundations to prevent sulphate attack. The samples tested were below the limits of DS1 in the BRE Special Digest 1:2005.

5.3. External Pavements

The proposed pavements are recommended to be designed in accordance with the CBR test results included in the Appendices of this Report. The initial value in the test report is recommended for the design of the road pavement. The plate test design values for the CBR range from 1.43% to 2.99%. The results suggest a design value of 2% should be adopted for the design of the pavement with proof rolling prior to construction undertaken to identify soft spots. These soft spots should be excavated and replaced with well graded granular fill. The low CBR test results indicate that a capping layer or a sufficient depth of crushed stone fill may be required. Plate bearing tests are recommended at the time of construction to verify the design assumptions for the proposed pavement make up and to verify adequate compaction has been achieved.

The use of a geogrid and separation membrane may improve the performance of the proposed pavement and enable a more economical pavement design to be achieved, a specialist supplier is recommended to advise of the required strength, depth and type of geotextile for the proposed design.

5.4. Material Reuse

The results of the testing are shown in Table 2 below. Typically, in Irish Boulder Clays, an MCV of between 7 and 8 is considered marginal, with 8 or greater considered suitable for reuse. Generally, the material is variable, with two of the samples tested indicating they may be suitable for reuse as a Class 2 Fill in their current state. However, TP01 at 1.50m had a moisture content of 54% and had a very high plasticity index of 50% and was determined to be made ground based on the anthropogenic material observed in the same strata in the adjacent WS10. For TP02 at 1.50m BGL, the moisture content of 17% and corresponding MCV value of 9 is a more satisfactory result. Where minor treatment is required, the reduction of moisture content should be carefully monitored and controlled to achieve an MCV of greater than 7 or 8. Furthermore, we would recommend the works take place during the summer months as air drying may be the most economical method of drying the unacceptable material to render it useable as Class 2 Fill. The addition of lime can assist in reducing the moisture content and render it suitable for reuse, providing strict controls are put in place to monitor the works and to ensure compliance with the project earthworks specification.

Table 2. Material Reuse

Trial Pit	Pit Elevation (m OD)	Sample Depth (m BGL)	Sample Depths (m OD)	MC (%)	MCV	Strata	Silt/Clay Content (%)	Material Reuse
TP01	19.30	1.50	17.80	54	8.4	MADE GROUND: Light grey/brown slightly sandy slightly gravelly CLAY with some organic material	56	Not suitable
TP01	19.30	2.50	16.80	21	4.6	Light brown slightly sandy gravelly CLAY	43	Not suitable
TP02	19.45	1.50	17.95	17	9	Light brown slightly sandy slightly gravelly CLAY	51	May be suitable
TP02	19.45	2.50	16.95	16	2.7	Light brown slightly sandy gravelly CLAY	29	Not suitable
TP03	19.30	1.50	17.80	17	3.7	Light brown slightly sandy gravelly CLAY	31	Not suitable
TP03	19.30	2.50	16.80	15	6.4	Light brown slightly sandy gravelly CLAY	29	Requires Treatment

5.5. Excavations

Short term temporary excavations in the cohesive deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is required to permit man entry. Short term temporary excavations in the cohesive deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is required to permit man entry. A temporary batter of 2(H):1(V) is recommended in the Made Ground and firm brown/light brown cohesive deposits. A steeper batter of 1(H):1(V) is possible in the very stiff dark grey cohesive deposits for excavations of a duration of less than six months, subject

to regular inspection. Any seepage from the slope should be addressed with the installation of drainage and a reduction in the batter to maintain face stability. The groundwater levels, the seepage and instability noted in the trial pits and slit trenches suggest that the construction of steep slopes below a depth of 1.6m to 2.6m may be problematic.

Where an existing road is adjacent to the proposed excavation, a batter of 2(H):1(V) is recommended with a minimum set back of 2m from the edge of the slope to any footpath or carriageway for the entire slope depth. A global stability check would be required to demonstrate the stability of the slope where loading is imposed from any walkways, traffic, or plant. A kingpost or piled retaining wall may be more appropriate solutions for the temporary retention of the excavation sides where traffic, loading or space constraints are expected. Any battered slopes should be covered to prevent erosion and to protect from moisture ingress. The groundwater and stability noted on the trial pit and slit trench logs should be consulted when determining the most appropriate construction methods for excavations.

Excavations in the upper cohesive and weathered rock deposits are expected to be excavatable with conventional excavation equipment, with zones of more intact bedrock below this depth requiring rock breaking technique. Based on the fracture spacing, the rock strength testing and Pettifer & Fookes (1994) Revised Excavability Graph, the Lucan Formation ranges from hard digging to hard ripping, however the zones recovered as non-intact should be easy to hard digging.

5.6. Soakaway Design

At the location of IT01, the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. This location is therefore not recommended as suitable for soakaway design and construction.

5.7. Geotechnical Hazards

Based on the desk study and the findings of this ground investigation, a table of potential geotechnical hazards has been made and should be considered in the design and construction of the proposed development. Further hazards not identified in this report may be present on the site and construction activities may result in unplanned hazards that cannot be quantified at this stage. This table does not consider the risk of contamination across the site. The environmental factors are considered in the waste classification and environmental assessment report which is included under the cover of a separate report by Ground Investigations Ireland.

Table 3. Potential Geotechnical Hazards

Hazard Category (excluding Contamination)	Hazardous Status		Engineering Considerations If Hazard Effects Site
	Likely	Unlikely	
Made Ground	✓		Variable depths of disturbed ground encountered across site. Made ground not suitable founding stratum due to variability of material.
Karstic dissolution features		✓	The site is underlain by the Lucan Formation. No Karst features were identified on the GSI Karst Database or during logging of the rock core.
Ground subject to or at risk from coastal or river erosion		✓	No hazard present. The Poddle is located 600m to the east of the site and discharges to the River Liffey approximately 1.3 km to the north of the site.
High groundwater table	✓		Groundwater is variable within the cohesive deposits and may change depending on seasonal fluctuations. May affect temporary and permanent works
Existing sub-structures	✓		The history of the site involved the construction of apartment blocks which have since been demolished. There may be substructures and foundations, as seen in ST03, which will require removal prior to future construction
Quarrying/mining		✓	No old mine or quarry noted on the OSI historical mapping of the site
Landslide Susceptibility		✓	The GSI mapping shows the site is low risk in terms of landslide susceptibility

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

APPENDIX 1 - Site Location Plan



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713700E

713850E

714000E

714150E

714300E

714450E

733200N

733050N

732900N

732750N

732600N

713700E

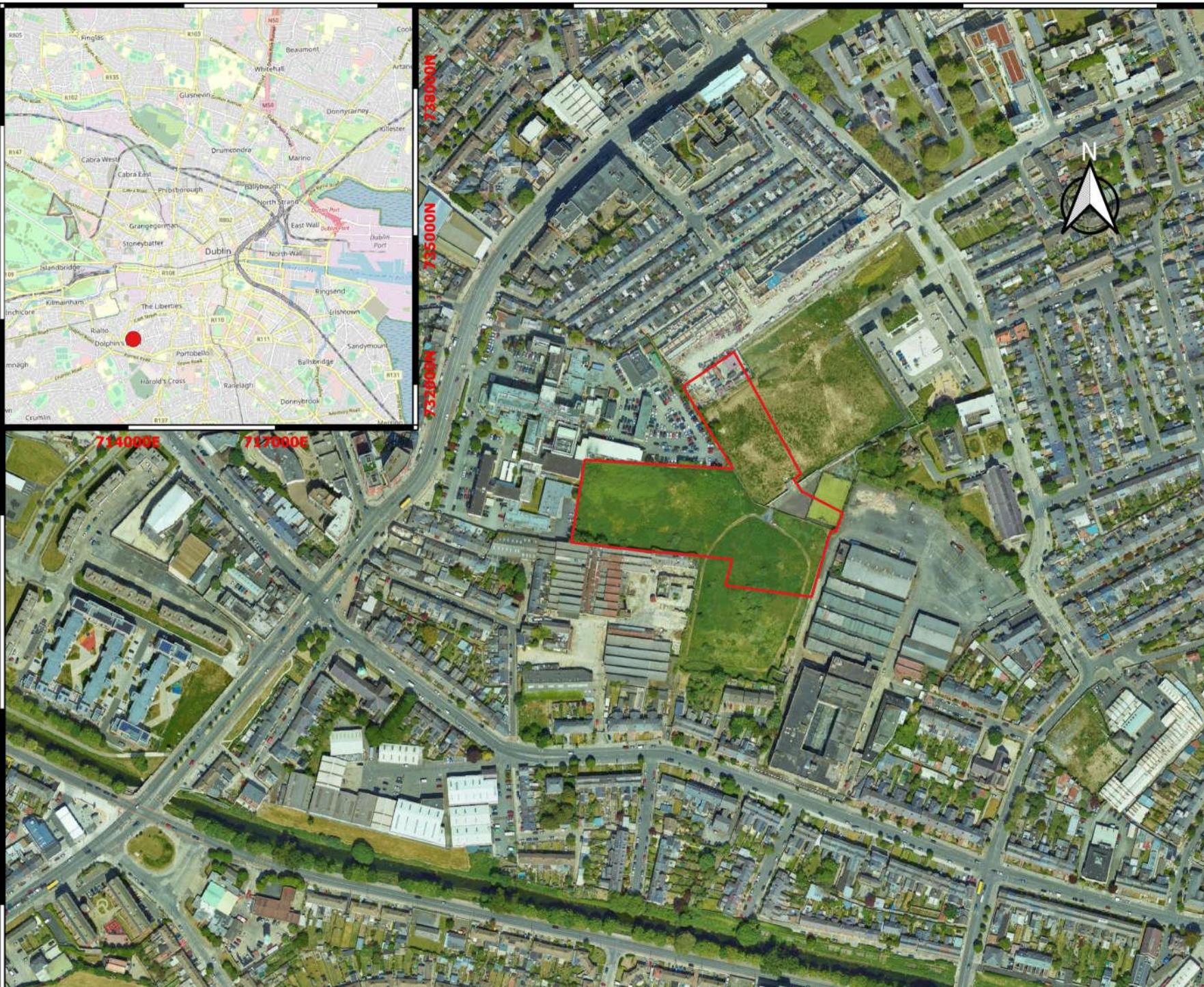
713850E

714000E

714150E

714300E

714450E



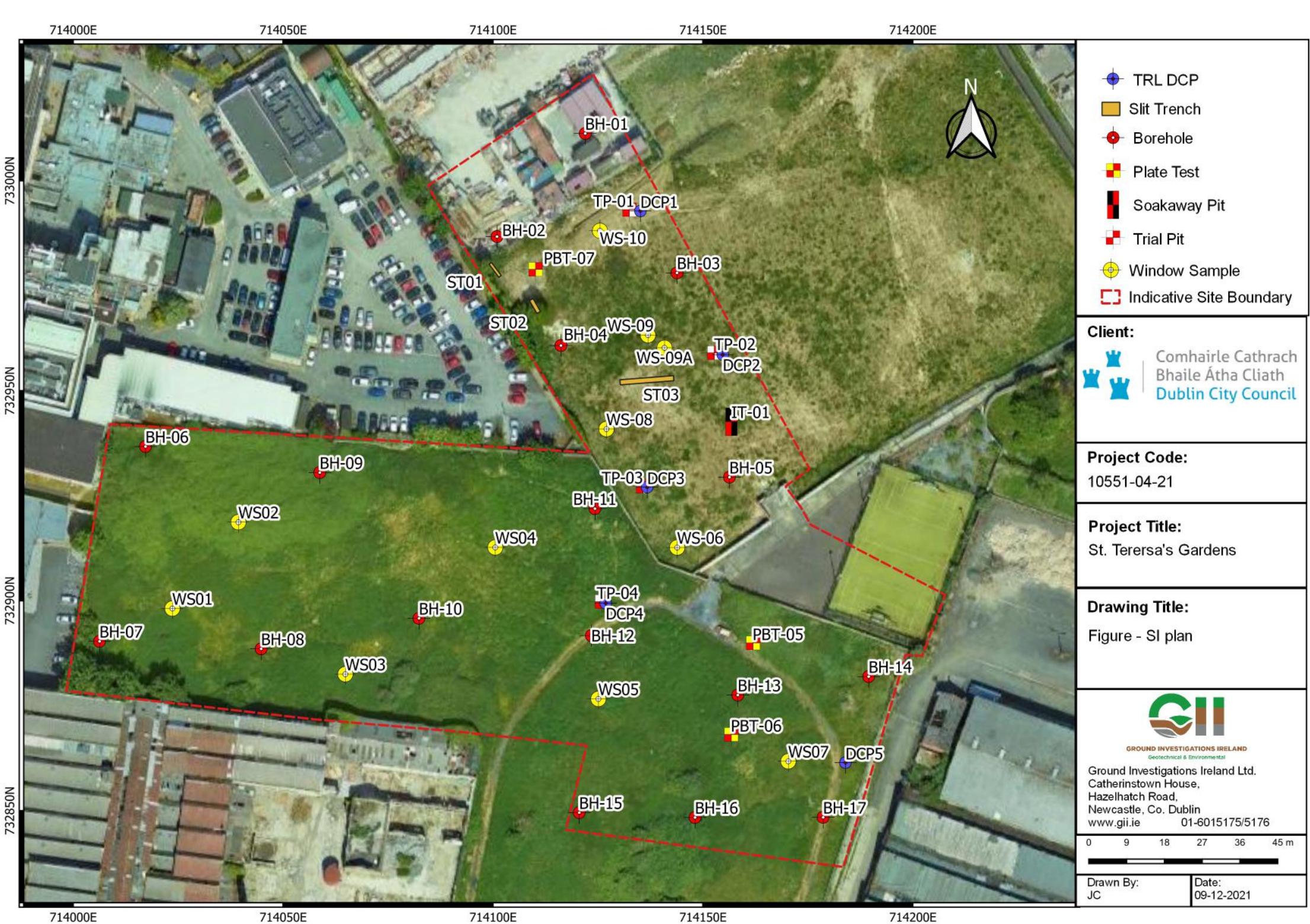
- Site Location
- Indicative Site Boundary

Client:

AECOMProject Code:
10551-04-21Project Title:
Saint Teresa's GardensDrawing Title:
Figure 1 Site LocationGROUND INVESTIGATIONS IRELAND
Geotechnical & EnvironmentalGround Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 30 60 90 120 150 m

Drawn By:
BS Date:
22-10-2021



APPENDIX 2 – Trial Pit Records



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Site
St. Teresa's Gardens

Trial Pit Number
PBT-05

Machine : 13 Tonne Excavator Method : Trial Pit		Dimensions 4.00m L x 1.00m W x 3.90m D	Ground Level (mOD) 19.06	Client The Land Development Agency	Job Number 10551-04-21			
		Location (dGPS) 714161.8 E 732889.7 N	Dates 23/06/2021	Engineer AECOM	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	MADE GROUND: Dark brown slightly sandy slightly gravelly Topsoil with occasional rootlets		
				18.36	0.70	Soft to firm brown/grey slightly sandy slightly gravelly CLAY with occasional occasional subangular to subrounded cobbles		
					(1.70)			
				16.66	2.40	Stiff dark brown mottled grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
					(1.00)			
				15.66	3.40	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.		
					(0.50)			
				15.16	3.90	Complete at 3.90m		

Plan	Remarks	
	No groundwater encountered Sidewalls stable Plate Test carried out in trial pit at 1.10m BGL Trial pit terminated at 3.90m BGL	
Scale (approx)	Logged By	Figure No.
1:25	PM	10551-04-21.PBT-05



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Site
St. Teresa's Gardens

Trial Pit Number
PBT-06

Machine : 13 Tonne Excavator Method : Trial Pit		Dimensions 4.00m L x 1.00m W x 3.30m D	Ground Level (mOD) 19.19	Client The Land Development Agency	Job Number 10551-04-21			
		Location (dGPS) 714156.6 E 732867.9 N	Dates 23/06/2021	Engineer AECOM	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Dark brown slightly sandy slightly gravelly Topsoil with occasional rootlets		
				18.69	0.50	Soft to firm light brown mottled grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.70)			
				17.99	1.20	Firm dark brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(1.00)			
				16.99	2.20	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.		
					(1.10)			
				15.89	3.30	Complete at 3.30m		
Plan					Remarks			
					No groundwater encountered Sidewalls spalling at 1.50m Plate Test carried out in trial pit at 1.20m BGL Trial pit terminated at 3.30m BGL			
					Scale (approx)	Logged By	Figure No.	
					1:25	PM	10551-04-21.PBT-06	



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Site
St. Teresa's Gardens

Trial Pit Number
PBT-07

Machine : 13 Tonne Excavator Method : Trial Pit		Dimensions 4.00m L x 1.00m W x 3.50m D	Ground Level (mOD) 19.32	Client The Land Development Agency	Job Number 10551-04-21			
		Location (dGPS) 714110 E 732978.6 N	Dates 23/06/2021	Engineer AECOM	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND: Dark brown slightly sandy gravelly Clay with occasional cobbles and boulders, and occasional pieces of red brick, concrete, plastic, and metal.		
					(1.00)			
				18.32	1.00	MADE GROUND: Light grey slightly sandy slightly gravelly silty Clay with occasional cobbles and boulders, and occasional pieces of red brick, plastic, ceramic and timber		
					(1.20)			
				17.12	2.20	Firm dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
					(1.10)			
				16.02	3.30	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.20)			
				15.82	3.50	Complete at 3.50m		
Plan					Remarks			
					No groundwater encountered Plate Test carried out in trial pit at 1.50m BGL Trial pit terminated at 3.50m BGL			
					Scale (approx) 1:25	Logged By PM	Figure No. 10551-04-21.PBT-07	



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Trial Pit Number
TP-01

Machine : JCB 3CX Method : Trial Pit		Dimensions 3.40m L x 0.60m W x 3.00m D	Ground Level (mOD) 19.30	Site St. Teresa's Gardens	Job Number 10551-04-21			
		Location 714132.4 E 732992.8 N	Dates 17/05/2021	Client The Land Development Agency	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	ES			19.10	(0.20) 0.20	Light brown TOPSOIL with occasional rootlets.		
0.50	B				(0.80)	MADE GROUND: Dark brown slightly sandy gravelly Clay with occasional subangular to subrounded cobbles and boulders and occasional pieces of red and yellow brick metal plastic ceramics and concrete.		
1.00-3.00	ES			18.30	1.00	MADE GROUND: Light grey slightly sandy slightly gravelly silty CLAY with some organic material		
1.50	B				(1.00)			
2.50	B		Water strike(1) at 2.60m.	17.30	2.00	Soft to firm light brown mottled grey slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles.		V1
				16.30	(1.00) 3.00	Complete at 3.00m		

Plan	Remarks		
	Spalling at 0.60m Groundwater encountered at 2.60m BGL; slow ingress		
Scale (approx) 1:25		Logged By PM	Figure No. 10551-04-21.TP-01



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Site
St. Teresa's Gardens

Trial Pit Number
TP-02

Machine : JCB 3CX Method : Trial Pit		Dimensions 3.50m L x 0.60m W x 3.00m D	Ground Level (mOD) 19.45		Client The Land Development Agency	Job Number 10551-04-21		
		Location 714152.7 E 732958.8 N	Dates 17/05/2021	Engineer AECOM	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	ES			19.25	(0.20) 0.20	Light brown TOPSOIL with occasional rootlets.		
0.50	B				(0.80)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional pieces of metal plastic red and yellow brick and concrete.		
1.00-3.00	ES			18.45	1.00	Firm light brown mottled grey slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles.		
1.50	B				(2.00)			
2.50	B		Water strike(1) at 2.60m.	16.45	3.00	Complete at 3.00m		V1
Plan					Remarks			
					Spalling at 1.80m Groundwater encountered at 2.60m BGL; slow ingress			
						Scale (approx) 1:25	Logged By PM	Figure No. 10551-04-21.TP-03



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Trial Pit Number
TP-03

Machine : JCB 3CX Method : Trial Pit		Dimensions 3.50m L x 0.60m W x 3.00m D	Ground Level (mOD) 19.30	Site St. Teresa's Gardens	Trial Pit Number TP-03			
		Location 714135.8 E 732926.9 N	Dates 17/05/2021	Client The Land Development Agency	Job Number 10551-04-21			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	ES			19.10	(0.20) 0.20	Light brown TOPSOIL with occasional rootlets.		
0.50	B				(0.80)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional pieces of metal plastic red and yellow brick and concrete.		
1.00-3.00	ES			18.30	1.00	Firm light brown mottled grey slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles.		
1.50	B				(2.00)			
2.50	B		Water strike(1) at 2.50m.	16.30	3.00	Complete at 3.00m		V1

Plan	Remarks	Spalling at 1.80m Groundwater encountered at 2.50m BGL; slow ingress
	Scale (approx) 1:25	Logged By PM
		Figure No. 10551-04-21.TP-03



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Trial Pit Number
TP-04

Machine : JCB 3CX Method : Trial Pit		Dimensions 3.60m L x 0.60m W x 3.90m D	Ground Level (mOD) 19.10	Site St. Teresa's Gardens	Trial Pit Number TP-04			
		Location 714125.9 E 732899.5 N	Dates 23/06/2021	Client The Land Development Agency	Job Number 10551-04-21			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.40	ES				(0.40)	MADE GROUND: Dark brown Topsoil with occasional rootlets.		
0.50	B			18.70	0.40	MADE GROUND: Light brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional pieces of plastic red brick and ceramics.		
1.40-2.50	ES			17.70	1.40	Stiff dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.		
1.50	B				(1.00)			
2.50	B			16.60	2.50	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.		
2.50-3.90	ES				(1.10)			
3.50	B			15.20	3.90	Complete at 3.90m		

Plan	Remarks	
	No groundwater encountered Sidewalls spalling at 1.30m Trial pit terminated at 3.90m BGL	
Scale (approx)	Logged By	Figure No.
1:25	PM	10551-04-21.TP-04

St Teresa's Gardens – Trial Pit Photographs

PBT5



PBT5



PBT5



PBT6



PBT6



PBT6



PBT7



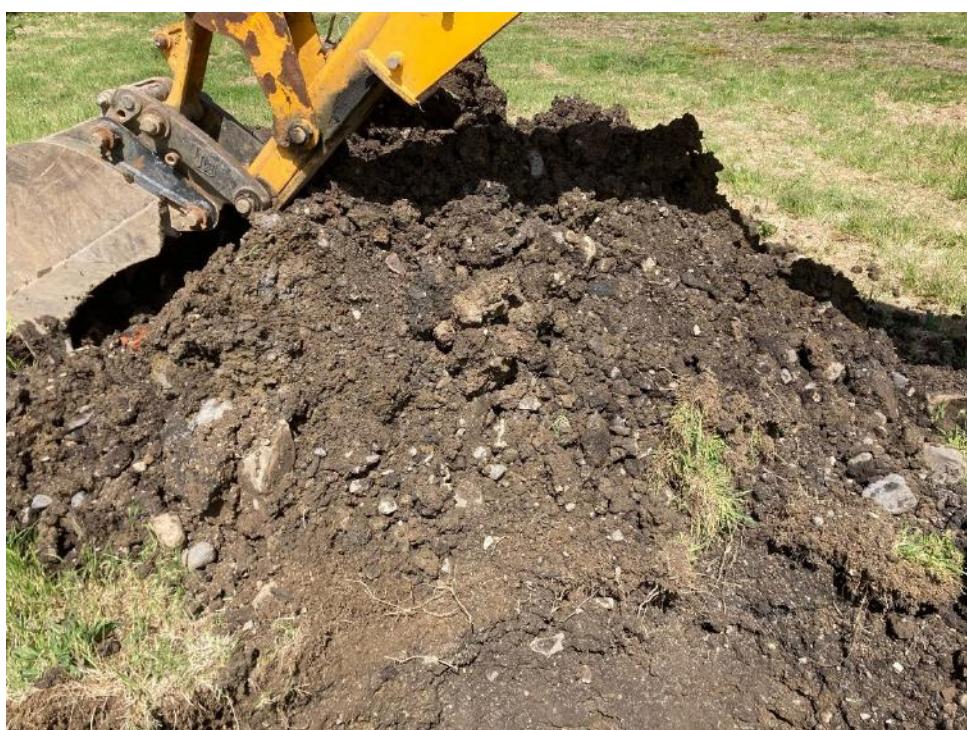
PBT7



PBT7



TP01



TP01



TP01



TP02



TP02



TP03



TP03



TP03



TP03



TP04



TP04



APPENDIX 3 – Slit Trench Records



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ST-01

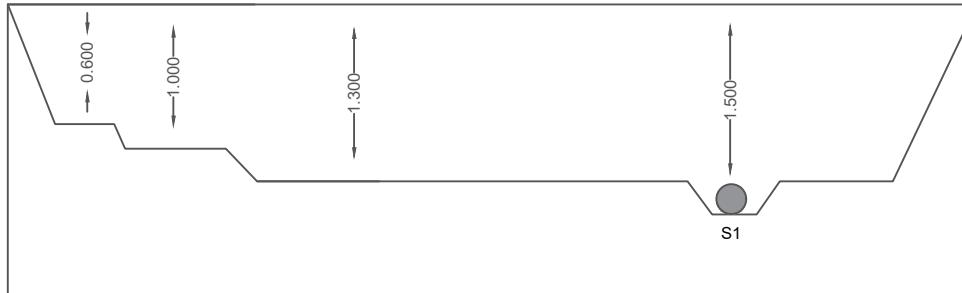
E 714101.4
N 732977
Z 19.185

→————— 3.50m —————→
→————— 2.50m —————→

E 714099
N 732980.
Z 19.021

SE

NW



From (m)	To (m)	Description
0.00	0.50	MADE GROUND: Light brown slightly silty slightly clayey slightly sandy fine to coarse subangular to subrounded Gravel with occasional subangular to subrounded cobbles and occasional pieces of plastic metal concrete and red brick.
0.05	1.45	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and boulders and occasional pieces of red brick and plastic.
1.45	1.50	MADE GROUND: Dark brown fine to coarse Sand.

Service No	ϕ (m)	Colour- Material	Utility	Angle to trench
1	0.150	Black PVC	Water	90

Sample Depth	Sample Type
0.50m	B
1.50m	B

Surface from/to	Surface Type
0.00	3.50

Groundwater	Y/N	Depth
	N	N/A

DATE OF EXCAVATION : 17/05/2021



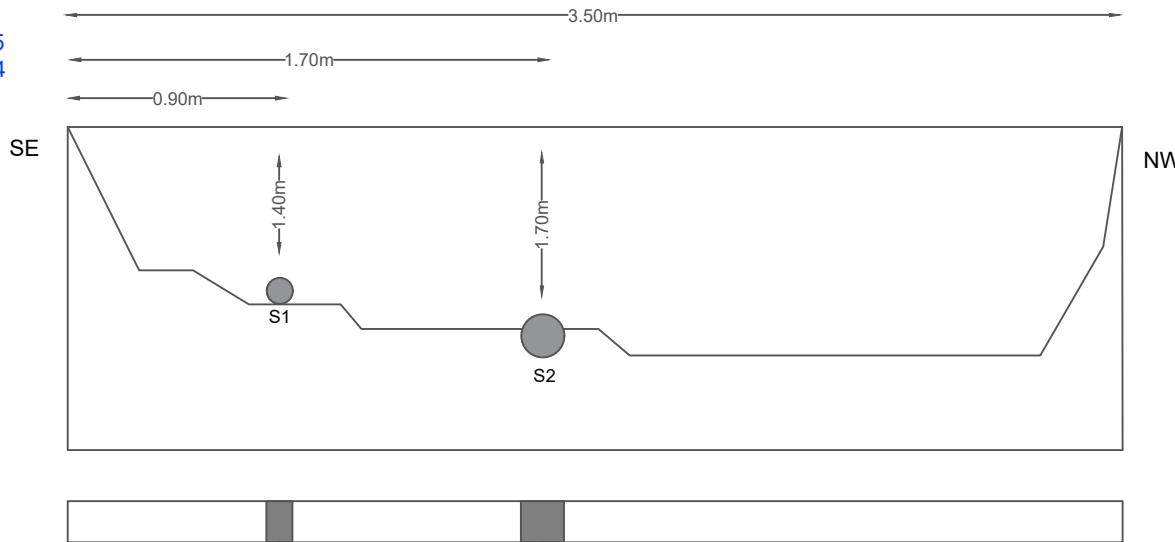
GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

PROJECT:	St. Teresa's Gardens		
DRAWING No.:	10551-07-21 ST01		
DATE:	May to August 2021		
ENGINEER:	AECOM		
SCALE:	NTS @ A4		
Version:	Date:	Drawn By:	Checked:
No.	Initials	Initials	Initials
	27/07/21	PM	JC

ST-02

E 714110.5
N 732968.4
Z 19.163

E 714108.7
N 732971.5
Z 19.35



From (m)	To (m)	Description
0.00	0.50	MADE GROUND: Light brown slightly silty slightly sandy slightly clayey fine to coarse subangular to subrounded Gravel with occasional subangular to subrounded cobbles and occasional pieces of red brick concrete and plastic.
0.50	1.70	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles. (Reworked)

Service No	ø (m)	Colour- Material	Utility	Angle to trench
S1	0.120	Black PVC	Water	90
S2	0.300	Concrete	Water	90

Groundwater	Y/N	Depth
	Y	1.60m

Sample Depth	Sample Type	Surface from/to		Surface Type
		0.00	3.50	
0.50m	B			
1.50m	B			

DATE OF EXCAVATION : 17/05/2021

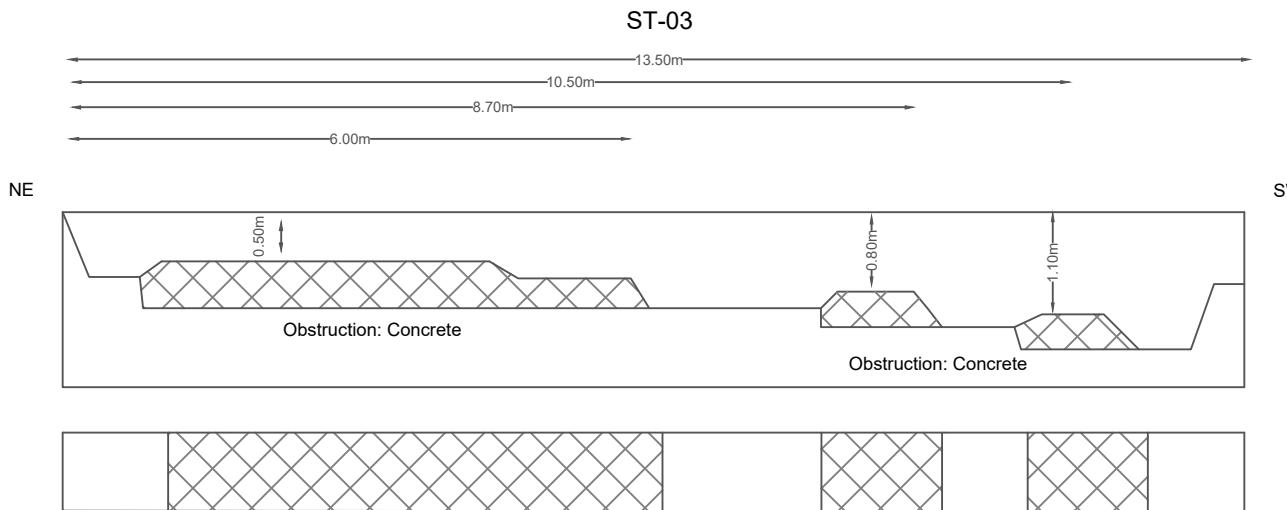


GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

PROJECT:	St. Teresa's Gardens		
DRAWING NO.:	10551-07-21 ST02		
DATE:	May to August 2021		
ENGINEER:	AECOM		
SCALE:	NTS @ A4		
Version:	Date:	Drawn By:	Checked:
No.	Initials	Initials	Initials
	27/07/21	PM	JC

E 714143.3
N 732952.4
Z 19.451

E 714130.3
N 732951.4
Z 19.417



From (m)	To (m)	Description
0.00	0.20	Dark brown TOPSOIL with occasional rootlets
0.50	1.70	MADE GROUND: Dark grey slightly silty slightly sandy gravelly Clay with occasional subangular to subrounded cobbles and boulders and occasional pieces of red and yellow brick plastic and concrete.

Sample Depth	Sample Type
0.50m	B
1.50m	B

Groundwater		Y/N	Depth
		Y	1.70m
Surface from/to		Surface Type	
0.00 13.50		Topsoil	

DATE OF EXCAVATION : 17/05/2021



GROUND INVESTIGATIONS IRELAND

Geotechnical & Environmental

PROJECT:	St. Teresa's Gardens		
DRAWING No.:	10551-07-21 ST03		
DATE:	May to August 2021		
ENGINEER:	AECOM		
SCALE:	NTS @ A4		
Version:	Date:	Drawn By:	Checked:
No.	Initials	Initials	Initials
	27/07/21	PM	JC

St Teresa's Gardens – Slit Trench Photographs

ST01



ST01



ST01



ST02



ST02



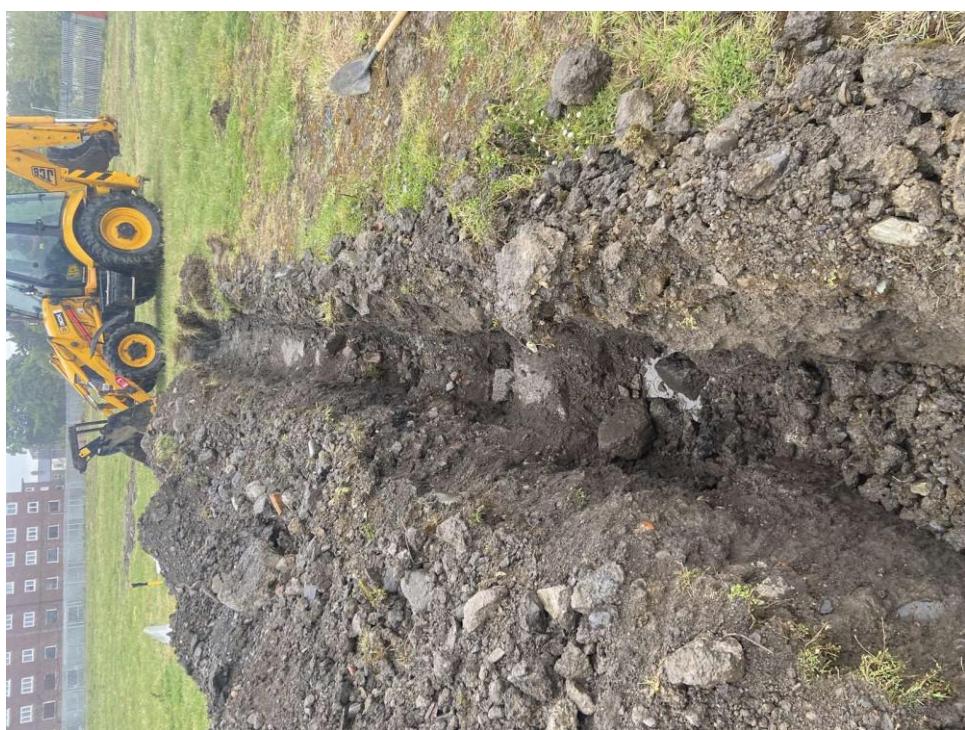
ST02



ST02



ST03



ST03



ST03



ST03



ST03



ST03



ST03



ST03



APPENDIX 4 – Soakaway Pit Records



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Site

St. Teresa's Gardens

Trial Pit
Number
IT-01

Machine : JCB 3CX Method : Trial Pit		Dimensions 0.50m L x 2.00m D x 1.50m L		Ground Level (mOD) 19.26		Client The Land Development Agency		Job Number 10551-04-21			
		Location 714178.6 E 732848.4 N		Dates 17/05/2021		Engineer AECOM		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water		
0.00-1.00	EN			19.06	(0.20) 0.20	Light brown clayey TOPSOIL with occasional rootlets.					
0.50 0.50	B T			18.26	(0.80) 1.00	MADE GROUND: Dark brown slightly silty slightly sandy slightly clayey fine to coarse subangular to subrounded Gravel with occasional pieces of red brick concrete clay pipe and metal.					
1.00-1.50	EN			17.76	(0.50) 1.50	Soft to firm light grey slightly slightly gravelly silty CLAY with occasional subangular to subrounded cobbles.					
1.50 1.50	B T					Complete at 1.50m					
Plan					Remarks						
					Spalling at 0.60m Spalling at 0.80m No groundwater encountered						
					Scale (approx) 1:25	Logged By PM	Figure No. 10551-04-21.IT-01				



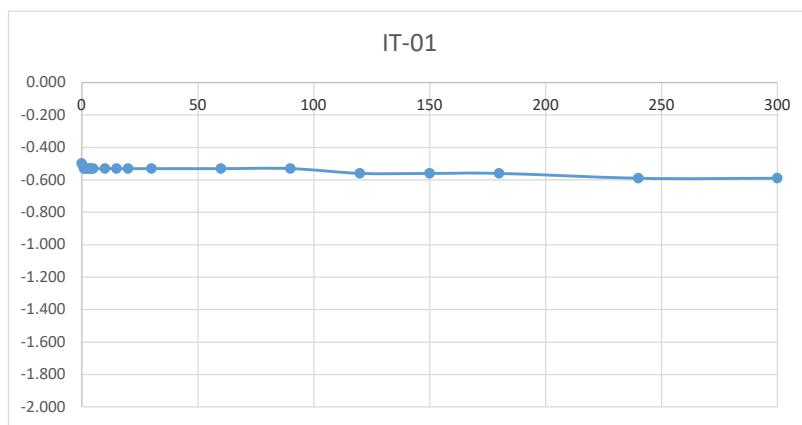
Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

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

IT-01
Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.00m x 0.60m 1.50m (L x W x D)

Date	Time	Water level (m bgl)
17/05/2021	0	-0.500
17/05/2021	1	-0.530
17/05/2021	2	-0.530
17/05/2021	3	-0.530
17/05/2021	4	-0.530
17/05/2021	5	-0.530
17/05/2021	10	-0.530
17/05/2021	15	-0.530
17/05/2021	20	-0.530
17/05/2021	30	-0.530
17/05/2021	60	-0.530
17/05/2021	90	-0.530
17/05/2021	120	-0.560
17/05/2021	150	-0.560
17/05/2021	180	-0.560
17/05/2021	240	-0.590
17/05/2021	300	-0.590

*Soakaway failed - Pit backfilled
 Start depth 0.50 Depth of Pit 1.500 Diff 1.000 75% full 0.75 25%full 1.25



St Teresa's Gardens – Soakaway Pit Photographs

IT01



IT01



APPENDIX 5 – Window Sample Records



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Number
WS-01

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 3.00m	Ground Level (mOD) 19.65	Site St. Teresa's Gardens	Job Number 10551-04-21
				Location 714023.6 E 732898.1 N	Dates 23/06/2021	Client The Land Development Agency	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
0.00-1.00	ES					FILL: Grey slightly sandy subangular fine to coarse Gravel with occasional subangular cobbles	
0.25	ES				(0.50)		
0.50	ES			19.15	0.50 (0.50)	MADE GROUND: Light brown slightly silty slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles, and rare fragments of terram and bricks	
1.00	ES			18.65	1.00 (1.00)	Light greyish brown slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles	
1.00-2.00	ES						
2.00	ES			17.65	2.00 (0.60)	Dark brown slightly gravelly very sandy CLAY with occasional subangular to subrounded cobbles	
2.60-3.00	ES			17.05	2.60 (0.20)	Dark brown fine to coarse SAND	
				16.85	2.80 (0.20)	Dark grey slightly silty very sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles	
3.00	ES			16.65	3.00	Complete at 3.00m	
Remarks GL - 1.00m BGL - Recovery - 100% 1.00m BGL - 2.00m BGL - Recovery - 85% 2.00m BGL - 3.00m BGL - Recovery - 100%							Scale (approx) 1:25 CB
							Logged By Figure No. 10551-04-21.WS-01



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**Number
WS-02**

Machine : Tech 10				Dimensions 88mm to 3.00m				Ground Level (mOD) 19.46				Site St. Teresa's Gardens				Number WS-02						
Method : Drive-in Windowless Sampler																Job Number 10551-04-21						
				Location 714039.3 E 732918.7 N				Dates 23/06/2021				Client The Land Development Agency				Sheet 1/1						
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend				Water	Instr									
0.00-0.70	ES				(0.30)	FILL: Grey slightly sandy subangular fine to coarse Gravel with occasional subangular cobbles																
0.25	ES			19.16	0.30	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional fragments of wood red brick and shells																
0.50	ES				(0.40)																	
0.70-2.60	ES			18.76	0.70	Light brown mottled grey slightly silty slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles																
1.00	ES				(1.90)																	
2.00	ES																					
2.60-3.00	ES			16.86	2.60	Dark grey slightly silty slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles																
3.00	ES			16.46	3.00	Complete at 3.00m																
Remarks GL - 1.00m BGL - Recovery - 95% 1.00m BGL - 2.00m BGL - Recovery - 90% 2.00m BGL - 3.00m BGL - Recovery - 100% 50mm slotted standpipe with a pea gravel surround installed from 3.00m 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							
														1:25	CB							
														Figure No.	10551-04-21.WS-02							



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**Number
WS-03**

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 2.00m 68mm to 3.00m	Ground Level (mOD) 19.61	Site St. Teresa's Gardens	Job Number 10551-04-21	
				Location 714064.8 E 732882.4 N	Dates 23/06/2021	Client The Land Development Agency	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water	
0.00-1.00 0.25 0.50 1.00 1.00-1.60 1.60-3.00 2.00 3.00	ES ES ES ES ES ES ES ES			19.61	0.50 0.50 0.50 1.10 (0.50) 1.60 (0.20) 1.80 (0.90) 2.70 (0.30) 3.00	FILL: Grey slightly sandy subangular fine to coarse Gravel with occasional subangular cobbles MADE GROUND: Dark brown, slightly sandy slightly gravelly Clay with occasional fragments of bricks, ceramics and terram Light brown mottled grey slightly silty slightly gravelly sandy CLAY Dark grey slightly sandy slightly gravelly silty CLAY with occasional subangular to subrounded cobbles Dark grey slightly silty slightly sandy slightly gravelly CLAY Dark grey sandy gravelly CLAY Complete at 3.00m		
Remarks GL - 1.00m BGL - Recovery - 100% 1.00m BGL - 2.00m BGL - Recovery - 75% 2.00m BGL - 3.00m BGL - Recovery - 65%							Scale (approx) 1:25 Logged By CB Figure No. 10551-04-21.WS-03	



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**Number
WS-04**

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 3.00m	Ground Level (mOD) 19.39	Site St. Teresa's Gardens	Job Number 10551-04-21		
				Location 714100.5 E 732912.6 N	Dates 23/06/2021	Client The Land Development Agency	Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.25	ES				(0.45)	FILL: Grey slightly sandy subangular fine to coarse Gravel with occasional subangular cobbles			
0.45-0.80 0.50	ES ES			18.94	0.45 (0.35)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional fragments of red brick, shells and terram			
0.80-2.10	ES			18.59	0.80	Light brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles			
1.00	ES				(1.30)				
2.00	ES								
2.10-3.00	ES			17.29	2.10 (0.90)	Dark grey slightly silty slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
3.00	ES			16.39	3.00	Complete at 3.00m			
Remarks GL - 1.00m BGL - Recovery - 85% 1.00m BGL - 2.00m BGL - Recovery - 100% 2.00m BGL - 3.00m BGL - Recovery - 40% 50mm slotted standpipe with a pea gravel surround installed from 3.00m 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
								1:25	CB
								Figure No.	10551-04-21.WS-04



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Number
WS-05

Machine : Tech 10		Dimensions 88mm to 3.00m		Ground Level (mOD) 19.25		Site St. Teresa's Gardens		Job Number 10551-04-21			
Method : Drive-in Windowless Sampler		Location 714125.1 E 732876.6 N		Dates 23/06/2021		Client The Land Development Agency		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water Instr		
0.00-1.00	ES				(0.20)	Dark brown TOPSOIL with occasional rootlets					
0.25	ES			19.05	0.20	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick, concrete, glass and ceramics					
0.50	ES				(0.80)						
1.00	ES			18.25	1.00	Light grey mottled brown slightly sandy slightly gravelly CLAY					
1.00-2.00	ES			17.95	(0.30)						
2.00	ES				1.30	Dark grey slightly silty slightly sandy gravelly CLAY [Damp]					
2.70-2.90	ES				(1.60)						
3.00	ES			16.35	2.90	Grey slightly sandy slightly gravelly CLAY [Damp]					
				16.25	3.00	Complete at 3.00m					
Remarks GL - 1.00m BGL - Recovery - 90% 1.00m BGL - 2.00m BGL - Recovery - 80% 2.00m BGL - 3.00m BGL - Recovery - 100% 50mm slotted standpipe with a pea gravel surround installed from 3.00m 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		
								1:25	CB		
								Figure No.	10551-04-21.WS-05		



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Number
WS-06

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 2.00m 68mm to 3.00m	Ground Level (mOD) 19.17	Site St. Teresa's Gardens	Job Number 10551-04-21		
				Location 714143.8 E 732912.6 N	Dates 22/06/2021	Client The Land Development Agency Engineer AECOM	Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.00	ES			19.07	(0.10) 0.10	Dark brown TOPSOIL with occasional rootlets.			
0.25	ES					MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick and concrete.			
0.50	ES				(0.90)				
1.00	ES			18.17	1.00	Dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles. (Damp)			
1.00-2.30	ES				(1.30)				
2.00	ES								
2.30-3.00	ES			16.87	2.30	Dark grey slightly silty slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles. (Damp)			
3.00	ES			16.17	3.00	Complete at 3.00m			
Remarks GL - 1.00m BGL - Recovery - 100% 1.00m BGL - 2.00m BGL - Recovery - 100% 2.00m BGL - 3.00m BGL - Recovery - 85% 50mm slotted standpipe with a pea gravel surround installed from 3.00m 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
								1:25	PM
								Figure No.	10551-04-21.WS-06



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Number
WS-07

Machine : Tech 10 Method : Drive-in Windowless Sampler			Dimensions 88mm to 2.00m	Ground Level (mOD) 19.35	Site St. Teresa's Gardens	Job Number 10551-04-21			
			Location 714170.3 E 732861.7 N	Dates 23/06/2021	Client The Land Development Agency	Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.70	ES				(0.20)	Dark brown TOPSOIL with occasional rootlets			
0.25	ES			19.15	0.20	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional fragments of shells and brick			
0.50	ES				(0.50)				
0.70-1.80	ES			18.65	0.70	Dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
1.00	ES				(0.80)				
1.80-2.00	ES			17.85	1.50	Dark brown very sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
2.00	ES			17.55	1.80	Greyish brown slightly silty slightly sandy slightly gravelly CLAY			
				17.35	2.00	Complete at 2.00m			
Remarks GL - 1.00m BGL - Recovery - 100% 1.00m BGL - 2.00m BGL - Recovery - 95% Obstruction at 2.00m BGL: presumed boulder 50mm slotted standpipe with a pea gravel surround installed from 2.00m 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
								1:25	CB
								Figure No.	10551-04-21.WS-07



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Number
WS-08

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 2.00m 68mm to 4.00m	Ground Level (mOD) 19.44	Site St. Teresa's Gardens	Job Number 10551-04-21
				Location 714127 E 732940.8 N	Dates 22/06/2021	Client The Land Development Agency Engineer AECOM	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.00-1.00	ES			19.24	(0.20) 0.20	Dark brown TOPSOIL with occasional rootlets.	
0.25	ES			18.44	(0.80) 1.00	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick glass and plastic.	
0.50	ES			17.44	(1.00) 2.00	Firm light brown mottled grey slightly silty slightly sandy slightly gravelly CLAY.	
1.00	ES			16.64	(0.80) 2.80	Firm dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
2.00	ES			16.14	(0.50) 3.30	Firm dark brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
2.00-3.30	ES			15.44	(0.70) 4.00	Stiff dark grey slightly silty slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
Remarks GL - 1.00m BGL - Recovery - 100% 1.00m - 2.00m BGL - Recovery - 100% 2.00m - 3.00m BGL - Recovery - 85% 3.00 - 4.00m BGL - Recovery - 100%							Scale (approx) 1:25 Logged By PM
							Figure No. 10551-04-21.WS-08



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Number
WS-09

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 0.85m	Ground Level (mOD) 19.43	Site St. Teresa's Gardens	Job Number 10551-04-21	
				Location 714136.9 E 732963.2 N	Dates 22/06/2021	Client The Land Development Agency	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Dark brown TOPSOIL with occasional rootlets.		
				19.13	0.30 (0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick and concrete.		
				18.58	0.85 (0.55)	Complete at 0.85m		
Remarks GL - 0.85m BGL - Recovery - 100% Refusal at 0.85m BGL due to obstruction							Scale (approx) 1:25	Logged By PM
							Figure No. 10551-04-21.WS-09	



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**Number
WS-09A**

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 0.85m	Ground Level (mOD) 19.43	Site St. Teresa's Gardens	Job Number 10551-04-21	
				Location 714140.8 E 732960.2 N	Dates 22/06/2021	Client The Land Development Agency	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.85	ES				(0.30)	Dark brown TOPSOIL with occasional rootlets.		
0.25	ES			19.13	0.30	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick and concrete.		
0.50	ES				(0.55)			
0.85	ES			18.58	0.85	Complete at 0.85m		
Remarks GL - 0.85m BGL - Recovery - 100% Refusal at 0.85m BGL due to obstruction							Scale (approx) 1:25	Logged By PM
							Figure No. 10551-04-21.WS-09A	



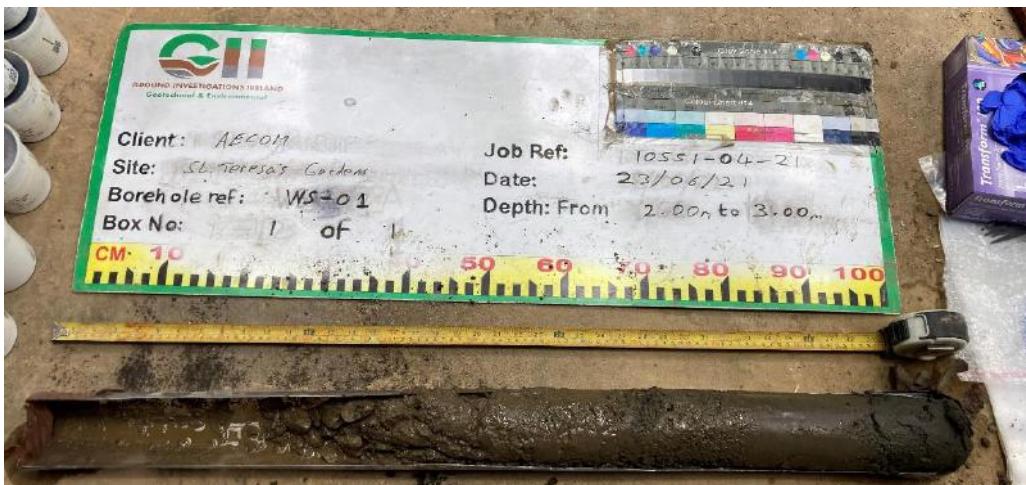
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Number
WS-10

Machine : Tech 10 Method : Drive-in Windowless Sampler				Dimensions 88mm to 2.00m 68mm to 3.00m	Ground Level (mOD) 19.21	Site St. Teresa's Gardens	Job Number 10551-04-21		
				Location 714125.4 E 732988.1 N	Dates 22/06/2021	Client The Land Development Agency	Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-2.30	ES					MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick and glass.			
0.25	ES								
0.50	ES				(1.00)				
1.00	ES			18.21	1.00	MADE GROUND: Light grey slightly sandy slightly gravelly silty Clay with occasional subangular to subrounded cobbles and occasional fragments of plastic timber and red brick.			
					(1.30)				
2.00	ES								
2.30-3.00	ES			16.91	2.30	Firm light brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.			
					(0.70)				
3.00	ES			16.21	3.00	Complete at 3.00m			
Remarks GL - 1.00m BGL - Recovery - 100% 1.00 - 2.00m BGL - Recovery - 95% 2.00 - 3.00m BGL - Recovery - 100% 50mm slotted standpipe with a pea gravel surround installed from 3.00m 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
								1:25	PM
								Figure No.	10551-04-21.WS-10

St. Teresa's Gardens – Window Sample Photographs

WS-01



WS-02



WS-03



WS-04



WS-05



WS-06



WS-07



WS-08



WS-09A



WS-09



WS-10



APPENDIX 6 – Cable Percussion and Rotary Core Borehole Records



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Site
St. Teresa's Gardens

Borehole Number
BH01

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.70m 147mm cased to 12.70m		Ground Level (mOD) 19.10		Client The Land Development Agency		Job Number 10551-04-21	
Method : Cable Percussion & Rotary Cored		Location 714121.9 E 733011.2 N		Dates 22/06/2021-01/07/2021		Engineer AECOM		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water Instr
0.25	B					(1.60)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional subangular to sub rounded cobbles and boulders and occasional pieces of red brick, metal and concrete.		
0.25	ES								
0.50	B								
0.50	ES								
1.00-1.45	SPT(C) N=14			2,3/4,4,3,3	17.50	1.60	Firm to stiff grey slightly sandy slightly gravelly silty CLAY with occasional cobbles.		
1.00	B								
1.00	ES								
2.00	B								
2.00	ES								
2.00-2.50	UT 50%			17 blows		(1.40)			
3.00-3.45	SPT(C) N=21								
3.00	B								
3.00	ES								
4.00-4.45	SPT(C) N=40								
4.00	B								
4.50	TCR	SCR	RQD	FI					
4.70-4.77	100								
4.70									
5.20-5.65									
5.20									
6.25	73	20	49						
6.70									
7.15	NI								
7.90	NI								
8.20	7								
9.70									
Remarks Hand dug inspection pit. Groundwater encountered at 4.70m BGL. Rotary follow on from 4.70m BGL Standpipe installed upon completion: 60mm slotted standpipe with pea gravel surround from 12.70m BGL to 6.70m BGL, 60mm plain standpipe from 6.70m BGL to GL with bentonite seal, finished with a raised cover Complete at 12.70m BGL Chiselling from 4.70m to 4.70m for 1 hour.								Scale (approx)	Logged By
								1:50	MB & SG
								Figure No.	10551-04-21.BH01



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Borehole
Number
BH01

Machine : Dando 2000 & Beretta T47S Flush : Water Core Dia: 102 mm Method : Cable Percussion & Rotary Cored				Casing Diameter 200mm cased to 4.70m 147mm cased to 12.70m			Ground Level (mOD) 19.10		Site St. Teresa's Gardens			Job Number 10551-04-21					
				Location 714121.9 E 733011.2 N			Dates 22/06/2021-01/07/2021		Client The Land Development Agency			Sheet 2/2					
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	Instr					
11.20	93	81	60	6		19.10	6.40										
	100	95	87					Complete at 12.70m									
12.70						19.10	12.70										
Remarks										Scale (approx)	Logged By						
										1:50	MB & SG						
										Figure No.	10551-04-21.BH01						



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Site							Borehole Number		
St. Teresa's Gardens							BH02		
Machine : Dando 2000 & Beretta T47S		Casing Diameter		Ground Level (mOD)		Client		Job Number	
Method : Cable Percussion		200mm cased to 4.90m 147mm cased to 11.20m		19.17		The Land Development Agency		10551-04-21	
Location		Dates		Engineer		Sheet		1/2	
714100.9 E 732986.6 N		22/06/2021-02/07/2021		AECOM					
Depth (m)	Sample / Tests		Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B ES						(1.40)	MADE GROUND: Dark brown/black slightly sandy slightly gravelly Clay occasional subangular to subrounded cobbles and occasional pieces of red brick timber and concrete boulders .	
0.25	B ES						1.40	Stiff brown slightly sandy slightly silty gravelly CLAY with occasional subangular to subrounded cobble.	
0.50	SPT(C) N=17 B ES				1,3/3,4,5,5	17.77	(2.20)		
0.50									
1.00-1.45									
1.00									
1.00									
2.00	B ES UT 40%								
2.00									
2.00-2.50									
3.00	SPT(C) N=20 B ES				2,4/4,4,5,7	15.57	3.60	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles	
3.00									
3.00-3.45									
3.00									
3.00									
4.00	SPT(C) 50/245 B								
4.00									
4.90									
4.90-4.95									
4.60									
4.90									
4.90-4.95									
4.60									
5.20	TCR 100 SCR 100 RQD 100		FI	13	25/50 8,9/10,14,14,12 50/0 SPT(C) 25*/50 B Water strike(1) at 4.70m, rose to 3.30m in 20 mins. 8,11/13,13,15,9 SPT(C) N=50	17.77	(2.00)	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands, euhedral pyrite mineralisation parallel to F1, and calcite mineralisation parallel to F1 and F2	
5.20-5.65									
5.20									
5.60									
6.00									
6.40									
6.70									
7.90									
8.20									
9.70									
Remarks Hand dug inspection pit. Groundwater encountered at 4.70m BGL. Rotary follow on from 4.90m BGL. Borehole backfilled upon completion. Complete at 11.20m BGL. Chiselling from 4.90m to 4.90m for 1 hour.								Scale (approx) 1:50 Figure No. 10551-04-21.BH02	Logged By MB & SG

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Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.90m 147mm cased to 11.20m			Ground Level (mOD) 19.17		Client The Land Development Agency			Job Number 10551-04-21		
Flush : Water										Sheet 2/2		
Core Dia: 102 mm					Dates 22/06/2021-02/07/2021		Engineer AECOM					
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend Water		
11.20	77	51	95			7.97	11.20					
								Complete at 11.20m				
Remarks								Scale (approx)	Logged By			
								1:50	MB & SG			
								Figure No.	10551-04-21.BH02			



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Site
St. Teresa's Gardens

Borehole Number
BH03

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.70m 146mm cased to 11.20m		Ground Level (mOD) 19.30		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion		Location 714143.8 E 732978 N		Dates 24/06/2021-05/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B						MADE GROUND; Black slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles with occasional pieces of red brick and concrete.	
0.25	ES					(1.70)		
0.50	B							
0.50	ES							
1.00-1.45	SPT(C) N=7			2,1/1,2,2,2				
1.00	B							
1.00	ES							
2.00-2.45	SPT(C) N=14			3,4/4,2,4,4			Firm to stiff brown grey slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles.	
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=32			3,2/5,9,9,9			Very stiff brown grey slightly silty slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles.	
3.00	B							
4.00-4.45	SPT(C) N=47			25/50 9.9/11,11,11,14 50/0			Very stiff dark grey/brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobble.	
4.00	B							
4.40	TCR	SCR	RQD	FI				
4.70-4.76	33							
4.70								
5.20-5.65								
5.20								
5.60	100	59	41	12			Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE interbedded with strong dark grey fine grained argillaceous LIMESTONE with occasional clay bands, calcite veins parallel to F1 and F2 and euhedral pyrite mineralisation parallel to F1	
6.70								
7.50	100	100	89	3			F1: 5.60m BGL to 11.20m BGL: Closely spaced, 0 to 20 degrees, smooth to rough, planar to undulose with clay smear, occasional clay fill, calcite mineralisation and euhedral pyrite mineralisation	
7.75				20				
8.20				6				
8.30				12			F2: 5.60m BGL to 11.20m BGL: Medium spacing, 45 to 65 degrees, smooth to rough, planar to undulose with clay smear and calcite mineralisation	
9.70								
Remarks Hand dug inspection pit. Groundwater encountered at 4.70m BGL. Rotary follow on from 4.70m BGL. Borehole backfilled upon completion. Complete at 11.20m BGL. Chiselling from 4.70m to 4.70m for 1 hour.								Scale (approx) 1:50 Logged By MB & SG Figure No. 10551-04-21.BH03

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Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.70m 146mm cased to 11.20m			Ground Level (mOD) 19.30		Client The Land Development Agency			Job Number 10551-04-21			
Flush : Water										Sheet 2/2			
Core Dia: 102 mm		Location 714143.8 E 732978 N			Dates 24/06/2021-05/07/2021		Engineer AECOM						
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend Water			
11.20	87	84	66	4		8.10	11.20	Complete at 11.20m					
Remarks								Scale (approx)	Logged By				
								1:50	MB & SG				
								Figure No.	10551-04-21.BH03				



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Site
St. Teresa's Gardens

Borehole Number
BH04

Machine : Dando 2000		Casing Diameter 200mm cased to 4.80m 146mm cased to 11.20m		Ground Level (mOD) 19.23		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion		Location 714116.1 E 732960.7 N		Dates 23/06/2021-06/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B					(1.10)	MADE GROUND: Black/Brown slightly sandy slightly gravelly Clay with occasional sub angular to sub rounded cobble and occasional red brick .	
0.25	ES							
0.50	B							
0.50	ES							
1.00-1.45	SPT(C) N=7			2,2/1,2,2,2	18.13	1.10 (0.30)	Soft dark brown slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles.	
1.00	B				17.83	1.40		
1.00	ES						Firm grey slightly silty slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles.	
2.00-2.45	SPT(C) N=10			1,3/3,2,2,3		(1.10)		
2.00	B				16.73	2.50		
2.00	ES						Stiff dark grey slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles.	
3.00-3.45	SPT(C) N=26			4,3/4,6,7,9		(1.40)		
3.00	B				15.33	3.90		
4.00-4.41	SPT(C) 50/255			7,11/13,13,14,10 25/50 50/0		(0.90)	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional sub angular to sub rounded cobbles.	V1
4.00	B							
4.90	TCR	SCR	RQD	FI				
4.90-4.96	100	33	50	B SPT(C) 25*60 Water strike(1) at 4.90m, rose to 4.00m in 20 mins.				
4.60					14.43	4.80	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands, calcite mineralisation parallel to F1 and F2 and euhedral pyrite mineralisation parallel to F1	V1
4.80								
5.00								
5.20								
5.65								
5.90								
6.70								
6.90								
7.15								
8.20								
9.70								
Remarks Hand dug inspection pit. Groundwater encountered at 4.70m BGL. Rotary follow on from 4.80m BGL. Borehole backfilled upon completion. Complete at 11.20m BGL. Chiselling from 4.90m to 4.90m for 1 hour.								Scale (approx) 1:50 Logged By MB & SG Figure No. 10551-04-21.BH04



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Borehole
Number
BH04

Machine : Dando 2000						Casing Diameter		Ground Level (mOD)		Site			
Flush : Water						200mm cased to 4.80m 146mm cased to 11.20m		19.23		St. Teresa's Gardens			
Core Dia: 102 mm						Location		Dates		Client			
Method : Cable Percussion						714116.1 E 732960.7 N		23/06/2021- 06/07/2021		The Land Development Agency			
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description			Legend		
11.20	100	90	87			8.03	11.20				Water		
								Complete at 11.20m					
Remarks										Scale (approx)	Logged By		
										1:50	MB & SG		
										Figure No.	10551-04-21.BH04		



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Site
St. Teresa's Gardens

Borehole Number
BH05

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.40m 146mm cased to 12.70m		Ground Level (mOD) 19.19		Client The Land Development Agency		Job Number 10551-04-21		
Method : Cable Percussion & Rotary Cored		Location 714156.3 E 732929.3 N		Dates 25/06/2021-07/07/2021		Engineer AECOM		Sheet 1/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.25	B				18.99	(0.20) 0.20	MADE GROUND: Brown gravelly Clay with occasional cobbles			
0.25	ES					(1.40)	MADE GROUND: Black brown slightly sandy slightly gravelly Clay with occasional crushed brick and occasional subangular to subrounded cobbles.			
0.50	B									
0.50	ES									
1.00-1.15	SPT(C) 50/0			19.4/50						
1.00	B									
1.00	ES									
2.00-2.45	SPT(C) N=14			3,5/3,3,3,5						
2.00	B									
2.00	ES									
3.00-3.45	SPT(C) N=13			2,3/3,3,3,4						
3.00	B									
4.00	TCR	SCR	RQD	FI	15.69	3.50	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
4.00-4.27										
3.70										
4.40	60			Water strike(1) at 4.20m, rose to 3.90m in 20 mins. B						
5.20-5.65				7,15/15,14,21 SPT(C) N=50		(3.10)				
5.20										
6.60	93	7	7							
6.70										
8.20	100	77	57							
9.60				9						
9.70	100	83	43							
Remarks Hand dug inspection pit. Groundwater encountered at 4.2m BGL. Rotary follow on from 4.40m BGL. Standpipe installed: 60mm slotted standpipe with pea gravel surround from 12.70m BGL to 6.70m BGL, plain standpipe from 6.70m BGL to GL with bentonite seal, finished with a raised cover Complete at 12.70m BGL Chiselling from 4.40m to 4.40m for 1 hour.								Scale (approx)	Logged By	
								1:50	MB & SG	
								Figure No.	10551-04-21.BH05	



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Borehole
Number
BH05

Machine : Dando 2000 & Beretta T47S			Casing Diameter 200mm cased to 4.40m 146mm cased to 12.70m			Ground Level (mOD) 19.19		Site St. Teresa's Gardens			Job Number 10551-04-21								
Flush : Water			Location 714156.3 E 732929.3 N			Dates 25/06/2021-07/07/2021		Client The Land Development Agency			Sheet 2/2								
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	Instr							
11.20	100	95	88	4		6.49	12.70	Complete at 12.70m											
	100	100	97																
Remarks																			
										Scale (approx)	Logged By								
										1:50	MB & SG								
										Figure No.	10551-04-21.BH05								



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Site

St. Teresa's Gardens

Borehole

Number Plus

Machine : Beretta T47S			Casing Diameter 146mm cased to 12.70m			Ground Level (mOD) 19.32		Client The Land Development Agency			Job Number 10551-04-21
Flush : Water			Location (dGPS) 714017.2 E 732936.6 N			Dates 23/07/2021		Engineer AECOM			Sheet 1/2
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
2.20 2.20-2.65	0	0			2,3/3,3,4,4 SPT(C) N=14		(2.80)	NO RECOVERY: Driller notes: Hardcore/Fill			
3.70 3.70-4.15	33				6.8/11,12,12,15 SPT(C) N=50	16.52	2.80	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
5.20 5.20-5.65	96				8.8/13,17,20 SPT(C) N=50		(3.40)				
6.20	93	23	20			13.12	6.20	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE with calcite parallel to F1 and F2, and occasional mudstone interbeds			
6.70				4			(1.00)				
7.20	93	60	53			12.12	7.20	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional limestone interbeds, calcite mineralisation parallel to F1 and F2, euhedral pyrite mineralisation parallel to F1 and occasional clay bands			
8.20				10			(2.40)				
9.60 9.70	93	66	43			9.72	9.60 (0.55)	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE with calcite mineralisation parallel to F2 and euhedral pyrite			
				4							
Remarks No groundwater encountered Borehole backfilled upon completion Complete at 12.70m BGL										Scale (approx)	Logged By
										1:50	JS
										Figure No. 10551-04-21.BH06	

Remarks

Remarks
No groundwater encountered
Borehole backfilled upon completion
Complete at 12.70m BGL

Scale
(approx) Logged
By

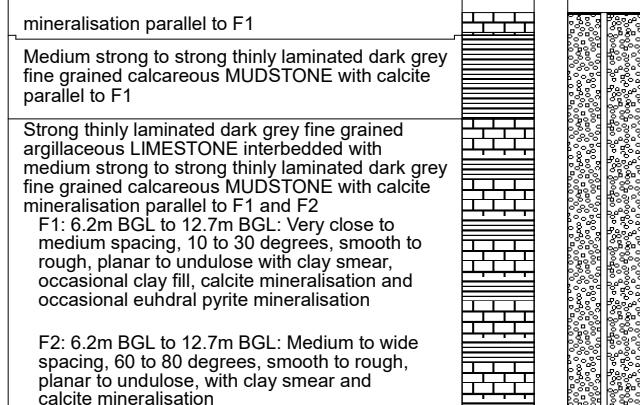
Figure No.
10551-04-31-BH06



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Site
St. Teresa's Gardens

Borehole Number
BH06

Machine : Beretta T47S			Casing Diameter 146mm cased to 12.70m			Ground Level (mOD) 19.32		Client The Land Development Agency			Job Number 10551-04-21									
Flush : Water			Location (dGPS) 714017.2 E 732936.6 N			Dates 23/07/2021		Engineer AECOM			Sheet 2/2									
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	Instr								
10.15	96	93	86	6	7	9.17	(0.55)	mineralisation parallel to F1												
10.70								Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with calcite parallel to F1												
11.20								Strong thinly laminated dark grey fine grained argillaceous LIMESTONE interbedded with medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with calcite mineralisation parallel to F1 and F2												
12.70								F1: 6.2m BGL to 12.7m BGL: Very close to medium spacing, 10 to 30 degrees, smooth to rough, planar to undulose with clay smear, occasional clay fill, calcite mineralisation and occasional euhedral pyrite mineralisation F2: 6.2m BGL to 12.7m BGL: Medium to wide spacing, 60 to 80 degrees, smooth to rough, planar to undulose, with clay smear and calcite mineralisation												
Complete at 12.70m																				
Remarks											Scale (approx)	Logged By								
											1:50	JS								
											Figure No.	10551-04-21.BH06								



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Site
St. Teresa's Gardens

Borehole Number
BH07

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.30m 146mm cased to 10.40m		Ground Level (mOD) 19.32		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714017.2 E 732936.6 N		Dates 05/07/2021-16/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B					(0.60)	MADE GROUND: Grey slightly sandy gravelly Clay with occasional cobbles	
0.25	ES					0.60	Possible MADE GROUND: Very soft brown slightly sandy slightly gravelly Clay	▼1
0.50	B							
0.50	ES							
1.00	B							
1.00	ES							
1.00-1.45	SPT(C) N=5			Water strike(1) at 1.00m, rose to 0.70m in 20 mins, sealed at YESm. 1,2/2,1,1,1		(2.40)		
2.00-2.45	SPT(C) N=2			1,1/0,0,1,1				
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=39			6,7/9,9,11,10		3.00	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
3.00	B			16,20/50				
4.00	TCR	SCR	RQD	FI		(1.30)		
4.00-4.22	80	53	29					
3.70								
4.20								
4.90								
5.20								
5.25								
6.15								
6.50								
6.70								
6.75								
7.45								
8.20								
9.70								
Remarks Hand dug inspection pit. Groundwater encountered at 1m BGL. Rotary follow on from 4.30m BGL. Borehole backfilled upon completion. Complete at 10.40m BGL. Chiselling from 4.30m to 4.30m for 1 hour.								Scale (approx) 1:50
								Logged By MB & JS
								Figure No. 10551-04-21.BH07

 Ground Investigations Ireland Ltd www.gii.ie								Site St. Teresa's Gardens		Borehole Number BH07			
Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.30m 146mm cased to 10.40m			Ground Level (mOD) 19.32		Client The Land Development Agency			Job Number 10551-04-21			
Flush : Water										Sheet 2/2			
Core Dia: 102 mm		Location 714017.2 E 732936.6 N			Dates 05/07/2021-16/07/2021		Engineer AECOM						
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend			
10.40	100	85	71			8.92	(0.90) 10.40			Water			
								Complete at 10.40m					
Remarks								Scale (approx)	Logged By				
								1:50	MB & JS				
								Figure No.	10551-04-21.BH07				



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Site
St. Teresa's Gardens

Borehole Number
BH08

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.20m 146mm cased to 11.10m		Ground Level (mOD) 19.81		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714006.3 E 732890.3 N		Dates 02/07/2021-20/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				19.41	(0.40)	MADE GROUND: Grey slightly clayey angular fine to coarse Gravel.	
0.25	ES					0.40		
0.50	B					(0.80)	MADE GROUND: Black brown slightly sandy slightly gravelly CLAY with occasional cobbles.	
0.50	ES							
1.00	B				18.61	1.20		
1.00	ES							
1.00-1.45	SPT(C) N=11			Water strike(1) at 1.00m, rose to 0.90m in 20 mins. 2,1/4,4,1,2			Firm grey brown slightly sandy gravelly Clay with occasional cobbles and boulders	
2.00	B					(1.80)		
2.00	ES							
3.00	B				16.81	3.00	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles and boulders	
3.00-3.45	SPT(C) N=45			19.6/50 Water strike(2) at 3.00m, rose to 2.30m in 20 mins. 3,7/9,11,12,13				
4.00				B SPT(C) 25*/120 50/80				
4.00-4.20						(1.90)		
3.70	TCR	SCR	RQD	FI				
	73	6	6					
4.90					14.91	4.90	Strong thinly laminated dark grey fine grained argilaceous LIMESTONE with occasional mudstone interbeds, occasional clay bands, calcite mineralisation parallel to F1 and F2 and euhedral pyrite growth parallel to F1 and F2	
5.20								
	100	83	76				F1: 4.9m BGL to 11.1m BGL: Close to medium spacing, 10 to 30 degrees, smooth to rough, planar to undulose with clay smear, occasional clay fill, calcite mineralisation and euhedral pyrite mineralisation	
6.70								
	96	60	53					
8.20				8		(6.20)	F2: 4.9m BGL to 11.1m BGL: Medium to wide spacing, 60 to 80 degrees, smooth to rough, planar to undulose with clay smear and calcite/euhedral pyrite co-mineralisation	
9.70								
Remarks Hand dug inspection pit. Groundwater encountered at 1m BGL. Obstruction at 2m for SPT Rotary follow on from 4.20m BGL Borehole backfilled upon completion Complete at 11.10m BGL Chiselling from 4.20m to 4.20m for 1 hour.								Scale (approx) 1:50 Logged By MB & JS Figure No. 10551-04-21.BH08

 Ground Investigations Ireland Ltd www.gii.ie								Site St. Teresa's Gardens		Borehole Number BH08		
Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.20m 146mm cased to 11.10m			Ground Level (mOD) 19.81		Client The Land Development Agency			Job Number 10551-04-21		
Flush : Water												
Core Dia: 102 mm												
Method : Cable Percussion & Rotary Cored		Location 714006.3 E 732890.3 N			Dates 02/07/2021-20/07/2021		Engineer AECOM			Sheet 2/2		
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description				
11.10	93	89	82			8.71	11.10					
								Complete at 11.10m				
Remarks								Scale (approx)	Logged By			
								1:50	MB & JS			
								Figure No.	10551-04-21.BH08			



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Site
St. Teresa's Gardens

Borehole Number
BH09

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.70m 146mm cased to 10.70m		Ground Level (mOD) 19.55		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714044.8 E 732888.5 N		Dates 01/07/2021-23/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				19.35	(0.20) 0.20	MADE GROUND: Grey angular fine to coarse Gravel	
0.25	ES					(0.70)	MADE GROUND: Grey slightly sandy slightly gravelly Clay with occasional red brick	
0.50	B				18.65	0.90 (0.60)	Firm brown/black slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
0.50	ES				18.05	1.50 (1.50)	Firm brown slightly sandy slightly gravelly CLAY.	
1.00-1.22	SPT(C) 50/70			18,41/50				
1.00	B							
1.00	ES							
1.50-2.00	UT 0%							
2.00-2.45	SPT(C) N=11			1,3/2,3,3,3				
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=17			4,5/4,4,3,6	16.55	3.00 (0.40)	Stiff brown slightly sandy slightly gravelly CLAY	
3.00	B				16.15	3.40 (1.30)	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles.	
4.00-4.40	8,11/12,14,14,10							
4.00	SPT(C) 50/250							
4.10	B							
4.10	Water strike(1) at 4.20m, rose to 1.90m in 20 mins.							
4.70-4.74	90	41	32	25/50 SPT(C) 25*/40	14.85	4.70 (0.80)	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with calcite mineralisation parallel to F1 and F2	
4.70				50/0 B				
5.20								
5.50								
6.20								
6.70								
6.80								
8.20								
9.70								
Remarks Hand dug inspection pit. Groundwater encountered at 1m BGL. Obstruction at 1m for SPT. Rotary follow on from 4.70m BGL. Borehole backfilled upon completion. Complete at 10.70m BGL. Chiselling from 4.70m to 4.70m for 1 hour.								Scale (approx) 1:50 Logged By MB & JS
								Figure No. 10551-04-21.BH09

 Ground Investigations Ireland Ltd www.gii.ie								Site St. Teresa's Gardens		Borehole Number BH09		
Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.70m 146mm cased to 10.70m			Ground Level (mOD) 19.55		Client The Land Development Agency			Job Number 10551-04-21		
Flush : Water												
Core Dia: 102 mm												
Method : Cable Percussion & Rotary Cored		Location 714044.8 E 732888.5 N			Dates 01/07/2021-23/07/2021		Engineer AECOM			Sheet 2/2		
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description				
10.70	80	65	55	9		8.85	10.70	parallel to F1 and euhedral pyrite mineralisation parallel to f1				
							(1.00)	Complete at 10.70m				
Remarks								Scale (approx)	Logged By			
								1:50	MB & JS			
								Figure No.	10551-04-21.BH09			



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Site
St. Teresa's Gardens

Borehole Number
BH10

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.40m 146mm cased to 12.70m		Ground Level (mOD) 19.35		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714058.7 E 732930.4 N		Dates 01/07/2021-22/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				19.15	(0.20) 0.20	MADE GROUND: Grey slightly clayey angular fine to coarse Gravel.	
0.25	ES					(0.80)	MADE GROUND: Black slightly sandy slightly gravelly Clayey gravel with occasional red brick.	
0.50	B				18.35	1.00	Soft brown black slightly sandy slightly gravelly CLAY.	
0.50	ES			2,4/2,2,2,2		(1.70)		
1.00-1.45	SPT(C) N=8			0,1/1,1,0,2				
1.00	B			Water strike(1) at 2.70m, rose to 2.00m in 20 mins. 9,7/10,10,12,12				
1.00	ES			17,22/21,29				
2.00-2.45	SPT(C) N=4			B				
2.00				ES				
2.00					16.65	2.70	Very stiff dark grey slightly sandy slightly gravelly CLAY occasional subangular to subrounded cobbles	
3.00	B					(3.90)		
3.00-3.45	SPT(C) N=44							
4.00	TCR	SCR	RQD	FI				
4.00-4.26								
3.70	16							
5.20	73							
6.60					12.75	6.60	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE with euhedral pyrite mineralisation parallel to F1	
6.70					12.45	(0.30) 6.90		
6.90						(0.80)	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands	
7.70	96	73	55	15	11.65	7.70	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE with calcite mineralisation parallel to F1 and F2 and co-mineralisation of euhedral pyrite and possible arsenopyrite with calcite in F2	
8.20				6	11.10	(0.55) 8.25		
8.25	100	46	21	19		(1.55)	Medium strong thinly laminated dark grey fine grained calcareous MUDSTONE with euhedral pyrite mineralisation parallel to F1 and occasional clay bands	
9.70							F1: 6.60m BGL to 12.70m BGL: Very close to medium, 15 to 30 degrees, smooth to rough and occasionally stepped, planar to undulose, with clay smear, occasional clay infill, calcite mineralisation and euhedral pyrite mineralisation F2: 6.60m BGL to 12.70m BGL: Medium to wide, 60 to 75 degrees, smooth to rough, planar to undulose with clay smear, calcite mineralisation and occasional	
9.80								
Remarks Hand dug inspection pit. Groundwater encountered at 2.70m BGL. Rotary follow on from 4.40m BGL. Borehole backfilled upon completion. Complete at 12.70m BGL. Chiselling from 4.70m to 4.70m for 1 hour.								Scale (approx) 1:50
								Logged By MB & JS
								Figure No. 10551-04-21.BH10



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Site
St. Teresa's Gardens

Borehole Number
BH10

Machine : Dando 2000 & Beretta T47S			Casing Diameter 200mm cased to 4.40m 146mm cased to 12.70m			Ground Level (mOD) 19.35		Client The Land Development Agency			Job Number 10551-04-21						
Flush : Water			Location 714058.7 E 732930.4 N			Dates 01/07/2021- 22/07/2021		Engineer AECOM			Sheet 2/2						
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description			Legend						
11.20	100	78	65	10		9.55	9.80	co-mineralisation of euhedral pyrite with calcite Strong thinly laminated dark grey fine grained argillaceous LIMESTONE with occasional clay bands in F1, calcite mineralisation in F1 and F2, and co-mineralisation of euhedral pyrite with calcite in F2									
	(1.90)																
	93	59	31	15			7.65	11.70	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with clay bands and calcite mineralisation parallel to F1 and F2								
						6.65		12.70									
						Complete at 12.70m											
Remarks										Scale (approx)	Logged By						
										1:50	MB & JS						
										Figure No.	10551-04-21.BH10						



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Site
St. Teresa's Gardens

Borehole Number
BH11

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.50m 146mm cased to 12.70m		Ground Level (mOD) 19.39		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & rotary Cored		Location 714082.3 E 732895.8 N		Dates 25/06/2021-08/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B					(0.70)	MADE GROUND: Grey slightly sandy gravelly Clay with occasional red brick, glass and ceramic.	
0.25	ES				18.69	0.70	Possible MADE GROUND: Very soft grey brown slightly sandy gravelly silty CLAY	
0.50	B					(2.00)		
0.50	ES							
1.00-1.45	SPT(C) N=3			1,2/0,1,1,1				
1.00	B							
1.00	ES							
2.00-2.45	SPT(C) N=5			1,2/1,2,1,1				
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=24			5,4/6,6,6,6				
3.00	B							
4.00	B			7,8/8,9,9,10				
4.00-4.45				SPT(C) N=36				
4.50	TCR	SCR	RQD	FI				
4.20	100							
5.20	47	17	100					
6.45								
6.70	87	73	33	12				
8.20								
9.70	100	96	93					
Remarks Hand dug inspection pit. Groundwater encountered at 4.5m BGL. Rotary follow on from 4.5m BGL Borehole backfilled upon completion Complete at 12.70m BGL Chiselling from 4.50m to 4.50m for 1 hour.								Scale (approx) 1:50 Logged By MB & SG Figure No. 10551-04-21.BH11



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Borehole Number
BH11

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.50m 146mm cased to 12.70m		Ground Level (mOD) 19.39		Site St. Teresa's Gardens		Client The Land Development Agency		Job Number 10551-04-21						
Flush : Water		Core Dia: 102 mm		Location 714082.3 E 732895.8 N		Dates 25/06/2021-08/07/2021		Engineer AECOM		Sheet 2/2						
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water					
11.20	97	93	90	5			6.69	Complete at 12.70m								
	97	88	74				12.70									
Remarks																
										Scale (approx)	Logged By					
										1:50	MB & SG					
										Figure No.	10551-04-21.BH11					



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Site
St. Teresa's Gardens

Borehole Number
BH12

Machine : Dando 2000 & Beretta T47S		Casing Diameter 200mm cased to 4.50m 146mm cased to 10.00m		Ground Level (mOD) 19.02		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714124.3 E 732921.9 N		Dates 28/06/2021-04/07/2021		Engineer AECOM		Sheet 1/1
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				18.94	0.08	TARMACADAM	
0.25	ES					(0.62)	MADE GROUND: Grey clayey angular fine to coarse Gravel.	
0.50	B				18.32	0.70	MADE GROUND: Grey/brown slightly sandy gravelly Clay with occasional red brick and glass.	
0.50	ES				18.02	1.00	Soft to firm greyish brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles	
1.00-1.45	SPT(C) N=8			0,4/2,2,2,2		(1.50)		
1.00	B							
1.00	ES							
1.50-2.00	UT 0%							
2.00-2.45	SPT(C) N=6			1,3/3,1,1,1				
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=37			4,9/11,7,11,8				
3.00	B							
3.70	TCR	SCR	RQD	FI				
4.00-4.14	100	70	65	SPT(C) 27*/140 Water strike(1) at 4.00m, rose to 3.60m in 20 mins. B				
4.00								
4.00								
5.20								
6.70								
8.20								
9.70								
10.00								

Remarks

Hand dug inspection pit.
Groundwater encountered at 4m BGL.
Rotary follow on from 4.50m BGL.
Borehole backfilled upon completion.
Complete at 10.00m BGL.
Chiselling from 4.20m to 4.20m for 1 hour.

Scale (approx)
1:50
Logged By
MB & SG

Figure No.
10551-04-21.BH12



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Site
St. Teresa's Gardens

Borehole Number
BH13

Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 4.50m 146mm cased to 10.10m		Ground Level (mOD) 19.08		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714123.4 E 732891.6 N		Dates 28/06/2021-20/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				18.78	(0.30)	TOPSOIL	
0.25	ES				18.78	0.30	MADE GROUND: Black/brown slightly sandy slightly gravelly Clay with occasional subangular to subrounded cobbles and occasional fragments of red brick and concrete.	
0.50	B				18.38	(0.40)		
0.50	ES				18.38	0.70	Soft to firm brown/grey slightly sandy slightly gravelly CLAY.	
1.00-1.45	SPT(C) N=8			0.4/2,2,2,2		(2.00)		
1.00	B							
1.00	ES							
1.50	UT O%							
2.00-2.45	SPT(C) N=6			1,3/3,1,1,1				
2.00	B							
2.00	ES							
3.00-3.45	SPT(C) N=37			4,9/11,7,11,8				
3.00	B			25/50				
3.60	TCR	SCR	RQD	FI	50/0			
4.00-4.06					SPT(C) 25*/60			
4.00					Water strike(1) at 4.00m, rose to 3.60m in 20 mins.			
4.20					B			
5.10					B			
6.60	100	70	49	17	5.10		Strong thinly laminated dark grey fine grained argillaceous LIMESTONE interbedded with medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands, calcite mineralisation parallel to F2 and euhedral pyrite mineralisation parallel to F1	
8.10	96	69	63		5.10		F1: 5.10m BGL to 10.10m BGL: Very close to medium spacing, 10 to 20 degrees, smooth to rough, planar to undulose, with clay smear, clay fill, calcite mineralisation and euhedral pyrite mineralisation	
9.60	93	93	90	5	5.10		F2: 5.10m BGL to 10.10m BGL: Wide spacing, 80 to 90 degrees, smooth to rough, planar to undulose, with clay smear and calcite mineralisation	
	100	100	90	12				
Remarks Hand dug inspection pit. Groundwater encountered at 4m BGL. Rotary follow on from 4.50m BGL Borehole backfilled upon completion Complete at 10.10m BGL Chiselling from 4.20m to 4.20m for 1 hour.								Scale (approx) 1:50
								Logged By MB & JS
								Figure No. 10551-04-21.BH13



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**Borehole
Number
BH13**

Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 4.50m 146mm cased to 10.10m		Ground Level (mOD) 19.08		Site St. Teresa's Gardens		Job Number 10551-04-21			
Flush : Water											
Core Dia: 102 mm											
Method : Cable Percussion & Rotary Cored											
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description			
10.10						8.98	10.10				
								Complete at 10.10m			
Remarks								Scale (approx)	Logged By		
								1:50	MB & JS		
								Figure No. 10551-04-21.BH13			



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Borehole
Number
BH14

Machine : Dando 2000 & Beretta T44							Casing Diameter			Ground Level (mOD)		Site													
Method : Cable Percussion & Rotary Cored							200mm cased to 4.00m 146mm cased to 11.10m			19.17		St. Teresa's Gardens													
							Location			Dates		Client			Job Number										
							714158.3 E 732877.4 N			29/06/2021- 21/07/2021		The Land Development Agency			10551-04-21										
										Engineer					Sheet										
										AECOM					1/2										
Depth (m)	Sample / Tests		Casing Depth (m)	Water Depth (m)	Field Records		Level (mOD)	Depth (m) (Thickness)	Description				Legend	Water	Instr										
0.25	B ES B ES	SPT(C) N=10 B ES			1,2/2,2,3,3	0,1/0,1,1,1	18.87 18.27 16.47 14.37	(0.30) 0.30 (0.60) 0.90 (1.80) 2.70 (2.10) 4.80 (0.90) 5.70 (3.00) 8.70 8.70	TOPSOIL																
0.25									MADE GROUND: Brown/black slightly sandy slightly gravelly Clay with occasional ceramics and red brick.																
0.50									Very soft grey brown slightly gravelly slightly sandy silty CLAY																
0.50																									
1.00-1.45	SPT(C) N=3 B ES	UT 0%			1,3/4,6,6,8 25/50 SPT(C) 25*/80	Water strike(1) at 3.80m, rose to 3.20m in 20 mins. 50/0 B	F1	(2.10)																	
2.00																									
2.00																									
2.50-3.00																									
3.00-3.45	TCR 93	SCR 20	RQD 9		18	8	18.27 16.47 14.37 10.47	(1.80) (2.70) (4.80) (0.90) (5.70) (3.00) (8.70)																	
3.60																									
4.00-4.08																									
4.00																									
4.80	100	23	23		90	73	56	7																	
5.10																									
5.70																									
6.60																									
8.10	100	80	73		7																				
8.70																									
9.60																									
Remarks Hand dug inspection pit. Groundwater encountered at 3.8m BGL. Rotary follow on from 4.00m BGL. Standpipe installed: 60mm slotted standpipe with pea gravel surround from 11.10m BGL to 4.80m BGL, plain standpipe from 4.80m BGL to GL with bentonite seal, finished with a raised cover Complete at 11.10m BGL Chiselling from 4.00m to 4.00m for 1 hour.												Scale (approx)	Logged By												
												1:50	MB & JS												
												Figure No.	10551-04-21.BH14												



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Borehole Number
BH14

Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 4.00m 146mm cased to 11.10m		Ground Level (mOD) 19.17		Site St. Teresa's Gardens										
Flush : Water								Job Number 10551-04-21								
Core Dia: 102 mm																
Method : Cable Percussion & Rotary Cored		Location 714158.3 E 732877.4 N		Dates 29/06/2021- 21/07/2021		Client The Land Development Agency		Sheet 2/2								
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend							
11.10	100	96	90			8.07	11.10 (2.40)	Complete at 11.10m								
Remarks								Scale (approx)	Logged By							
								1:50	MB & JS							
								Figure No. 10551-04-21.BH14								



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Site
St. Teresa's Gardens

Borehole Number
BH15

Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 3.60m 146mm cased to 11.10m		Ground Level (mOD) 19.30		Client The Land Development Agency		Job Number 10551-04-21
Method : Cable Percussion & Rotary Cored		Location 714189.4 E 732881.9 N		Dates 30/06/2021-27/07/2021		Engineer AECOM		Sheet 1/2
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend Water
0.25	B				19.00	(0.30)	TOPSOIL.	
0.25	ES				19.00	0.30	MADE GROUND: Black slightly sandy slightly gravelly Clay with occasional fragments of red brick, mortar and ceramics.	
0.50	B				18.50	(0.50)		
0.50	ES				18.50	0.80	Firm grey/brown slightly gravelly slightly silty CLAY with occasional subangular to subrounded cobbles	
1.00-1.45	SPT(C) N=11			1,2/2,3,3,3	17.40	(1.10)		
1.00	B				17.40	1.90		
1.00	ES				17.40	(1.10)	Firm to stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles	
2.00-2.45	SPT(C) N=14			3,5/4,4,4,2	16.30	3.00		
2.00	B				16.30	(1.50)		
2.00	ES				16.30	4.50	Very stiff dark grey slightly sandy slightly gravelly CLAY with subangular to subrounded cobbles	
3.00-3.45	SPT(C) N=47			8,8/10,10,10,17	14.80	(1.50)		
3.00	B				14.80	4.50		
3.60	TCR	SCR	RQD	FI	14.80	4.50	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE interbedded with medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands, calcite mineralisation parallel to F1 and F2 and euhedral pyrite mineralisation parallel to F1 and F2	
3.60	73	0	0	Water strike(1) at 3.60m, rose to 3.20m in 20 mins. B	14.80	4.50		
4.50					14.80	4.50		
5.10					14.80	4.50		
6.60	96	66	43		14.80	4.50	F1: 4.50m BGL to 11.10m BGL: Very close to medium spacing, 10 to 20 degrees, smooth to rough, planar to undulose with clay smear, occasional clay bands, calcite mineralisation and euhedral pyrite mineralisation	
8.10	96	36	30		14.80	4.50	F2: 4.50m BGL to 11.10m BGL: Medium to wide spacing, 70 to 85 degrees, smooth to rough, planar to undulose with clay smear, calcite mineralisation and euhedral pyrite mineralisation	
9.60	100	66	53		14.80	4.50		
Remarks Hand dug inspection pit. Groundwater encountered at 3.6m BGL. Rotary follow on from 3.60m BGL. Borehole backfilled upon completion. Complete at 11.10m BGL. Chiselling from 3.60m to 3.60m for 1 hour.								Scale (approx) 1:50 Logged By MB & JS Figure No. 10551-04-21.BH15

 Ground Investigations Ireland Ltd www.gii.ie								Site St. Teresa's Gardens		Borehole Number BH15							
Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 3.60m 146mm cased to 11.10m			Ground Level (mOD) 19.30		Client The Land Development Agency			Job Number 10551-04-21							
Flush : Water																	
Core Dia: 102 mm																	
Method : Cable Percussion & Rotary Cored		Location 714189.4 E 732881.9 N			Dates 30/06/2021- 27/07/2021		Engineer AECOM			Sheet 2/2							
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend							
11.10	93	30	23				8.20	11.10	Complete at 11.10m								
Remarks								Scale (approx)	Logged By								
								1:50	MB & JS								
								Figure No.	10551-04-21.BH15								



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Borehole
Number
BH16

Machine : Dando 2000 & Beretta T44						Casing Diameter			Ground Level (mOD)		Site		Borehole Number							
Method : Cable Percussion & Rotary Cored						200mm cased to 4.00m 146mm cased to 11.10m			19.56		St. Teresa's Gardens		BH16							
						Location			Dates		Client		Job Number							
						714120.5 E 732849.5 N			30/06/2021-26/07/2021		The Land Development Agency		10551-04-21							
Depth (m)	Sample / Tests		Casing Depth (m)	Water Depth (m)	Field Records		Level (mOD)	Depth (m) (Thickness)	Description				Legend							
0.25	B ES						19.26	(0.30)	TOPSOIL											
0.25	B ES						18.76	(0.50)	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional fragments of red brick and concrete.											
0.50							18.76	0.80	Soft to firm brownish grey slightly sandy slightly gravelly silty CLAY											
1.00-1.45	SPT(C) N=7 B ES				0,0/2,2,1,2			(1.20)												
1.00																				
1.00	UT 0%																			
1.50-2.00																				
2.00-2.45	SPT(C) N=18 B ES				3,3/5,4,5,4		17.56	2.00	Stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles											
2.00																				
2.00																				
3.00-3.45	SPT(C) N=31 B				9,5/5,8,9,9 25/50		16.56	3.00	Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles											
3.00																				
3.60	TCR SCR RQD		FI	0			15.26	(1.30)												
4.00-4.07	86 22 0				50/0 SPT(C) 25*/70 Water strike(1) at 4.00m, rose to 2.80m in 20 mins. B		15.26		Medium strong thinly laminated dark grey fine grained calcareous MUDSTONE with calcite mineralisation parallel to F2											
4.00																				
4.30																				
5.10	86 40 0		22	0			12.16	(3.10)												
6.60							12.16													
7.40	96 80 50		2	50			12.16	(0.70)	Strong thinlaminated dark grey fine grained argillaceous LIMESTONE with calcite mineralisation parallel to F2											
8.10	93 56 50						11.46		Strong thinlaminated dark grey fine grained argillaceous LIMESTONE interbedded with medium strong to strong thinlaminated dark grey fine grained calcareous MUDSTONE with euhedral pyrite mineralisation parallel to F1 and co-mineralisation of pyrite with calcite parallel to F2											
9.60			13	50			11.46	(3.00)	F1: 4.30m BGL to 11.10m BGL: Very close to medium spacing, 10 to 30 degrees, smooth to rough, planar to undulose with clay smear, clay infill and euhedral pyrite mineralisation											
Remarks Hand dug inspection pit. Groundwater encountered at 4.00m BGL. Rotary follow on from 4.00m BGL. Borehole backfilled upon completion. Complete at 11.10m BGL. Chiselling from 4.00m to 4.00m for 1 hour.												Scale (approx)	Logged By							
												1:50	MB & JS							
												Figure No.	10551-04-21.BH16							



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Borehole Number
BH16

Machine : Dando 2000 & Beretta T44 Flush : Water Core Dia: 102 mm Method : Cable Percussion & Rotary Cored						Casing Diameter 200mm cased to 4.00m 146mm cased to 11.10m	Ground Level (mOD) 19.56	Site St. Teresa's Gardens	Job Number 10551-04-21
						Location 714120.5 E 732849.5 N	Dates 30/06/2021- 26/07/2021	Client The Land Development Agency	Sheet 2/2
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
11.10	96	43	29			8.46	11.10	F2: 4.30m BGL to 11.10m BGL: Medium to wide spacing, 60 to 80 degrees, smooth to rough, planar to undulose with clay smear, calcite mineralisation and co-mineralisation of euhedral pyrite with calcite Complete at 11.10m	
Remarks								Scale (approx) 1:50	Logged By MB & JS
								Figure No. 10551-04-21.BH16	



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Site
St. Teresa's Gardens

Borehole Number
BH17

Machine : Dando 2000 & Beretta T44		Casing Diameter 200mm cased to 4.20m 146mm cased to 12.60m		Ground Level (mOD) 19.41		Client The Land Development Agency		Job Number 10551-04-21		
Method : Cable Percussion & Rotary Cored		Location 714148.1 E 732848.3 N		Dates 29/06/2021-23/07/2021		Engineer AECOM		Sheet 1/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.25	B				19.33	0.08 (0.52)	TARMACADAM			
0.25	ES				18.81	0.60 (0.20)	MADE GROUND: Grey slightly clayey angular fine to coarse Gravel			
0.50	B				18.61	0.80 (0.80)	MADE GROUND: Black/brown slightly sandy slightly gravelly Clay with subangular to subrounded occasional cobbles			
0.50	ES			3,2/1,3,3,3		(1.40)	Firm grey/brown slightly gravelly slightly silty CLAY with occasional subangular to subrounded cobbles			
1.00-1.45	SPT(C) N=10									
1.00	B									
1.00	ES									
2.00-2.45	SPT(C) N=29			4,3/5,7,9,8	17.21	2.20 (0.80)	Stiff to very stiff dark brownish grey slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles			
2.00	B									
2.00	ES									
3.00-3.45	SPT(C) N=49			9,9/9,9,14,17	16.41	3.00 (2.40)	Very stiff dark grey slightly sandy slightly gravelly CLAY occasional subangular to subrounded cobbles		V1	
3.00	B									
4.00	TCR	SCR	RQD	FI						
3.60										
4.00-4.22	73			B 20,27/50 SPT(C) 50/70 Water strike(1) at 4.20m, rose to 3.00m in 20 mins.						
5.10										
5.40	36	21	16							
6.60				12						
7.30	100	55	26							
8.10				20						
9.20	96	63	19							
9.60				2						
10.00										
Remarks Hand dug inspection pit. Groundwater encountered at 4.2m BGL. Rotary follow on from 4.20m BGL Standpipe Installed: 60mm slotted standpipe with pea gravel surround from 11.10m BGL to 5.40m BGL, plain standpipe from 5.40m BGL to GL with bentonite seal, finished with a raised cover Complete at 12.60m BGL Chiselling from 4.20m to 4.20m for 1 hour.								Scale (approx)	Logged By	
								1:50	MB & JS	
								Figure No.	10551-04-21.BH17	



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Site
St. Teresa's Gardens

Borehole Number
BH17

Machine : Dando 2000 & Beretta T44			Casing Diameter 200mm cased to 4.20m 146mm cased to 12.60m			Ground Level (mOD) 19.41		Client The Land Development Agency			Job Number 10551-04-21				
Flush : Water			Location 714148.1 E 732848.3 N			Dates 29/06/2021- 23/07/2021		Engineer AECOM			Sheet 2/2				
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	Instr			
10.50	96	83	66	26		9.41	10.00 (0.50)	Medium strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands							
11.10	100	60	26	11		8.91	10.50 (2.10)	Strong thinly laminated dark grey fine grained argillaceous LIMESTONE interbedded with thinly laminated dark grey fine grained calcareous MUDSTONE with occasional clay bands, calcite mineralisation parallel to F2 and euhedral pyrite mineralisation parallel to F1							
12.60						6.81	12.60	F1: 5.40m BGL to 12.60m BGL: Very close to medium spacing, 10 to 30 degrees, smooth to rough, planar to undulose with clay smear, clay fill, calcite mineralisation and euhedral pyrite mineralisation F2: 5.40m BGL to 12.60m BGL: Wide spacing, 60 to 80 degrees, smooth to rough, planar to undulose, with clay smear and calcite mineralisation							
Complete at 12.60m															
Remarks										Scale (approx)	Logged By				
										1:50	MB & JS				
										Figure No.	10551-04-21.BH17				

ST. TERESA'S GARDENS ROTARY CORE PHOTOGRAPHS:



BH01



BH01



BH01



BH01



BH01



BH01



BH02



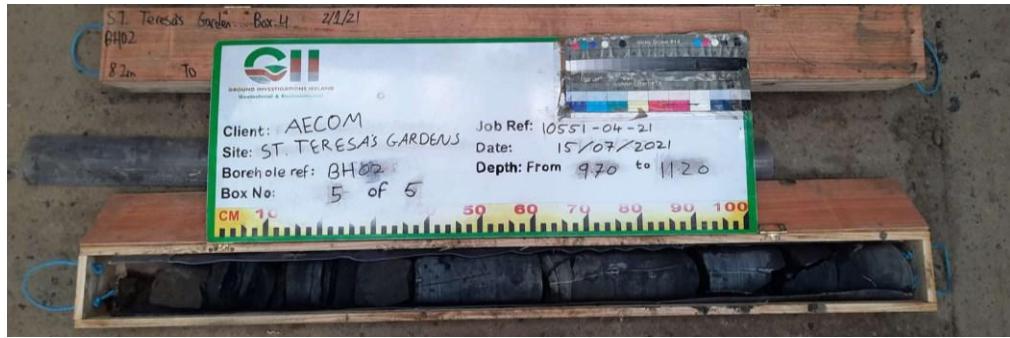
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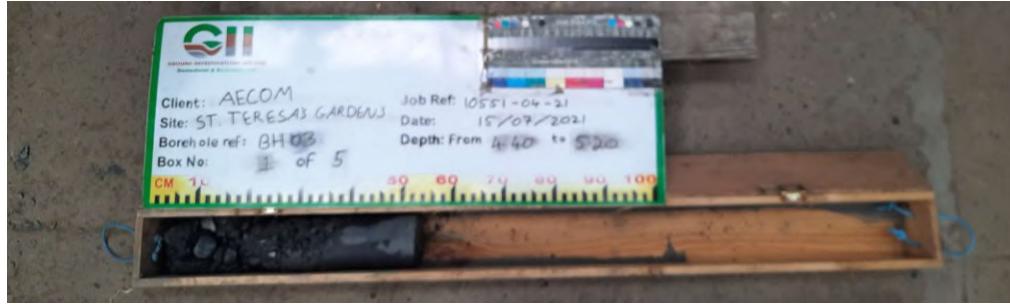
BH02



BH02



BH02



BH03



BH03



BH03



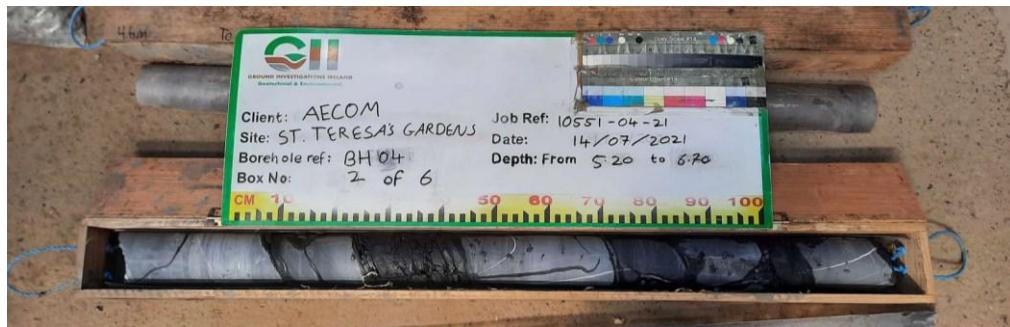
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BH03



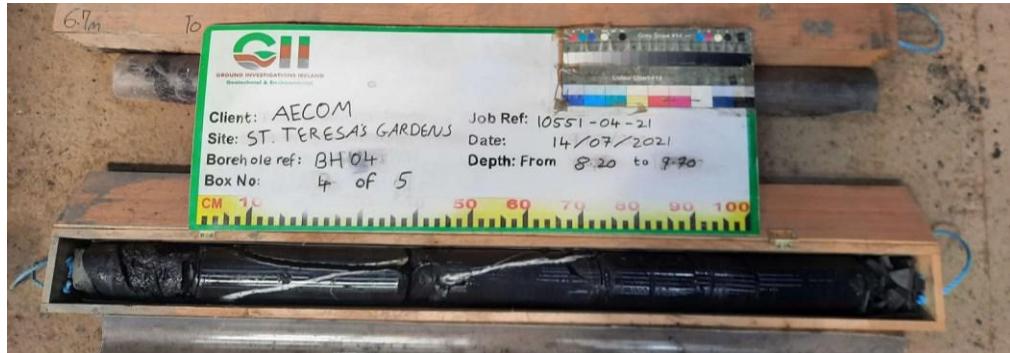
BH04



BH04



BH04



BH04



BH04



BH05



BH05



BH05



BH05



BH05



BH05



BH06



BH06



BH06



BH07



BH07



BH08



BH08



BH09



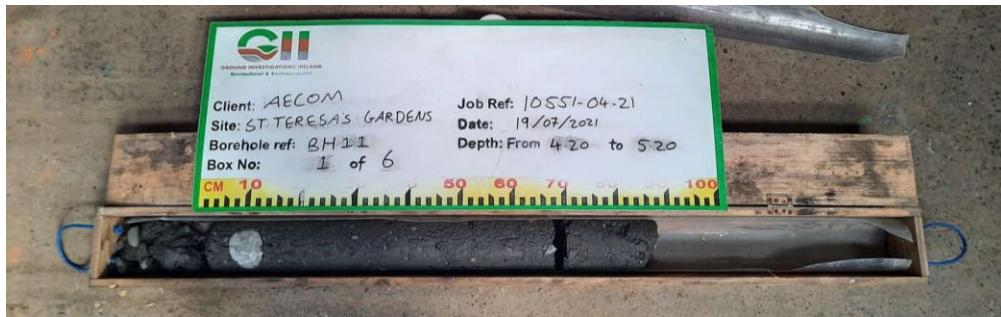
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BH10



BH10



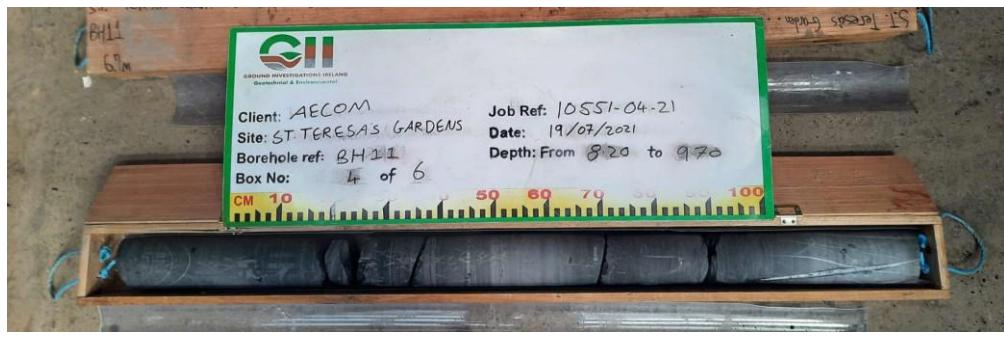
BH11



BH11



BH11



BH11



BH11



BH11



BH12



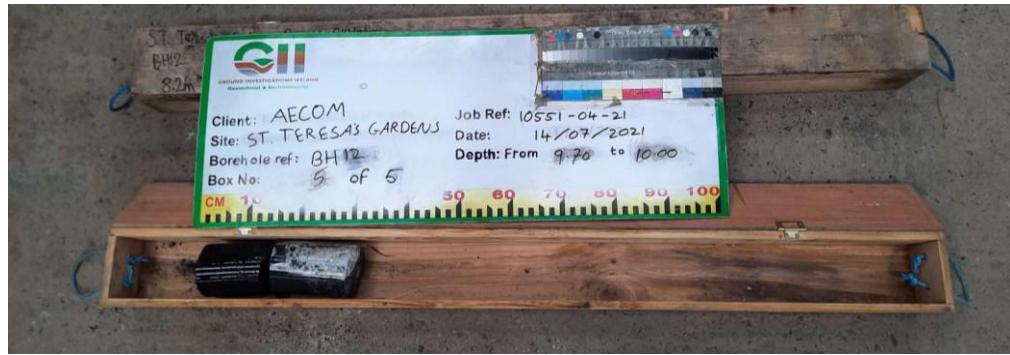
BH12



BH12



BH12



BH12



BH13



BH13



BH14



BH14



BH15



BH15



BH16



BH16



BH17



BH17

APPENDIX 7 – Plate Testing Records



GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

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

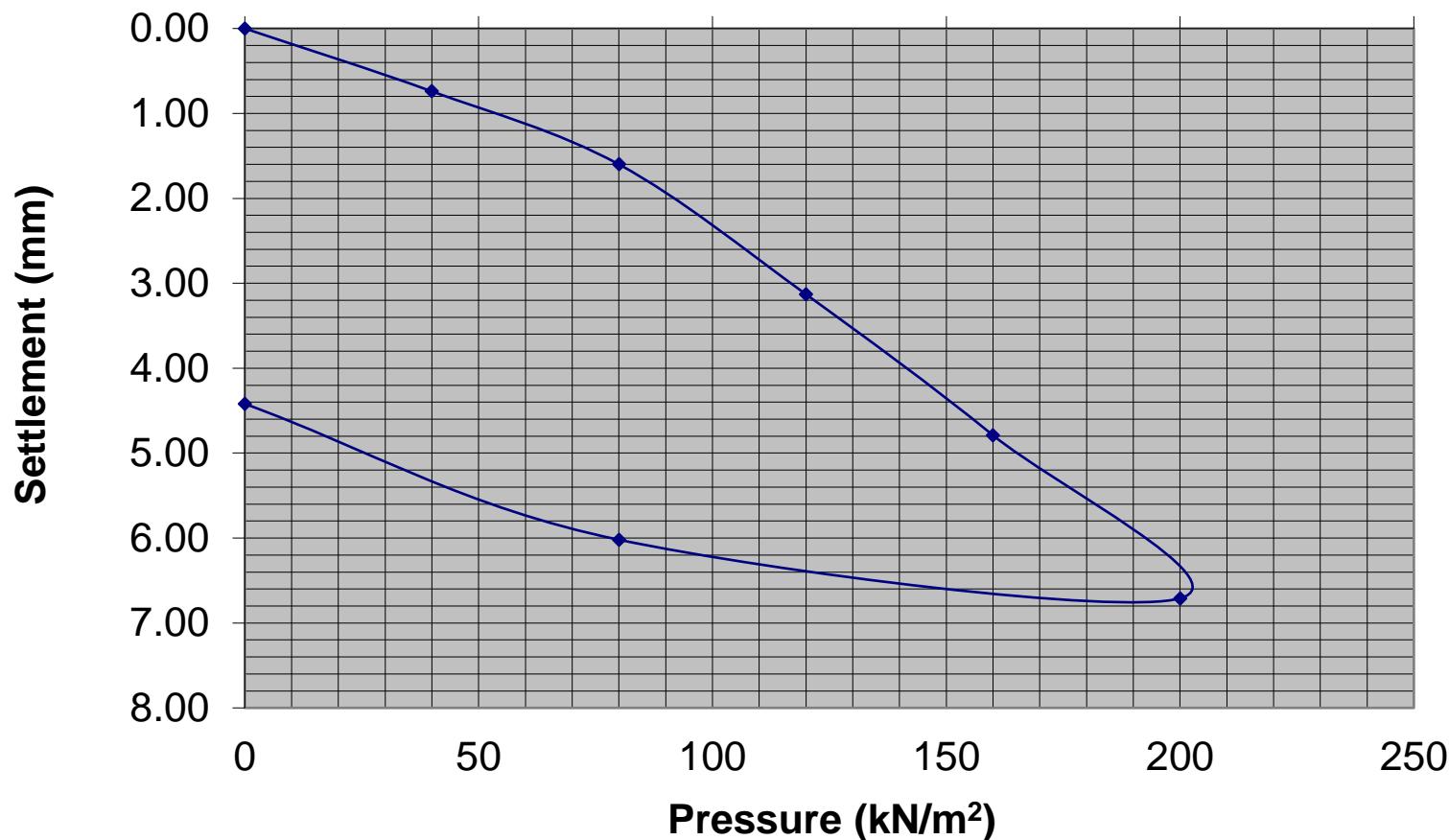
Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

LOCATION	St Teresa's Garden	MATERIAL	Brown mottled grey slightly sandy slightly gravelly CLAY with occasional cobbles
CONTRACT NO.	10551-04-21		
DATE	23/06/2021	DEPTH	1.10 m BGL
CLIENT	The Land Development Agency	PLATE DIAMETER	600mm
ENGINEER	AECOM	TEST NO.	PBT05

Normal Stress kN/m ²	Applied Load kN	Gauge Settlement mm
0	0	0.00
40	11.31	0.74
80	22.62	1.60
120	33.93	3.13
160	45.24	4.79
200	56.55	6.71
80	22.62	6.02
0	0	4.42

Survey Points ITM	
Easting	714161.841
Northing	732889.671
Elevation	19.056
Site Crew	
Engineer	PM
Driver	JOB
Excavator	13 Tonne

Plate Test No. 5



Maximum Applied Stress	200.00	kN/m ²
Stress at 1.25mm Settlement	67.00	kN/m ²
Modulus of Subgrade Reaction (k)	27.39	MN/m ² /m
Equivalent CBR % Value in accordance with HD25/94 volume 7 section 2	2.99	%



GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

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

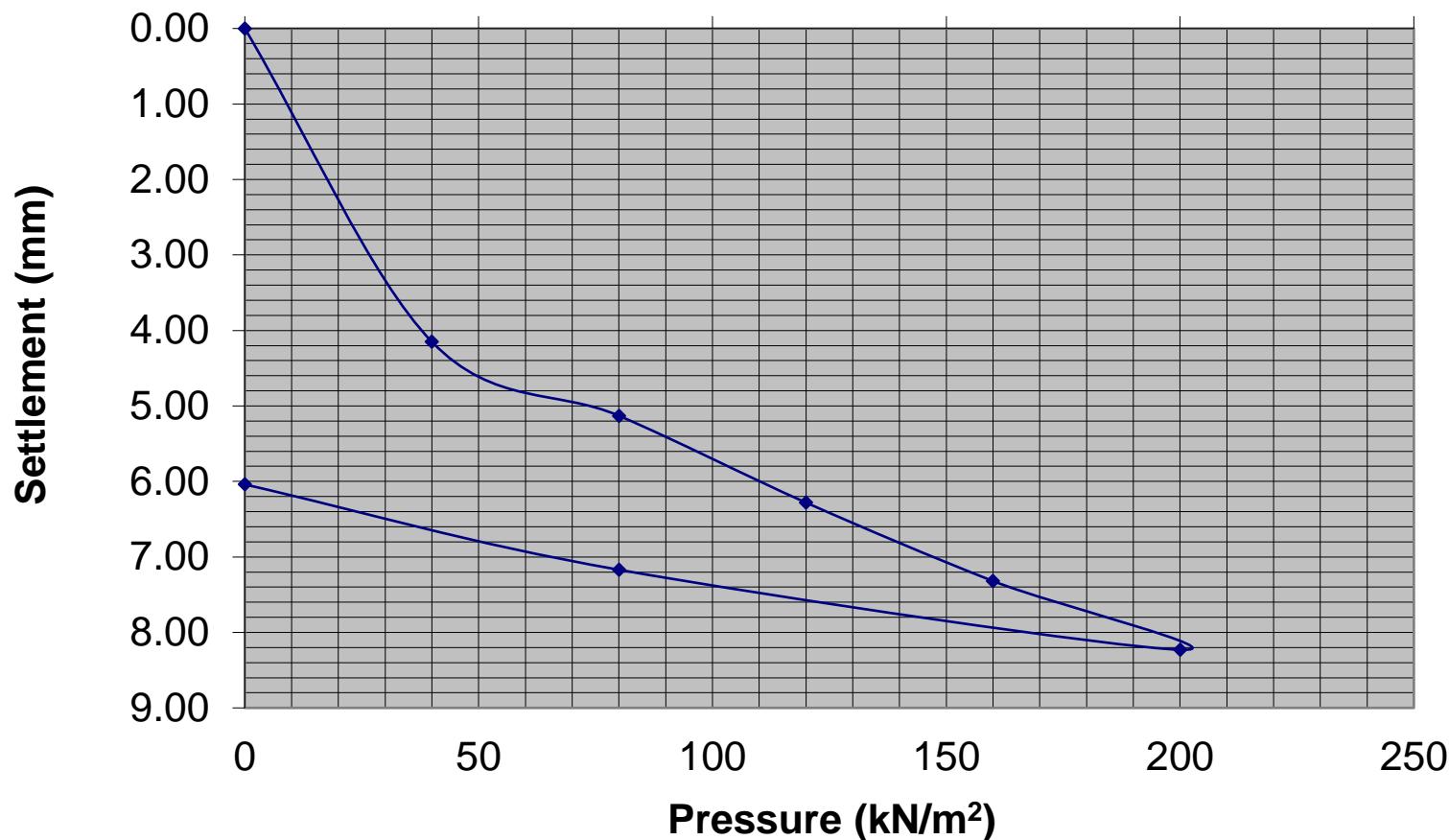
Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

LOCATION	St Teresa's Garden	MATERIAL	Brown mottled grey slightly sandy slightly gravelly CLAY with occasional cobbles
CONTRACT NO.	10551-04-21		
DATE	23/06/2021	DEPTH	1.20 mBGL
CLIENT	The Land Development Agency	PLATE DIAMETER	600mm
ENGINEER	AECOM	TEST NO.	PBT06

Normal Stress kN/m ²	Applied Load kN	Gauge Settlement mm
0	0	0.00
40	11.31	4.15
80	22.62	5.13
120	33.93	6.28
160	45.24	7.32
200	56.55	8.23
80	22.62	7.17
0	0	6.04

Survey Points ITM	
Easting	714156.65
Northing	732867.88
Elevation	19.185
Site Crew	
Engineer	PM
Driver	JOB
Excavator	13 Tonne

Plate Test No. 6



Maximum Applied Stress	200.00	kN/m ²
Stress at 1.25mm Settlement	12.00	kN/m ²
Modulus of Subgrade Reaction (k)	17.92	MN/m ² /m
Equivalent CBR % Value in accordance with HD25/94 volume 7 section 2	1.43	%



GROUND INVESTIGATIONS IRELAND
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D22 YD52

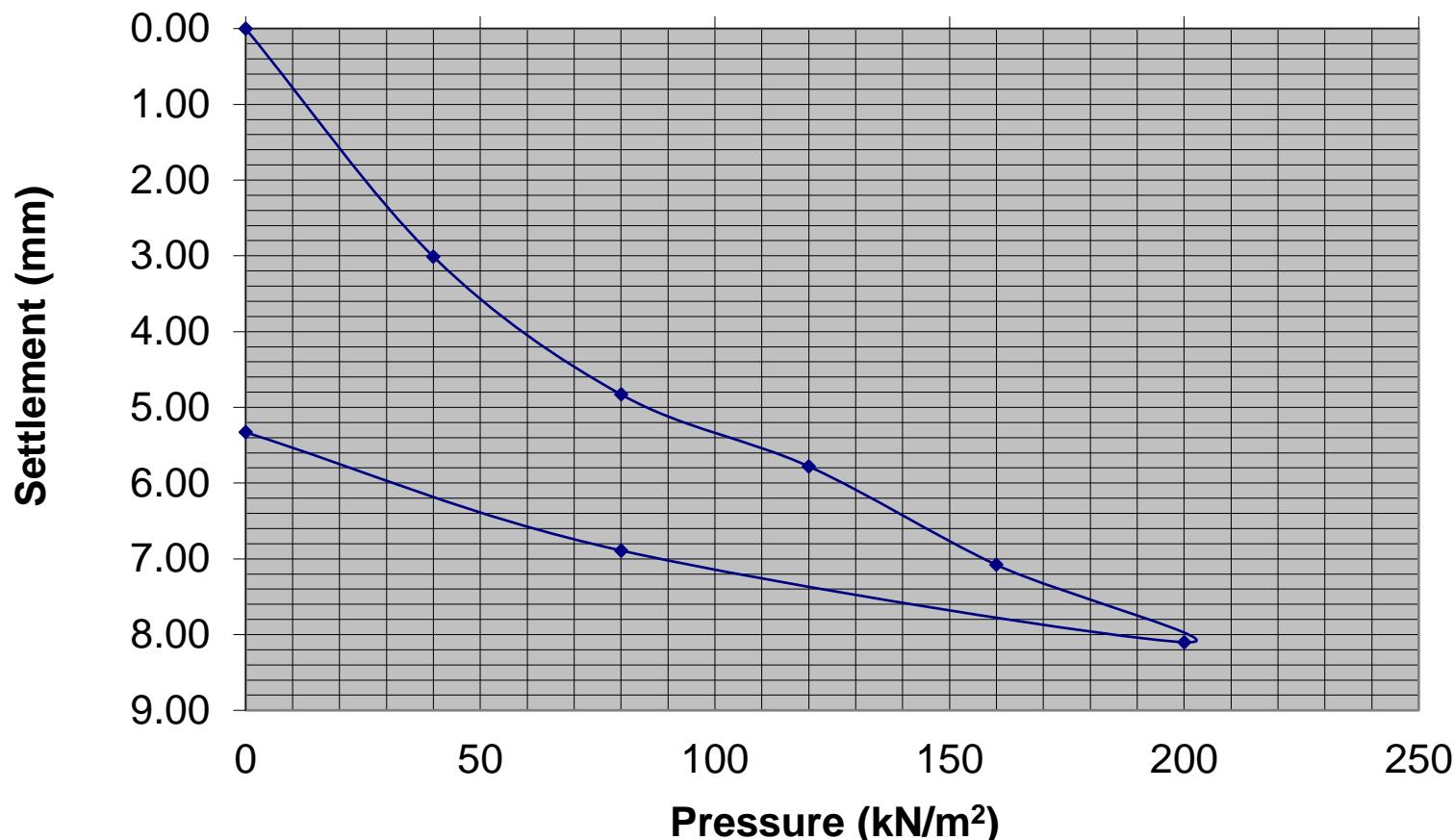
Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

LOCATION	St Teresa's Garden	MATERIAL	Possible MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional cobbles
CONTRACT NO.	10551-04-21	DEPTH	1.50m BGL
DATE	23/06/2021	PLATE DIAMETER	600mm
CLIENT	The Land Development Agency	TEST NO.	PBT07
ENGINEER	AECOM		

Normal Stress kN/m ²	Applied Load kN	Gauge Settlement mm
0	0	0.00
40	11.31	3.01
80	22.62	4.83
120	33.93	5.78
160	45.24	7.08
200	56.55	8.10
80	22.62	6.89
0	0	5.33

Survey Points ITM	
Easting	714110.023
Northing	732978.631
Elevation	19.32
Site Crew	
Engineer	PM
Driver	JOB
Excavator	13 Tonne

Plate Test No. 7



Maximum Applied Stress	200.00	kN/m ²
Stress at 1.25mm Settlement	18.00	kN/m ²
Modulus of Subgrade Reaction (k)	18.53	MN/m ² /m
Equivalent CBR % Value in accordance with HD25/94 volume 7 section 2	1.52	%

APPENDIX 8 – TRL Dynamic Cone Penetrometer Records



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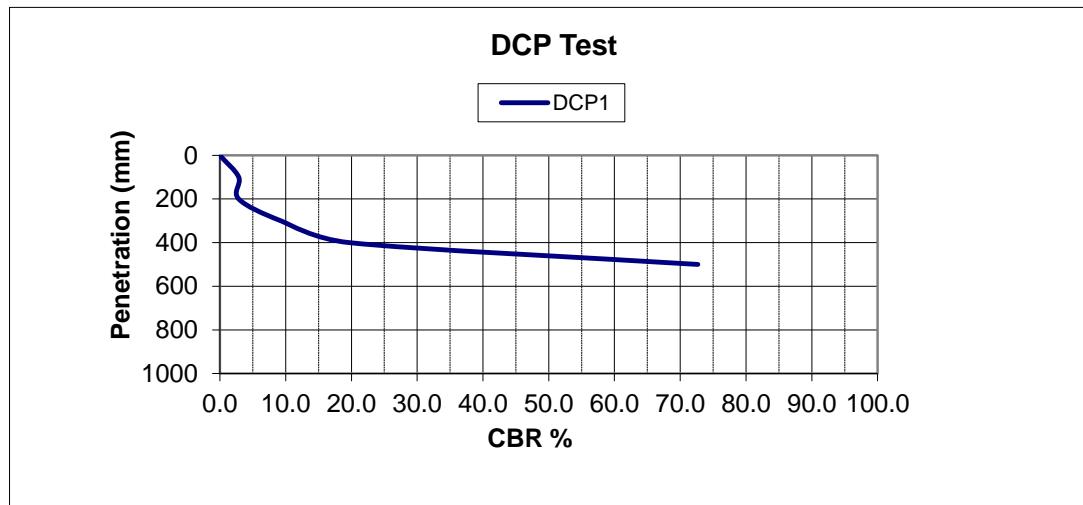
Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

Job Name	St Teresa's Gardens	Test Type	Dynamic Cone Penetration Test
Job No.	10551-04-21	Test Reference	DCP1
Client	The Land Development Agency	By	JC
Engineer	AECOM	Date	09/12/2021
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	5	20.0	9.3
400	9	11.1	19.7
500	25	4.0	72.7
600	-	-	-
700	-	-	-
800	-	-	-
900	-	-	-
1000	-	-	-

* four attempts - all refused shallow due to coarse material in made ground

Reference Kleyn and Van Heerden (60° Cone)
Formula $\text{Log10 (CBR)} = 2.632 - 1.28 \text{ Log10 (mm/blow)}$





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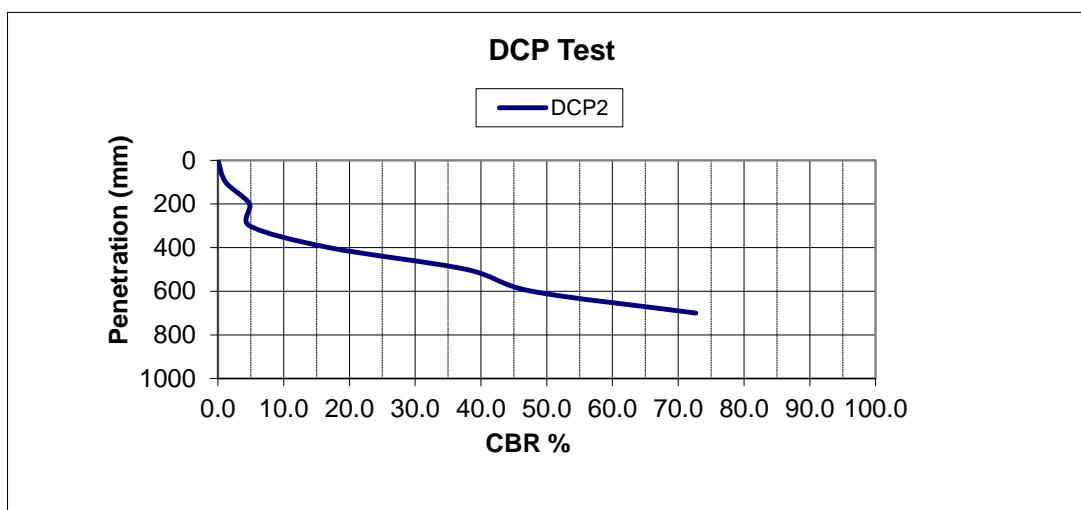
Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

Job Name	St Teresa's Gardens	Test Type	Dynamic Cone Penetration Test
Job No.	10551-04-21	Test Reference	DCP2
Client	The Land Development Agency	By	JC
Engineer	AECOM	Date	09/12/2021
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	1	100.0	1.2
200	3	33.3	4.8
300	3	33.3	4.8
400	8	12.5	16.9
500	15	6.7	37.8
600	18	5.6	47.7
700	25	4.0	72.7
800	-	-	-
900	-	-	-
1000	-	-	-

* four attempts - all refused shallow due to coarse material in made ground

Reference Kleyn and Van Heerden (60° Cone)
Formula $\text{Log10 (CBR)} = 2.632 - 1.28 \text{ Log10 (mm/blow)}$





GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

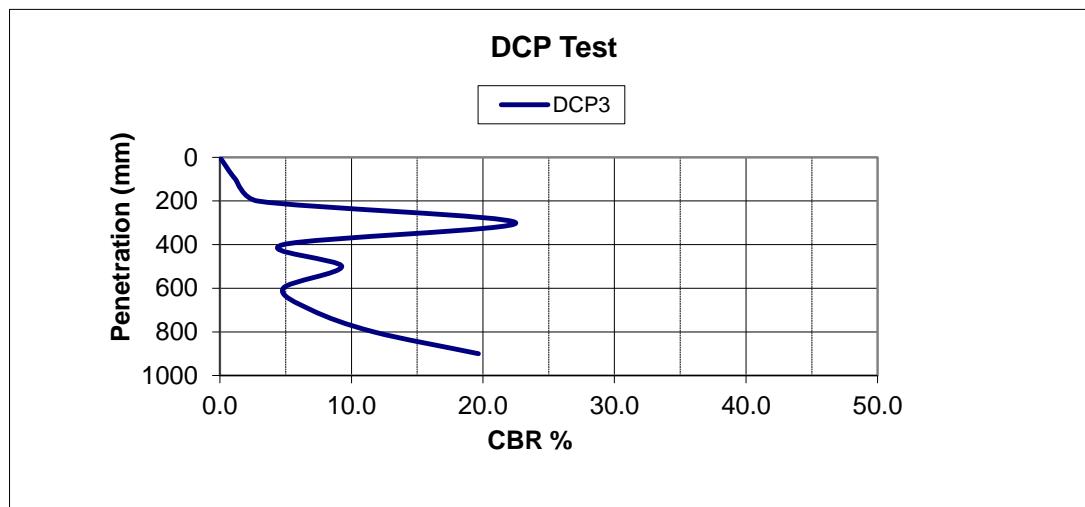
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Newcastle,
Co. Dublin.
D22 YD52

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

Job Name	St Teresa's Gardens	Test Type	Dynamic Cone Penetration Test
Job No.	10551-04-21	Test Reference	DCP3
Client	The Land Development Agency	By	JC
Engineer	AECOM	Date	09/12/2021
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	1	100.0	1.2
200	2	50.0	2.9
300	10	10.0	22.5
400	3	33.3	4.8
500	5	20.0	9.3
600	3	33.3	4.8
700	4	25.0	7.0
800	6	16.7	11.7
900	9	11.1	19.7
1000	-	-	-

Reference Kleyn and Van Heerden (60° Cone)
Formula $\text{Log10 (CBR)} = 2.632 - 1.28 \text{ Log10 (mm/blow)}$





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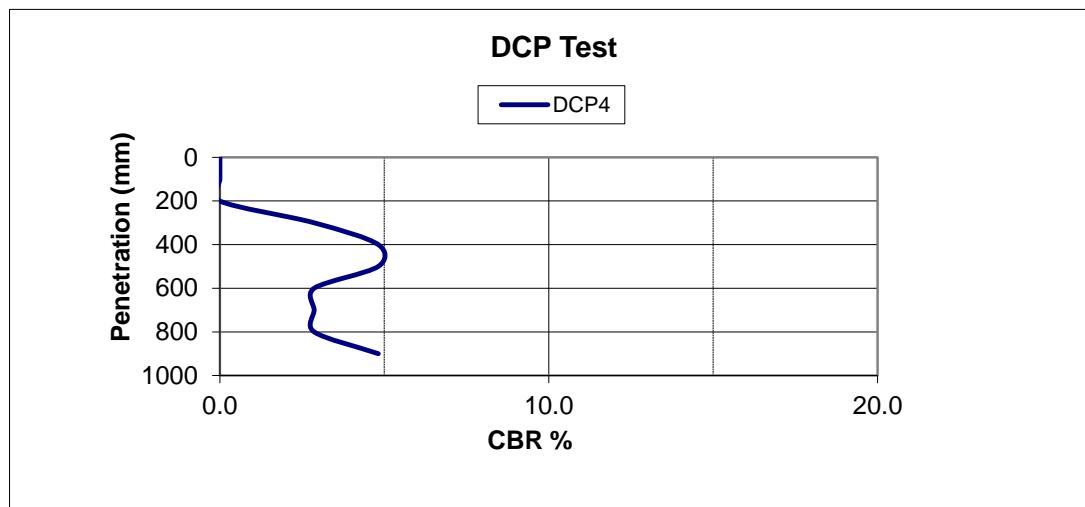
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Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

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

Job Name	St Teresa's Gardens	Test Type	Dynamic Cone Penetration Test
Job No.	10551-04-21	Test Reference	DCP4
Client	The Land Development Agency	By	JC
Engineer	AECOM	Date	09/12/2021
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	0	-	0.0
200	0	-	0.0
300	2	50.0	2.9
400	3	33.3	4.8
500	3	33.3	4.8
600	2	50.0	2.9
700	2	50.0	2.9
800	2	50.0	2.9
900	3	33.3	4.8
1000	-	-	-

Reference Kleyn and Van Heerden (60° Cone)
Formula $\text{Log10 (CBR)} = 2.632 - 1.28 \text{ Log10 (mm/blow)}$





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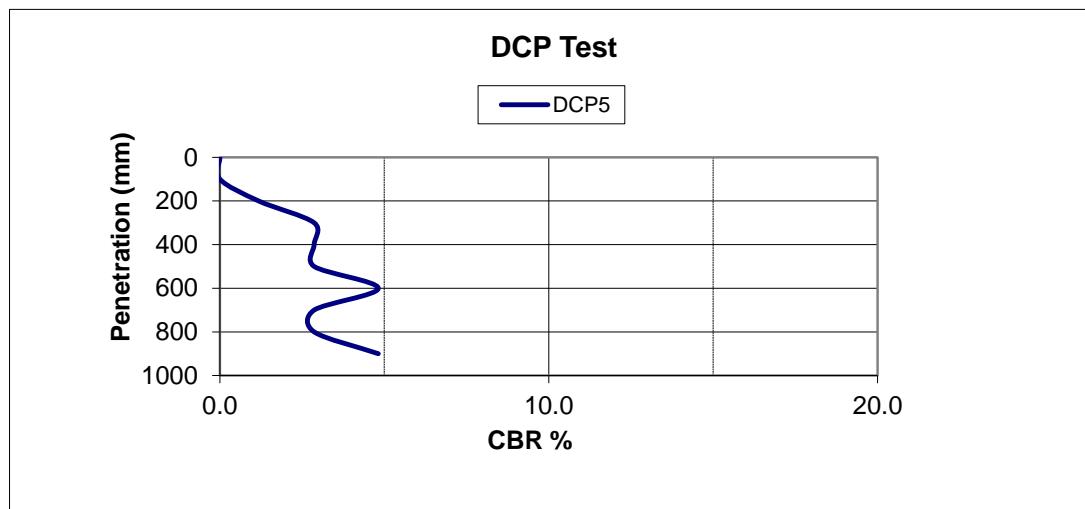
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D22 YD52

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

Job Name	St Teresa's Gardens	Test Type	Dynamic Cone Penetration Test
Job No.	10551-04-21	Test Reference	DCP5
Client	The Land Development Agency	By	JC
Engineer	AECOM	Date	09/12/2021
Initial Depth	Ground level		

Depth (mm bgl)	No. of Blows per 100mm	Penetration per Blow (mm)	CBR (%)
0	-	-	0.0
100	0	-	0.0
200	1	100.0	1.2
300	2	50.0	2.9
400	2	50.0	2.9
500	2	50.0	2.9
600	3	33.3	4.8
700	2	50.0	2.9
800	2	50.0	2.9
900	3	33.3	4.8
1000	-	-	-

Reference Kleyn and Van Heerden (60° Cone)
Formula $\text{Log10 (CBR)} = 2.632 - 1.28 \text{ Log10 (mm/blow)}$



APPENDIX 9 – Laboratory Testing

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



Attention : Barry Sexton
Date : 13th October, 2021
Your reference : 10551-04-21
Our reference : Test Report 21/15238 Batch 1
Location : St Teresas Gardens
Date samples received : 29th September, 2021
Status : Final Report
Issue : 1

Twenty nine samples were received for analysis on 29th September, 2021 of which twenty nine 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

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	WS01	WS01	WS01	WS02	WS02	WS02	WS03	WS03	WS03	WS04			
Depth	0.00-1.00	1.00-2.00	2.00-3.00	0.00-0.70	0.70-2.60	2.60-3.00	0.00-1.00	1.00-1.60	1.60-3.00	0.00-0.80			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil												
Batch Number	1	1	1	1	1	1	1	1	1	1		LOD/LOR	Units
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		Method No.	
Antimony	2	<1	1	3	2	2	3	1	3	<1	mg/kg	TM30/PM15	
Arsenic [#]	17.3	5.7	8.7	25.5	9.8	11.5	23.5	15.8	18.0	25.9	<0.5	mg/kg	TM30/PM15
Barium [#]	417	53	53	252	77	51	203	671	71	169	<1	mg/kg	TM30/PM15
Cadmium [#]	4.0	2.0	1.9	2.6	2.4	2.1	1.5	1.9	1.5	2.3	<0.1	mg/kg	TM30/PM15
Chromium [#]	59.4	38.0	39.5	45.6	35.3	43.8	54.7	50.6	54.2	63.3	<0.5	mg/kg	TM30/PM15
Copper [#]	68	21	27	89	34	31	231	33	29	73	<1	mg/kg	TM30/PM15
Lead [#]	80	14	19	418	15	23	220	17	12	213	<5	mg/kg	TM30/PM15
Mercury [#]	<0.1	<0.1	<0.1	0.6	<0.1	<0.1	0.6	<0.1	<0.1	0.5	<0.1	mg/kg	TM30/PM15
Molybdenum [#]	8.2	2.6	4.0	6.4	4.4	4.3	4.7	8.9	5.3	5.3	<0.1	mg/kg	TM30/PM15
Nickel [#]	42.7	26.5	33.2	53.2	41.9	38.0	75.4	47.2	34.2	51.6	<0.7	mg/kg	TM30/PM15
Selenium [#]	3	<1	7	2	1	8	1	2	3	2	<1	mg/kg	TM30/PM15
Zinc [#]	126	69	89	179	91	91	209	84	80	275	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene [#]	<0.04	<0.04	<0.04	<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	0.04	<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	<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	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene [#]	<0.03	<0.03	<0.03	0.12	<0.03	<0.03	0.33	<0.03	<0.03	0.30	<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	0.05	<0.04	mg/kg	TM4/PM8
Fluoranthene [#]	<0.03	<0.03	<0.03	0.12	<0.03	<0.03	0.51	<0.03	<0.03	0.30	<0.03	mg/kg	TM4/PM8
Pyrene [#]	<0.03	<0.03	<0.03	0.12	<0.03	<0.03	0.47	<0.03	<0.03	0.29	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	<0.06	<0.06	<0.06	0.10	<0.06	<0.06	0.31	<0.06	<0.06	0.22	<0.06	mg/kg	TM4/PM8
Chrysene [#]	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	0.35	<0.02	<0.02	0.27	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene [#]	<0.07	<0.07	<0.07	0.14	<0.07	<0.07	0.58	<0.07	<0.07	0.43	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	0.30	<0.04	<0.04	0.26	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene [#]	<0.04	<0.04	<0.04	0.05	<0.04	<0.04	0.18	<0.04	<0.04	0.15	<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	<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	0.20	<0.04	<0.04	0.19	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<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	0.45	<0.22	<0.22	1.77	<0.22	<0.22	1.33	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	0.88	<0.64	<0.64	3.35	<0.64	<0.64	2.46	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	0.42	<0.05	<0.05	0.31	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.16	<0.02	<0.02	0.12	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	93	88	98	85	85	96	95	90	99	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH CU 1D AL)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

Please include all sections of this report if it is reproduced

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	WS01	WS01	WS01	WS02	WS02	WS02	WS03	WS03	WS03	WS04			
Depth	0.00-1.00	1.00-2.00	2.00-3.00	0.00-0.70	0.70-2.60	2.60-3.00	0.00-1.00	1.00-1.60	1.60-3.00	0.00-0.80			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil												
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<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 SV	<0.1 SV	<0.1	<0.1 SV	<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 SV	<0.1 SV	<0.1	<0.1 SV	<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	<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	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<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	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<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	<26	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<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	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<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 SV	<0.1 SV	<0.1	<0.1 SV	<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 SV	<0.1 SV	<0.1	<0.1 SV	<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 SV	<0.1 SV	<0.1	<0.1 SV	<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	<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	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	11	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	18	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<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	29	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TM5/PM8/PM16
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<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	23	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	
Sample ID	WS01	WS01	WS01	WS02	WS02	WS02	WS03	WS03	WS03	WS04	
Depth	0.00-1.00	1.00-2.00	2.00-3.00	0.00-0.70	0.70-2.60	2.60-3.00	0.00-1.00	1.00-1.60	1.60-3.00	0.00-0.80	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	
Sample Type	Soil										
Batch Number	1	1	1	1	1	1	1	1	1	1	
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR
											Units
											Method No.
Natural Moisture Content	30.6	16.5	11.2	28.8	12.7	12.6	41.6	19.4	10.7	16.3	<0.1
Moisture Content (% Wet Weight)	23.5	14.2	10.1	22.3	11.3	11.2	29.4	16.2	9.7	14.1	<0.1
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg
Chromium III	59.4	38.0	39.5	45.6	35.3	43.8	54.7	50.6	54.2	63.3	<0.5
Total Organic Carbon#	1.27	0.34	0.48	5.94	0.44	0.66	7.68	0.35	0.61	4.68	<0.02
pH#	8.33	8.83	8.88	8.33	8.94	8.86	8.28	8.80	8.90	8.42	<0.01
Mass of raw test portion	0.1193	0.1029	0.0988	0.1111	0.1026	0.0968	0.1239	0.1041	0.097	0.1282	kg
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60			
Sample ID	WS04	WS04	WS05	WS05	WS05	WS05	WS06	WS06	WS06	WS07			
Depth	0.80-2.80	2.80-3.00	0.00-1.00	1.00-1.30	1.30-2.70	2.70-3.00	0.00-1.00	1.00-2.30	2.30-3.00	0.00-0.70			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil												
Batch Number	1	1	1	1	1	1	1	1	1	1		LOD/LOR	Units
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		Method No.	
Antimony	2	2	4	3	<1	2	3	<1	2	3	<1	mg/kg	TM30/PM15
Arsenic [#]	10.8	10.6	32.8	14.9	4.2	9.3	9.2	6.6	10.2	26.1	<0.5	mg/kg	TM30/PM15
Barium [#]	83	54	187	492	49	59	73	53	104	134	<1	mg/kg	TM30/PM15
Cadmium [#]	1.9	2.0	1.4	1.7	1.5	1.9	1.6	1.3	1.9	2.5	<0.1	mg/kg	TM30/PM15
Chromium [#]	57.8	39.5	51.7	57.7	61.1	41.9	33.8	44.1	43.2	54.6	<0.5	mg/kg	TM30/PM15
Copper [#]	25	32	107	20	27	28	33	19	32	70	<1	mg/kg	TM30/PM15
Lead [#]	21	21	317	19	9	18	41	11	25	164	<5	mg/kg	TM30/PM15
Mercury [#]	<0.1	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	mg/kg	TM30/PM15
Molybdenum [#]	4.4	4.1	5.3	7.5	4.3	4.5	3.6	3.9	4.6	5.1	<0.1	mg/kg	TM30/PM15
Nickel [#]	44.5	38.2	46.6	40.0	22.3	33.9	32.1	21.0	38.9	53.2	<0.7	mg/kg	TM30/PM15
Selenium [#]	1	5	2	2	<1	5	<1	<1	2	2	<1	mg/kg	TM30/PM15
Zinc [#]	108	87	275	93	60	75	89	51	90	200	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene [#]	<0.04	<0.04	0.11	<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	0.11	<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	0.15	<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	0.13	<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	1.90	<0.03	<0.03	<0.03	0.54	<0.03	<0.03	0.19	<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	0.43	<0.04	<0.04	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene [#]	<0.03	<0.03	3.60	<0.03	<0.03	<0.03	1.03	<0.03	<0.03	0.24	<0.03	mg/kg	TM4/PM8
Pyrene [#]	<0.03	<0.03	3.17	<0.03	<0.03	<0.03	0.89	<0.03	<0.03	0.24	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	<0.06	<0.06	1.90	<0.06	<0.06	<0.06	0.56	<0.06	<0.06	0.20	<0.06	mg/kg	TM4/PM8
Chrysene [#]	<0.02	<0.02	2.26	<0.02	<0.02	<0.02	0.66	<0.02	<0.02	0.18	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene [#]	<0.07	<0.07	3.62	<0.07	<0.07	<0.07	0.97	<0.07	<0.07	0.23	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	<0.04	<0.04	2.05	<0.04	<0.04	<0.04	0.54	<0.04	<0.04	0.14	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene [#]	<0.04	<0.04	1.29	<0.04	<0.04	<0.04	0.35	<0.04	<0.04	0.09	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	<0.04	<0.04	0.25	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	<0.04	<0.04	1.30	<0.04	<0.04	<0.04	0.36	<0.04	<0.04	0.10	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	0.25	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total [#]	<0.22	<0.22	11.86	<0.22	<0.22	<0.22	3.25	<0.22	<0.22	0.80	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	22.52	<0.64	<0.64	<0.64	6.18	<0.64	<0.64	1.61	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	2.61	<0.05	<0.05	<0.05	0.70	<0.05	<0.05	0.17	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	1.01	<0.02	<0.02	<0.02	0.27	<0.02	<0.02	0.06	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	100	79	97	88	93	78	95	99	101	95	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH CU 1D AL)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	
Sample ID	WS04	WS04	WS05	WS05	WS05	WS05	WS06	WS06	WS06	WS07	
Depth	0.80-2.80	2.80-3.00	0.00-1.00	1.00-1.30	1.30-2.70	2.70-3.00	0.00-1.00	1.00-2.30	2.30-3.00	0.00-0.70	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	
Sample Type	Soil										
Batch Number	1	1	1	1	1	1	1	1	1	1	
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR
											Units
											Method No.
TPH CWG											
Aliphatics											
>C5-C6 (HS_1D_AL) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>C6-C8 (HS_1D_AL) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>C8-C10 (HS_1D_AL)	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	9	<7	<7	<7	<7	mg/kg
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg
>C6-C10 (HS_1D_AL)	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg
Aromatics											
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	40	<7	<7	<7	<7	<7	<7	<7	mg/kg
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	141	<7	<7	<7	<7	<7	<7	<7	mg/kg
>EC35-EC40 (EH_1D_AR)	<7	<7	9	<7	<7	<7	<7	<7	<7	<7	mg/kg
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	190	<26	<26	<26	<26	<26	<26	<26	mg/kg
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	<52	<52	190	<52	<52	<52	<52	<52	<52	<52	mg/kg
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	mg/kg
>EC10-EC25 (EH_1D_AR)	<10	<10	27	<10	<10	<10	<10	<10	<10	<10	mg/kg
>EC25-EC35 (EH_1D_AR)	<10	<10	102	<10	<10	<10	<10	<10	<10	<10	mg/kg
MTBE #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
Benzene #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
Toluene #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
Ethylbenzene #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
m/p-Xylene #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
o-Xylene #	<5	<5 SV	<5 SV	<5	<5	<5 SV	<5	<5	<5 SV	<5	ug/kg
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	
Sample ID	WS04	WS04	WS05	WS05	WS05	WS05	WS06	WS06	WS06	WS07	
Depth	0.80-2.80	2.80-3.00	0.00-1.00	1.00-1.30	1.30-2.70	2.70-3.00	0.00-1.00	1.00-2.30	2.30-3.00	0.00-0.70	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	
Sample Type	Soil										
Batch Number	1	1	1	1	1	1	1	1	1	1	
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR
											Units
											Method No.
Natural Moisture Content	17.1	12.4	33.9	21.5	12.5	12.4	17.3	11.8	11.9	26.8	<0.1
Moisture Content (% Wet Weight)	14.6	11.0	25.3	17.7	11.1	11.0	14.8	10.6	10.6	21.1	<0.1
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg
Chromium III	57.8	39.5	51.7	57.7	61.1	41.9	33.8	44.1	43.2	54.6	<0.5
Total Organic Carbon#	0.50	0.65	8.38	0.39	0.46	0.68	0.86	0.28	0.65	2.82	<0.02
pH#	8.53	8.72	8.21	8.74	8.77	8.66	8.49	8.87	8.84	8.45	<0.01
Mass of raw test portion	0.1024	0.0982	0.1055	0.1073	0.0962	0.095	0.0986	0.0938	0.0983	0.1078	kg
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87		
Sample ID	WS07	WS07	WS08	WS08	WS08	WS08	WS09A	WS10	WS10		
Depth	0.70-1.80	1.80-2.00	0.00-1.00	1.00-2.00	2.00-3.30	3.30-4.00	0.00-0.85	0.00-2.30	2.30-3.00		
COC No / misc										Please see attached notes for all abbreviations and acronyms	
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		
Sample Date	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021		
Sample Type	Soil										
Batch Number	1	1	1	1	1	1	1	1	1		
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR	Units
										Method No.	
Antimony	2	1	3	2	2	1	1	2	1	<1	mg/kg
Arsenic [#]	17.8	9.6	16.2	12.3	10.4	10.9	8.7	26.8	7.9	<0.5	mg/kg
Barium [#]	124	75	154	94	181	76	108	133	56	<1	mg/kg
Cadmium [#]	2.3	2.0	2.6	1.8	2.6	1.4	0.7	0.9	1.5	<0.1	mg/kg
Chromium [#]	53.5	40.3	49.5	76.9	37.8	35.8	47.4	65.4	40.1	<0.5	mg/kg
Copper [#]	42	27	66	20	35	27	24	46	22	<1	mg/kg
Lead [#]	34	16	96	18	15	23	87	23	23	<5	mg/kg
Mercury [#]	<0.1	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg
Molybdenum [#]	5.3	4.1	6.3	5.1	6.4	4.0	2.5	4.0	3.6	<0.1	mg/kg
Nickel [#]	45.8	37.5	52.8	42.8	51.0	35.3	21.4	57.4	37.6	<0.7	mg/kg
Selenium [#]	<1	<1	4	1	2	3	<1	5	2	<1	mg/kg
Zinc [#]	142	82	249	76	105	84	94	105	81	<5	mg/kg
PAH MS											
Naphthalene [#]	<0.04	<0.04	0.05	<0.04	<0.04	<0.04	0.08	<0.04	<0.04	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg
Acenaphthene [#]	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	mg/kg
Fluorene [#]	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg
Phenanthrene [#]	<0.03	<0.03	1.35	<0.03	<0.03	<0.03	0.50	<0.03	<0.03	<0.03	mg/kg
Anthracene [#]	<0.04	<0.04	0.34	<0.04	<0.04	<0.04	0.19	<0.04	<0.04	<0.04	mg/kg
Fluoranthene [#]	<0.03	<0.03	2.54	<0.03	<0.03	<0.03	1.19	0.04	<0.03	<0.03	mg/kg
Pyrene [#]	<0.03	<0.03	2.17	<0.03	<0.03	<0.03	1.58	0.04	<0.03	<0.03	mg/kg
Benzo(a)anthracene [#]	<0.06	<0.06	1.35	<0.06	<0.06	<0.06	0.96	<0.06	<0.06	<0.06	mg/kg
Chrysene [#]	<0.02	<0.02	1.64	<0.02	<0.02	<0.02	1.00	<0.02	<0.02	<0.02	mg/kg
Benzo(bk)fluoranthene [#]	<0.07	<0.07	2.36	<0.07	<0.07	<0.07	1.72	<0.07	<0.07	<0.07	mg/kg
Benzo(a)pyrene [#]	<0.04	<0.04	1.32	<0.04	<0.04	<0.04	0.92	<0.04	<0.04	<0.04	mg/kg
Indeno(123cd)pyrene [#]	<0.04	<0.04	0.81	<0.04	<0.04	<0.04	0.60	<0.04	<0.04	<0.04	mg/kg
Dibenzo(ah)anthracene [#]	<0.04	<0.04	0.17	<0.04	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	mg/kg
Benzo(ghi)perylene [#]	<0.04	<0.04	0.81	<0.04	<0.04	<0.04	0.59	<0.04	<0.04	<0.04	mg/kg
Coronene	<0.04	<0.04	0.13	<0.04	<0.04	<0.04	0.11	<0.04	<0.04	<0.04	mg/kg
PAH 6 Total [#]	<0.22	<0.22	7.84	<0.22	<0.22	<0.22	5.02	<0.22	<0.22	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	15.29	<0.64	<0.64	<0.64	9.60	<0.64	<0.64	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	1.70	<0.05	<0.05	<0.05	1.24	<0.05	<0.05	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	0.66	<0.02	<0.02	<0.02	0.48	<0.02	<0.02	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg
PAH Surrogate % Recovery	93	96	91	81	80	91	99	93	83	<0	%
Mineral Oil (C10-C40) (EH CU 1D AL)	<30	<30	42	<30	<30	<30	204	<30	<30	<30	mg/kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	
Sample ID	WS07	WS07	WS08	WS08	WS08	WS08	WS09A	WS10	WS10	
Depth	0.70-1.80	1.80-2.00	0.00-1.00	1.00-2.00	2.00-3.30	3.30-4.00	0.00-0.85	0.00-2.30	2.30-3.00	
COC No / misc										Please see attached notes for all abbreviations and acronyms
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	
Sample Date	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	
Sample Type	Soil									
Batch Number	1	1	1	1	1	1	1	1	1	
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR
										Units
										Method No.
TPH CWG										
Aliphatics										
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<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	<0.2	<0.2 mg/kg TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	6	<4	<4	<4 mg/kg TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	30	<7	<7	<7 mg/kg TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	42	<7	<7	<7	157	<7	<7	<7 mg/kg TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	11	<7	<7	<7 mg/kg TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	42	<26	<26	<26	204	<26	<26	<26 mg/kg TM5/PM8/PM16/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	14	<10	<10	<10	65	<10	<10	<10 mg/kg TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	29	<10	<10	<10	114	<10	<10	<10 mg/kg TM5/PM8/PM16
Aromatics										
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<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	<0.2	<0.2 mg/kg TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4 mg/kg TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	47	<7	<7	<7	97	<7	<7	<7 mg/kg TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	193	<7	<7	<7	331	<7	<7	<7 mg/kg TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	12	<7	<7	<7	28	<7	<7	<7 mg/kg TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	252	<26	<26	<26	456	<26	<26	<26 mg/kg TM5/PM8/PM16/PM12/PM16
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	<52	<52	294	<52	<52	<52	660	<52	<52	<52 mg/kg TM5/PM8/PM16/PM12/PM16
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 mg/kg TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	23	<10	<10	<10	89	<10	<10	<10 mg/kg TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	132	<10	<10	<10	354	<10	<10	<10 mg/kg TM5/PM8/PM16
MTBE #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
Benzene #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
Toluene #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
Ethylbenzene #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
m/p-Xylene #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
o-Xylene #	<5	<5	<5 SV	<5	<5	<5 SV	<5	<5	<5	<5 ug/kg TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 ug/kg TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35 ug/kg TM17/PM8

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	
Sample ID	WS07	WS07	WS08	WS08	WS08	WS08	WS09A	WS10	WS10	
Depth	0.70-1.80	1.80-2.00	0.00-1.00	1.00-2.00	2.00-3.30	3.30-4.00	0.00-0.85	0.00-2.30	2.30-3.00	
COC No / misc										Please see attached notes for all abbreviations and acronyms
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	
Sample Date	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	
Sample Type	Soil									
Batch Number	1	1	1	1	1	1	1	1	1	
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	LOD/LOR
										Units
										Method No.
Natural Moisture Content	26.1	9.5	30.2	25.2	12.2	8.2	13.7	32.3	11.6	<0.1 % PM4/PM0
Moisture Content (% Wet Weight)	20.7	8.7	23.2	20.1	10.9	7.6	12.0	24.4	10.4	<0.1 % PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg TM38/PM20
Chromium III	53.5	40.3	49.5	76.9	37.8	35.8	47.4	65.4	40.1	<0.5 mg/kg NONE/NONE
Total Organic Carbon#	1.26	0.38	2.64	0.30	0.42	0.61	1.21	0.91	0.30	<0.02 % TM21/PM24
pH#	8.60	8.92	7.91	8.48	8.81	8.23	11.28	8.10	8.71	<0.01 pH units TM73/PM11
Mass of raw test portion	0.1146	0.0947	0.102	0.1085	0.0975	0.0966	0.1008	0.1194	0.101	kg NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg NONE/PM17

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	WS01	WS01	WS01	WS02	WS02	WS02	WS03	WS03	WS03	WS04			
Depth	0.00-1.00	1.00-2.00	2.00-3.00	0.00-0.70	0.70-2.60	2.60-3.00	0.00-1.00	1.00-1.60	1.60-3.00	0.00-0.80			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil												
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Dissolved Antimony [#]	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.004	<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	0.04	<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic [#]	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0032	<0.0025	<0.0025	0.0037	<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) [#]	<0.025	<0.025	<0.025	<0.025	<0.025	0.032	<0.025	<0.025	0.037	<0.025	mg/kg	TM30/PM17	
Dissolved Barium [#]	<0.003	<0.003	0.021	<0.003	<0.003	0.011	0.008	<0.003	0.016	0.018	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) [#]	<0.03	<0.03	0.21	<0.03	<0.03	0.11	0.08	<0.03	0.16	0.18	<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 [#]	0.010	0.010	0.010	0.007	0.014	0.013	0.004	0.009	0.014	0.004	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) [#]	0.10	0.10	0.10	0.07	0.14	0.13	0.04	0.09	0.14	0.04	<0.02	mg/kg	TM30/PM17
Dissolved Nickel [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium [#]	0.005	0.006	0.040	0.005	<0.003	0.030	0.005	<0.003	0.035	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) [#]	0.05	0.06	0.40	0.05	<0.03	0.30	0.05	<0.03	0.35	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc [#]	<0.003	<0.003	<0.003	<0.003	<0.003	0.042	<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	0.42	<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	0.4	0.4	<0.3	<0.3	0.3	<0.3	0.5	0.3	<0.3	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	4	4	<3	<3	<3	<3	5	3	<3	<3	<3	mg/kg	TM173/PM0
Sulphate as SO ₄ [#]	5.6	3.8	4.0	5.2	1.9	5.2	9.8	2.5	7.1	25.7	<0.5	mg/l	TM38/PM0
Sulphate as SO ₄ [#]	56	38	40	52	19	52	98	25	71	257	<5	mg/kg	TM38/PM0
Chloride [#]	0.8	0.3	0.3	0.6	<0.3	0.3	1.2	0.4	0.4	18.3	<0.3	mg/l	TM38/PM0
Chloride [#]	8	3	3	6	<3	3	12	4	4	183	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	<2	<2	<2	<2	<2	3	<2	<2	4	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	<20	<20	<20	<20	<20	30	<20	<20	40	<20	mg/kg	TM60/PM0
pH	8.47	8.26	8.19	8.19	7.96	7.81	8.20	7.99	7.90	8.28	<0.01	pH units	TM73/PM0
Total Dissolved Solids [#]	81	58	53	84	52	43	120	58	52	254	<35	mg/l	TM20/PM0
Total Dissolved Solids [#]	810	580	530	840	520	430	1200	580	520	2540	<350	mg/kg	TM20/PM0

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60			
Sample ID	WS04	WS04	WS05	WS05	WS05	WS05	WS06	WS06	WS06	WS07			
Depth	0.80-2.80	2.80-3.00	0.00-1.00	1.00-1.30	1.30-2.70	2.70-3.00	0.00-1.00	1.00-2.30	2.30-3.00	0.00-0.70			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil												
Batch Number	1	1	1	1	1	1	1	1	1	1		LOD/LOR	Units
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		Method No.	
Dissolved Antimony [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<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	<0.0025	<0.0025	<0.0025	<0.0025	0.0070	<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	<0.025	0.070	<0.025	mg/kg	TM30/PM17
Dissolved Barium [#]	<0.003	<0.003	0.004	<0.003	0.021	0.025	0.007	<0.003	0.008	0.004	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) [#]	<0.03	<0.03	0.04	<0.03	0.21	0.25	0.07	<0.03	0.08	0.04	<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 [#]	0.010	0.008	0.011	0.007	0.010	0.011	0.023	0.015	0.027	0.008	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) [#]	0.10	0.08	0.11	0.07	0.10	0.11	0.23	0.15	0.27	0.08	<0.02	mg/kg	TM30/PM17
Dissolved Nickel [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium [#]	0.004	0.006	<0.003	<0.003	0.006	0.016	0.003	0.004	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) [#]	0.04	0.06	<0.03	<0.03	0.06	0.16	<0.03	0.04	<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	0.4	<0.3	0.3	0.4	0.3	0.3	0.4	<0.3	0.4	0.4	<0.3	mg/l	TM173/PM0
Fluoride	4	<3	<3	4	<3	3	4	<3	4	4	<3	mg/kg	TM173/PM0
Sulphate as SO ₄ [#]	2.9	4.1	3.9	3.7	6.4	6.8	9.5	1.8	3.0	1.1	<0.5	mg/l	TM38/PM0
Sulphate as SO ₄ [#]	29	41	39	37	64	68	95	18	30	11	<5	mg/kg	TM38/PM0
Chloride [#]	<0.3	<0.3	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.4	<0.3	mg/l	TM38/PM0
Chloride [#]	<3	<3	4	4	5	4	<3	3	3	4	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2	2	<2	<2	<2	<2	<2	<2	3	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20	<20	<20	<20	<20	<20	<20	<20	30	<20	mg/kg	TM60/PM0
pH	8.04	7.93	8.12	8.03	7.20	7.62	7.95	7.99	7.97	8.11	<0.01	pH units	TM73/PM0
Total Dissolved Solids [#]	44	46	79	52	42	47	74	<35	<35	92	<35	mg/l	TM20/PM0
Total Dissolved Solids [#]	440	460	790	520	420	470	740	<350	<350	920	<350	mg/kg	TM20/PM0

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87			
Sample ID	WS07	WS07	WS08	WS08	WS08	WS08	WS09A	WS10	WS10			
Depth	0.70-1.80	1.80-2.00	0.00-1.00	1.00-2.00	2.00-3.30	3.30-4.00	0.00-0.85	0.00-2.30	2.30-3.00			
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			
Sample Date	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021			
Sample Type	Soil											
Batch Number	1	1	1	1	1	1	1	1	1			
Date of Receipt	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
										LOD/LOR	Units	Method No.
Dissolved Antimony#	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.002	<0.002			
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02			
Dissolved Arsenic#	0.0030	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0035	<0.0025			
Dissolved Arsenic (A10) #	0.030	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.035	<0.025			
Dissolved Barium#	0.003	<0.003	0.034	<0.003	<0.003	0.020	0.013	0.017	0.036			
Dissolved Barium (A10) #	0.03	<0.03	0.34	<0.03	<0.03	0.20	0.13	0.17	0.36			
Dissolved Cadmium#	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			
Dissolved Chromium#	<0.0015	<0.0015	0.0019	<0.0015	<0.0015	<0.0015	0.0124	<0.0015	<0.0015			
Dissolved Chromium (A10) #	<0.015	<0.015	0.019	<0.015	<0.015	<0.015	0.124	<0.015	<0.015			
Dissolved Copper#	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007			
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07			
Dissolved Lead#	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
Dissolved Molybdenum#	0.022	0.014	0.020	<0.002	0.014	0.020	0.002	0.006	0.022			
Dissolved Molybdenum (A10) #	0.22	0.14	0.20	<0.02	0.14	0.20	0.02	0.06	0.22			
Dissolved Nickel#	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Dissolved Selenium#	<0.003	0.004	0.014	<0.003	<0.003	0.018	<0.003	<0.003	<0.003			
Dissolved Selenium (A10) #	<0.03	0.04	0.14	<0.03	<0.03	0.18	<0.03	<0.03	<0.03			
Dissolved Zinc#	<0.003	<0.003	0.007	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003			
Dissolved Zinc (A10) #	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			
Mercury Dissolved by CVAF#	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001			
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			
Fluoride	<0.3	0.7	<0.3	0.4	<0.3	<0.3	<0.3	0.3	0.4			
Fluoride	<3	7	<3	4	<3	<3	<3	<3	4			
Sulphate as SO4#	4.2	1.6	419.5	35.6	4.4	20.1	47.7	23.7	2.9			
Sulphate as SO4 #	42	16	4194	356	44	201	477	237	29			
Chloride#	0.7	0.5	0.5	<0.3	0.3	0.5	1.2	1.6	0.4			
Chloride #	7	5	5	<3	<3	5	12	16	4			
Dissolved Organic Carbon	3	<2	<2	<2	<2	<2	2	<2	<2			
Dissolved Organic Carbon	30	<20	<20	<20	<20	<20	20	<20	<20			
pH	8.25	8.00	7.72	8.52	8.15	7.90	10.57	8.36	8.34			
Total Dissolved Solids#	82	47	740	107	50	94	199	137	52			
Total Dissolved Solids #	820	470	7398	1070	500	940	1990	1370	520			

Please see attached notes for all abbreviations and acronyms

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30						
Sample ID	WS01	WS01	WS01	WS02	WS02	WS02	WS03	WS03	WS03	WS04						
Depth	0.00-1.00	1.00-2.00	2.00-3.00	0.00-0.70	0.70-2.60	2.60-3.00	0.00-1.00	1.00-1.60	1.60-3.00	0.00-0.80						
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021						
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	1.27	0.34	0.48	5.94	0.44	0.66	7.68	0.35	0.61	4.68	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025 ^{SV}	<0.025 ^{SV}	<0.025	<0.025 ^{SV}	<0.025 ^{SV}	<0.025	<0.025	<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	0.45	<0.22	<0.22	1.77	<0.22	<0.22	1.33	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	0.88	<0.64	<0.64	3.35	<0.64	<0.64	2.46	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.032	<0.025	<0.025	0.037	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	0.21	<0.03	<0.03	0.11	0.08	<0.03	0.16	0.18	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 #	0.10	0.10	0.10	0.07	0.14	0.13	0.04	0.09	0.14	0.04	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<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	<0.05	<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	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	0.05	0.06	0.40	0.05	<0.03	0.30	0.05	<0.03	0.35	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	0.42	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	810	580	530	840	520	430	1200	580	520	2540	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	<20	<20	<20	<20	<20	30	<20	<20	40	500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	75.6	87.9	90.8	81.4	87.6	92.6	72.7	86.4	92.3	70.3	-	-	-	<0.1	%	NONE/PM4
pH #	8.33	8.83	8.88	8.33	8.94	8.86	8.28	8.80	8.90	8.42	-	-	-	<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	4	4	<3	<3	<3	<3	5	3	<3	<3	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	56	38	40	52	19	52	98	25	71	257	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	8	3	3	6	<3	3	12	4	4	183	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60							
Sample ID	WS04	WS04	WS05	WS05	WS05	WS05	WS06	WS06	WS06	WS07							
Depth	0.80-2.80	2.80-3.00	0.00-1.00	1.00-1.30	1.30-2.70	2.70-3.00	0.00-1.00	1.00-2.30	2.30-3.00	0.00-0.70							
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	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021							
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.	
Solid Waste Analysis																	
Total Organic Carbon #	0.50	0.65	8.38	0.39	0.46	0.68	0.86	0.28	0.65	2.82	3	5	6	<0.02	%	TM21/PM24	
Sum of BTEX	<0.025	<0.025 ^{SV}	<0.025 ^{SV}	<0.025	<0.025	<0.025 ^{SV}	<0.025	<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	<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	11.86	<0.22	<0.22	<0.22	3.25	<0.22	<0.22	0.80	-	-	-	<0.22	mg/kg	TM4/PM8	
PAH Sum of 17	<0.64	<0.64	22.52	<0.64	<0.64	<0.64	6.18	<0.64	<0.64	1.61	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	<0.025	0.070	0.5	2	25	<0.025	mg/kg	TM30/PM17	
Barium #	<0.03	<0.03	0.04	<0.03	0.21	0.25	0.07	<0.03	0.08	0.04	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 #	0.10	0.08	0.11	0.07	0.10	0.11	0.23	0.15	0.27	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	<0.02	<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	<0.05	<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	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17	
Selenium #	0.04	0.06	<0.03	<0.03	0.06	0.16	<0.03	0.04	<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 #	440	460	790	520	420	470	740	<350	<350	920	4000	60000	100000	<350	mg/kg	TM20/PM0	
Dissolved Organic Carbon	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	30	500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	88.0	92.1	84.9	84.2	93.8	94.4	91.1	95.5	91.6	83.2	-	-	-	<0.1	%	NONE/PM4	
pH #	8.53	8.72	8.21	8.74	8.77	8.66	8.49	8.87	8.84	8.45	-	-	-	<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	4	<3	<3	4	<3	3	4	<3	4	4	-	-	-	<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	29	41	39	37	64	68	95	18	30	11	1000	20000	50000	<5	mg/kg	TM38/PM0	
Chloride #	<3	<3	4	4	5	4	<3	3	3	4	800	15000	25000	<3	mg/kg	TM38/PM0	

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

Please see attached notes for all abbreviations and acronyms

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Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
21/15238	1	WS01	0.00-1.00	1-3	No interpretation possible
21/15238	1	WS01	1.00-2.00	4-6	No interpretation possible
21/15238	1	WS01	2.00-3.00	7-9	No interpretation possible
21/15238	1	WS02	0.00-0.70	10-12	No interpretation possible
21/15238	1	WS02	0.70-2.60	13-15	No interpretation possible
21/15238	1	WS02	2.60-3.00	16-18	No interpretation possible
21/15238	1	WS03	0.00-1.00	19-21	Possible trace PAHs
21/15238	1	WS03	1.00-1.60	22-24	No interpretation possible
21/15238	1	WS03	1.60-3.00	25-27	No interpretation possible
21/15238	1	WS04	0.00-0.80	28-30	No interpretation possible
21/15238	1	WS04	0.80-2.80	31-33	No interpretation possible
21/15238	1	WS04	2.80-3.00	34-36	No interpretation possible
21/15238	1	WS05	0.00-1.00	37-39	PAHs and naturally occurring compounds
21/15238	1	WS05	1.00-1.30	40-42	No interpretation possible
21/15238	1	WS05	1.30-2.70	43-45	No interpretation possible
21/15238	1	WS05	2.70-3.00	46-48	No interpretation possible
21/15238	1	WS06	0.00-1.00	49-51	No interpretation possible
21/15238	1	WS06	1.00-2.30	52-54	No interpretation possible
21/15238	1	WS06	2.30-3.00	55-57	No interpretation possible
21/15238	1	WS07	0.00-0.70	58-60	No interpretation possible
21/15238	1	WS07	0.70-1.80	61-63	No interpretation possible
21/15238	1	WS07	1.80-2.00	64-66	No interpretation possible
21/15238	1	WS08	0.00-1.00	67-69	PAHs, possible trace lubricating oil and naturally occurring compounds
21/15238	1	WS08	1.00-2.00	70-72	No interpretation possible
21/15238	1	WS08	2.00-3.30	73-75	No interpretation possible
21/15238	1	WS08	3.30-4.00	76-78	No interpretation possible
21/15238	1	WS09A	0.00-0.85	79-81	PAHs, possible trace degraded Diesel and Lubricating oil
21/15238	1	WS10	0.00-2.30	82-84	No interpretation possible
21/15238	1	WS10	2.30-3.00	85-87	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
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). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	1	WS01	0.00-1.00	2	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS01	1.00-2.00	5	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS01	2.00-3.00	8	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS02	0.00-0.70	11	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS02	0.70-2.60	14	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS02	2.60-3.00	17	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS03	0.00-1.00	20	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	1	WS03	0.00-1.00	20	30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS03	1.00-1.60	23	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS03	1.60-3.00	26	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS04	0.00-0.80	29	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS04	0.80-2.80	32	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS04	2.80-3.00	35	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS05	0.00-1.00	38	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS05	1.00-1.30	41	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS05	1.30-2.70	44	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS05	2.70-3.00	47	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	1	WS05	2.70-3.00	47	30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS06	0.00-1.00	50	30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS06	1.00-2.30	53	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS06	2.30-3.00	56	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS07	0.00-0.70	59	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS07	0.70-1.80	62	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS07	1.80-2.00	65	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS08	0.00-1.00	68	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	Soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
21/15238	1	WS08	1.00-2.00	71	30/09/2021	Asbestos Level Screen	NAD
					30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	1	WS08	2.00-3.30	74	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS08	3.30-4.00	77	30/09/2021	General Description (Bulk Analysis)	soil
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS09A	0.00-0.85	80	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos Fibres (2)	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos ACM (2)	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Type (2)	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS10	0.00-2.30	83	30/09/2021	General Description (Bulk Analysis)	soil/stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos Fibres (2)	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos ACM (2)	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Type (2)	NAD
					30/09/2021	Asbestos Level Screen	NAD
21/15238	1	WS10	2.30-3.00	86	30/09/2021	General Description (Bulk Analysis)	Soil/Stones
					30/09/2021	Asbestos Fibres	NAD
					30/09/2021	Asbestos ACM	NAD
					30/09/2021	Asbestos Type	NAD
					30/09/2021	Asbestos Level Screen	NAD

Element Materials Technology

Notification of Deviating Samples

Client Name: Ground Investigations Ireland

Reference: 10551-04-21

Location: St Teresas Gardens

Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/15238						

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.: 21/15238

SOILS

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.

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 $35^{\circ}\text{C} \pm 5^{\circ}\text{C}$ unless otherwise stated. Moisture content for CEN Leachate tests are dried at $105^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

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 overestimate 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.

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.

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.

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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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 CO ₂ 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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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 First edition (2006)	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	

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



Attention : Barry Sexton
Date : 20th October, 2021
Your reference : 10551-04-21
Our reference : Test Report 21/15238 Batch 2
Location : St Teresas Gardens
Date samples received : 30th September, 2021
Status : Final Report
Issue : 1

Thirty eight samples were received for analysis on 30th September, 2021 of which thirty 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:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117	
Sample ID	BH01	BH01	BH02	BH02	BH03	BH03	BH04	BH04	BH05	BH05	
Depth	0.00-1.60	3.00-3.40	0.00-1.40	1.40-2.00	0.00-1.70	1.70-2.00	0.00-1.10	2.50-3.00	0.20-1.60	1.60-2.00	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2	2	2	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR
											Units
											Method No.
Antimony	1	2	2	2	2	1	2	2	1	<1	mg/kg
Arsenic [#]	29.6	7.9	32.5	9.8	12.8	8.6	10.1	10.7	11.7	<0.5	mg/kg
Barium [#]	95	74	238	207	105	250	78	94	107	<1	mg/kg
Cadmium [#]	0.7	1.9	2.5	2.6	1.9	2.4	1.9	2.0	1.5	<0.1	mg/kg
Chromium [#]	32.7	39.5	64.2	64.2	39.3	33.1	48.6	80.5	34.2	21.1	<0.5
Copper [#]	29	28	67	46	51	27	33	35	59	20	<1
Lead [#]	54	27	84	36	55	25	21	26	46	15	<5
Mercury [#]	0.1	<0.1	0.4	0.4	0.3	<0.1	<0.1	<0.1	0.2	<0.1	mg/kg
Molybdenum [#]	1.4	3.0	2.7	2.5	4.2	3.4	4.7	6.7	3.3	2.4	<0.1
Nickel [#]	28.9	36.3	53.3	49.0	40.2	32.1	40.1	50.5	34.8	24.9	<0.7
Selenium [#]	<1	1	2	2	3	2	4	2	2	<1	mg/kg
Sulphur as S	0.08	-	-	-	-	0.08	-	-	-	0.06	<0.01
Total Sulphate as SO4 BRE	0.09	-	-	-	-	0.09	-	-	-	0.06	<0.01
Zinc [#]	105	90	192	160	104	63	122	95	90	52	<5
PAH MS											
Naphthalene [#]	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg
Acenaphthylene	0.14	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg
Acenaphthene [#]	0.18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg
Fluorene [#]	0.11	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg
Phenanthrene [#]	2.01	<0.03	0.05	<0.03	0.21	0.23	0.05	<0.03	0.20	0.49	<0.03
Anthracene [#]	0.49	<0.04	<0.04	<0.04	0.05	0.08	<0.04	<0.04	0.06	0.15	<0.04
Fluoranthene [#]	3.01	<0.03	0.09	0.07	0.23	0.36	<0.03	0.06	0.27	0.73	<0.03
Pyrene [#]	2.90	<0.03	0.08	0.06	0.22	0.32	<0.03	0.06	0.26	0.61	<0.03
Benzo(a)anthracene [#]	1.53	<0.06	0.09	<0.06	0.14	0.21	<0.06	<0.06	0.17	0.39	<0.06
Chrysene [#]	1.69	<0.02	0.06	0.06	0.16	0.21	0.03	0.05	0.19	0.33	<0.02
Benzo(bk)fluoranthene [#]	3.59	<0.07	0.12	<0.07	0.22	0.32	<0.07	<0.07	0.26	0.47	<0.07
Benzo(a)pyrene [#]	2.02	<0.04	0.08	<0.04	0.10	0.16	<0.04	<0.04	0.14	0.24	<0.04
Indeno(123cd)pyrene [#]	1.37	<0.04	<0.04	<0.04	0.05	0.09	<0.04	<0.04	0.07	0.14	<0.04
Dibenz(a,h)anthracene [#]	0.28	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg
Benzo(ghi)perylene [#]	1.44	<0.04	<0.04	<0.04	0.07	0.11	<0.04	<0.04	0.10	0.15	<0.04
Coronene	0.23	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg
PAH 6 Total [#]	11.43	<0.22	0.29	<0.22	0.67	1.04	<0.22	<0.22	0.84	1.73	<0.22
PAH 17 Total	21.05	<0.64	<0.64	<0.64	1.45	2.09	<0.64	<0.64	1.72	3.75	<0.64
Benzo(b)fluoranthene	2.58	<0.05	0.09	<0.05	0.16	0.23	<0.05	<0.05	0.19	0.34	<0.05
Benzo(k)fluoranthene	1.01	<0.02	0.03	<0.02	0.06	0.09	<0.02	<0.02	0.07	0.13	<0.02
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg
PAH Surrogate % Recovery	94	95	132	123	131	121	116	106	115	109	<0
Mineral Oil (C10-C40) (EH CU_1D_AL)	53	<30	77	<30	<30	<30	<30	<30	<30	<30	mg/kg

Please include all sections of this report if it is reproduced

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117	
Sample ID	BH01	BH01	BH02	BH02	BH03	BH03	BH04	BH04	BH05	BH05	
Depth	0.00-1.60	3.00-3.40	0.00-1.40	1.40-2.00	0.00-1.70	1.70-2.00	0.00-1.10	2.50-3.00	0.20-1.60	1.60-2.00	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2	2	2	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR
											Units
											Method No.
TPH CWG											
Aliphatics											
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>C16-C21 (EH_CU_1D_AL) #	9	<7	23	<7	<7	<7	<7	<7	<7	<7	mg/kg
>C21-C35 (EH_CU_1D_AL) #	44	<7	54	<7	<7	<7	<7	<7	<7	<7	mg/kg
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
Total aliphatics C5-40 (EH+HS_1D_AL)	53	<26	77	<26	<26	<26	<26	<26	<26	<26	mg/kg
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C25 (EH_1D_AL)	14	<10	30	<10	<10	<10	<10	<10	<10	<10	mg/kg
>C25-C35 (EH_1D_AL)	31	<10	33	<10	<10	<10	<10	<10	<10	<10	mg/kg
Aromatics											
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>EC16-EC21 (EH_CU_1D_AR) #	38	<7	63	<7	<7	<7	<7	<7	31	<7	mg/kg
>EC21-EC35 (EH_CU_1D_AR) #	181	<7	296	<7	<7	<7	<7	126	<7	<7	mg/kg
>EC35-EC40 (EH_1D_AR)	14	<7	20	<7	<7	<7	<7	14	<7	<7	mg/kg
Total aromatics C5-40 (EH+HS_1D_AR)	233	<26	379	<26	<26	<26	<26	171	<26	<26	mg/kg
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	286	<52	456	<52	<52	<52	<52	171	<52	<52	mg/kg
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	46	<10	<10	mg/kg
>EC25-EC35 (EH_1D_AR)	120	<10	194	<10	<10	<10	<10	85	<10	<10	mg/kg
MTBE #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Benzene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Toluene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Ethylbenzene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
m/p-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
o-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117		
Sample ID	BH01	BH01	BH02	BH02	BH03	BH03	BH04	BH04	BH05	BH05		
Depth	0.00-1.60	3.00-3.40	0.00-1.40	1.40-2.00	0.00-1.70	1.70-2.00	0.00-1.10	2.50-3.00	0.20-1.60	1.60-2.00		
COC No / misc											Please see attached notes for all abbreviations and acronyms	
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		
Sample Type	Soil											
Batch Number	2	2	2	2	2	2	2	2	2	2	LOD/LOR	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	Units	
											Method No.	
Natural Moisture Content	23.3	10.4	50.1	39.0	22.8	16.8	14.2	15.2	23.6	14.2	<0.1 %	PM4/PM0
Moisture Content (% Wet Weight)	18.9	9.5	33.4	28.1	18.6	14.4	12.4	13.2	19.1	12.4	<0.1 %	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<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) #	0.0944	-	-	-	-	0.1970	-	-	-	0.0971	<0.0015 g/l	TM38/PM20
Chromium III	32.7	39.5	64.2	64.2	39.3	33.1	48.6	80.5	34.2	21.1	<0.5 mg/kg	NONE/NONE
Total Organic Carbon #	1.06	0.33	3.08	1.97	1.96	0.77	0.62	0.53	1.70	1.63	<0.02 %	TM21/PM24
Alkali Reserve	-	-	-	-	-	-	-	-	-	-	<0.000 gNaOH/100g	TM160/PM110
pH #	8.56	8.36	7.81	8.04	7.80	8.09	7.93	8.31	7.93	8.08	<0.01 pH units	TM73/PM11
Mass of raw test portion	0.1054	0.1008	0.1235	0.1123	0.1141	0.0987	0.1001	0.1029	0.1104	0.1018	kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg	NONE/PM17

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147			
Sample ID	BH07	BH07	BH08	BH08	BH09	BH09	BH10	BH10	BH11	BH11			
Depth	0.60-1.00	1.00-2.00	0.40-1.20	2.00-3.00	0.20-0.90	2.00-3.00	0.20-1.00	1.00-2.00	0.00-0.70	1.70-2.70			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil												
Batch Number	2	2	2	2	2	2	2	2	2	2		LOD/LOR	Units
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021		Method No.	
Antimony	2	2	2	2	3	1	<1	2	6	3	<1	mg/kg	TM30/PM15
Arsenic [#]	9.7	9.5	23.7	7.6	16.3	6.8	6.0	9.4	30.2	22.3	<0.5	mg/kg	TM30/PM15
Barium [#]	89	49	159	126	195	55	157	72	229	114	<1	mg/kg	TM30/PM15
Cadmium [#]	2.2	1.7	1.6	1.7	0.9	1.8	0.3	1.9	2.7	1.6	<0.1	mg/kg	TM30/PM15
Chromium [#]	41.3	37.2	34.2	56.9	36.1	33.1	26.0	49.4	58.7	53.0	<0.5	mg/kg	TM30/PM15
Copper [#]	28	30	87	20	82	23	21	31	120	98	<1	mg/kg	TM30/PM15
Lead [#]	19	15	271	15	147	12	24	19	273	127	<5	mg/kg	TM30/PM15
Mercury [#]	<0.1	0.2	1.5	<0.1	0.6	0.2	0.3	0.2	0.8	0.5	<0.1	mg/kg	TM30/PM15
Molybdenum [#]	3.5	2.5	3.2	4.7	1.9	4.2	1.6	4.3	6.4	5.6	<0.1	mg/kg	TM30/PM15
Nickel [#]	37.1	37.2	47.8	30.8	21.1	25.0	21.0	33.4	57.2	51.9	<0.7	mg/kg	TM30/PM15
Selenium [#]	1	1	1	<1	<1	<1	<1	1	2	2	<1	mg/kg	TM30/PM15
Sulphur as S	-	0.05	0.09	-	-	-	-	-	-	-	<0.01	%	TM30/PM15
Total Sulphate as SO4 BRE	-	0.03	0.12	-	-	-	-	-	-	-	<0.01	%	TM50/PM29
Zinc [#]	83	66	189	61	165	60	43	86	299	140	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene [#]	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	0.07	<0.03	0.04	<0.03	<0.03	<0.03	0.06	<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	<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	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene [#]	<0.03	<0.03	0.70	<0.03	0.58	<0.03	0.15	<0.03	0.54	0.22	<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	0.15	<0.04	0.13	<0.04	<0.04	<0.04	0.13	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene [#]	<0.03	<0.03	0.93	<0.03	0.83	<0.03	0.25	<0.03	0.90	0.25	<0.03	mg/kg	TM4/PM8
Pyrene [#]	<0.03	<0.03	0.86	<0.03	0.78	<0.03	0.22	<0.03	0.79	0.25	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	<0.06	<0.06	0.64	<0.06	0.39	<0.06	0.16	<0.06	0.43	0.17	<0.06	mg/kg	TM4/PM8
Chrysene [#]	<0.02	<0.02	0.58	<0.02	0.44	<0.02	0.15	<0.02	0.84	0.16	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene [#]	<0.07	<0.07	0.95	<0.07	0.71	<0.07	0.24	<0.07	0.78	0.22	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	<0.04	<0.04	0.49	<0.04	0.39	<0.04	0.13	<0.04	0.47	0.14	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene [#]	<0.04	<0.04	0.26	<0.04	0.24	<0.04	0.08	<0.04	0.25	0.07	<0.04	mg/kg	TM4/PM8
Dibenz(ah)anthracene [#]	<0.04	<0.04	0.05	<0.04	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	<0.04	<0.04	0.30	<0.04	0.27	<0.04	0.09	<0.04	0.28	0.09	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<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	2.93	<0.22	2.44	<0.22	0.79	<0.22	2.68	0.77	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	6.05	<0.64	4.86	<0.64	1.47	<0.64	5.54	1.57	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	0.68	<0.05	0.51	<0.05	0.17	<0.05	0.56	0.16	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.27	<0.02	0.20	<0.02	0.07	<0.02	0.22	0.06	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	122	120	123	94	96	125	129	128	127	114	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH CU_1D_AL)	<30	<30	<30	<30	30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147	
Sample ID	BH07	BH07	BH08	BH08	BH09	BH09	BH10	BH10	BH11	BH11	
Depth	0.60-1.00	1.00-2.00	0.40-1.20	2.00-3.00	0.20-0.90	2.00-3.00	0.20-1.00	1.00-2.00	0.00-0.70	1.70-2.70	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2	2	2	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR
											Units
											Method No.
TPH CWG											
Aliphatics											
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	30	<7	<7	<7	<7	<7	mg/kg
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	30	<26	<26	<26	<26	<26	mg/kg
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	28	<10	<10	<10	<10	<10	mg/kg
Aromatics											
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	10	<7	14	<7	<7	26	<7	<7	mg/kg
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	11	<7	61	<7	<7	106	<7	<7	mg/kg
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7	<7	<7	12	<7	<7	mg/kg
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	75	<26	<26	144	<26	<26	mg/kg
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	105	<52	<52	144	<52	<52	mg/kg
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	20	<10	<10	43	<10	<10	mg/kg
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	47	<10	<10	72	<10	<10	mg/kg
MTBE #	<5	<5	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	ug/kg
Benzene #	<5	<5	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	ug/kg
Toluene #	<5	<5	<5 SV	<5	14	<5	<5 SV	<5	<5 SV	<5	ug/kg
Ethylbenzene #	<5	<5	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	ug/kg
m/p-Xylene #	<5	<5	<5 SV	<5	8	<5	<5 SV	<5	<5 SV	<5	ug/kg
o-Xylene #	<5	<5	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	ug/kg
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147		
Sample ID	BH07	BH07	BH08	BH08	BH09	BH09	BH10	BH10	BH11	BH11		
Depth	0.60-1.00	1.00-2.00	0.40-1.20	2.00-3.00	0.20-0.90	2.00-3.00	0.20-1.00	1.00-2.00	0.00-0.70	1.70-2.70		
COC No / misc											Please see attached notes for all abbreviations and acronyms	
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		
Sample Type	Soil											
Batch Number	2	2	2	2	2	2	2	2	2	2		
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR	
											Units	
											Method No.	
Natural Moisture Content	13.4	11.4	37.0	11.7	26.3	14.0	12.1	16.1	47.1	23.3	<0.1 %	PM4/PM0
Moisture Content (% Wet Weight)	11.8	10.3	27.0	10.4	20.8	12.3	10.8	13.9	32.0	18.9	<0.1 %	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<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) #	-	0.0313	0.1685	-	-	-	-	-	-	-	<0.0015 g/l	TM38/PM20
Chromium III	41.3	37.2	34.2	56.9	36.1	33.1	26.0	49.4	58.7	53.0	<0.5 mg/kg	NONE/NONE
Total Organic Carbon #	0.33	0.39	9.13	0.37	1.93	0.34	0.81	0.57	8.29	6.49	<0.02 %	TM21/PM24
Alkali Reserve	-	-	-	-	0.002	-	-	-	-	-	<0.000 gNaOH/100g	TM160/PM110
pH #	8.57	8.66	7.81	8.44	11.86	8.57	8.13	8.59	7.93	8.41	<0.01 pH units	TM73/PM11
Mass of raw test portion	0.0806	0.0966	0.1192	0.0987	0.1059	0.1072	0.0966	0.1093	0.1305	0.104	kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg	NONE/PM17

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177	
Sample ID	BH12	BH12	BH13	BH13	BH14	BH14	BH15	BH15	BH16	BH16	
Depth	0.00-0.70	1.00-2.50	0.30-0.70	1.00-2.00	0.30-0.90	0.90-2.00	0.30-0.80	1.90-3.00	0.30-0.80	1.00-2.00	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2	2	2	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR
											Units
											Method No.
Antimony	<1	2	2	2	3	2	4	1	3	1	<1 mg/kg TM30/PM15
Arsenic [#]	7.1	10.8	11.8	10.5	25.8	9.8	36.8	9.4	27.7	9.1	<0.5 mg/kg TM30/PM15
Barium [#]	195	66	140	144	303	117	176	282	192	317	<1 mg/kg TM30/PM15
Cadmium [#]	1.3	2.6	1.8	2.1	1.6	1.8	1.4	1.5	1.1	2.2	<0.1 mg/kg TM30/PM15
Chromium [#]	20.3	38.7	46.8	45.9	44.0	30.9	33.2	25.2	48.9	26.5	<0.5 mg/kg TM30/PM15
Copper [#]	16	34	18	31	111	31	128	25	111	23	<1 mg/kg TM30/PM15
Lead [#]	17	14	19	17	325	24	413	32	306	34	<5 mg/kg TM30/PM15
Mercury [#]	0.1	<0.1	<0.1	<0.1	0.8	<0.1	1.1	<0.1	0.9	<0.1	<0.1 mg/kg TM30/PM15
Molybdenum [#]	3.0	5.5	5.3	4.8	3.7	4.0	4.5	3.1	4.7	3.6	<0.1 mg/kg TM30/PM15
Nickel [#]	15.3	45.4	31.0	37.6	36.2	34.2	61.7	25.0	49.2	39.5	<0.7 mg/kg TM30/PM15
Selenium [#]	<1	1	<1	2	1	1	2	1	1	2	<1 mg/kg TM30/PM15
Sulphur as S	0.09	-	-	-	-	0.03	0.10	0.03	-	0.03	<0.01 % TM30/PM15
Total Sulphate as SO4 BRE	0.06	-	-	-	-	0.03	0.14	0.04	-	0.04	<0.01 % TM50/PM29
Zinc [#]	49	89	81	90	234	80	248	75	220	85	<5 mg/kg TM30/PM15
PAH MS											
Naphthalene [#]	<0.04	<0.04	<0.04	<0.04	0.13	<0.04	0.11	<0.04	<0.04	<0.04	<0.04 mg/kg TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	0.14	<0.03	0.09	<0.03	0.10	<0.03	<0.03 mg/kg TM4/PM8
Acenaphthene [#]	<0.05	<0.05	<0.05	<0.05	0.09	<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	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04 mg/kg TM4/PM8
Phenanthrene [#]	0.06	<0.03	<0.03	<0.03	1.48	<0.03	0.74	0.09	0.94	0.07	<0.03 mg/kg TM4/PM8
Anthracene [#]	<0.04	<0.04	<0.04	<0.04	0.35	<0.04	0.17	<0.04	0.27	<0.04	<0.04 mg/kg TM4/PM8
Fluoranthene [#]	<0.03	<0.03	<0.03	<0.03	2.60	<0.03	1.09	0.16	1.47	0.11	<0.03 mg/kg TM4/PM8
Pyrene [#]	<0.03	<0.03	<0.03	<0.03	2.43	<0.03	1.05	0.14	1.31	0.11	<0.03 mg/kg TM4/PM8
Benzo(a)anthracene [#]	<0.06	<0.06	<0.06	<0.06	1.29	<0.06	0.61	0.12	0.70	0.07	<0.06 mg/kg TM4/PM8
Chrysene [#]	<0.02	<0.02	<0.02	<0.02	1.58	<0.02	0.70	0.11	0.78	0.07	<0.02 mg/kg TM4/PM8
Benzo(bk)fluoranthene [#]	<0.07	<0.07	<0.07	<0.07	2.42	<0.07	1.17	0.14	1.16	0.11	<0.07 mg/kg TM4/PM8
Benzo(a)pyrene [#]	<0.04	<0.04	<0.04	<0.04	1.40	<0.04	0.69	0.09	0.72	0.06	<0.04 mg/kg TM4/PM8
Indeno(123cd)pyrene [#]	<0.04	<0.04	<0.04	<0.04	0.75	<0.04	0.42	<0.04	0.38	<0.04	<0.04 mg/kg TM4/PM8
Dibenz(a,h)anthracene [#]	<0.04	<0.04	<0.04	<0.04	0.19	<0.04	0.11	<0.04	0.10	<0.04	<0.04 mg/kg TM4/PM8
Benzo(ghi)perylene [#]	<0.04	<0.04	<0.04	<0.04	0.86	<0.04	0.46	0.05	0.43	<0.04	<0.04 mg/kg TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	0.14	<0.04	0.08	<0.04	0.07	<0.04	<0.04 mg/kg TM4/PM8
PAH 6 Total [#]	<0.22	<0.22	<0.22	<0.22	8.03	<0.22	3.83	0.44	4.16	0.28	<0.22 mg/kg TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	15.94	<0.64	7.49	0.90	8.43	<0.64	<0.64 mg/kg TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	1.74	<0.05	0.84	0.10	0.84	0.08	<0.05 mg/kg TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	0.68	<0.02	0.33	0.04	0.32	0.03	<0.02 mg/kg TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 mg/kg TM4/PM8
PAH Surrogate % Recovery	119	115	123	117	126	117	116	114	118	118	<0 % TM4/PM8
Mineral Oil (C10-C40) (EH CU_1D_AL)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg TM5/PM8/PM16

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177	
Sample ID	BH12	BH12	BH13	BH13	BH14	BH14	BH15	BH15	BH16	BH16	
Depth	0.00-0.70	1.00-2.50	0.30-0.70	1.00-2.00	0.30-0.90	0.90-2.00	0.30-0.80	1.90-3.00	0.30-0.80	1.00-2.00	
COC No / misc											Please see attached notes for all abbreviations and acronyms
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2	2	2	
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR
											Units
											Method No.
TPH CWG											
Aliphatics											
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	24	<7	<7	<7	<7	mg/kg
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10	19	<10	<10	<10	<10	mg/kg
Aromatics											
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	<7	<7	18	<7	16	<7	31	<7	mg/kg
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	<7	<7	78	<7	93	<7	140	<7	mg/kg
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7	<7	11	<7	19	<7	mg/kg
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	96	<26	120	<26	190	<26	mg/kg
Total aliphatics and aromatic(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	96	<52	120	<52	190	<52	mg/kg
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	mg/kg
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	31	<10	28	<10	53	<10	mg/kg
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	53	<10	66	<10	97	<10	mg/kg
MTBE #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Benzene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Toluene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
Ethylbenzene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
m/p-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
o-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5 SV	<5	ug/kg
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177		
Sample ID	BH12	BH12	BH13	BH13	BH14	BH14	BH15	BH15	BH16	BH16		
Depth	0.00-0.70	1.00-2.50	0.30-0.70	1.00-2.00	0.30-0.90	0.90-2.00	0.30-0.80	1.90-3.00	0.30-0.80	1.00-2.00		
COC No / misc											Please see attached notes for all abbreviations and acronyms	
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021		
Sample Type	Soil											
Batch Number	2	2	2	2	2	2	2	2	2	2		
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	LOD/LOR	
											Units	
											Method No.	
Natural Moisture Content	18.2	12.1	17.4	13.7	28.5	13.2	34.5	17.0	70.5	17.0	<0.1 %	PM4/PM0
Moisture Content (% Wet Weight)	15.4	10.8	14.8	12.0	22.2	11.6	25.7	14.5	41.4	14.5	<0.1 %	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<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) #	0.0301	-	-	-	-	0.0185	0.0338	0.0201	-	0.0250	<0.0015 g/l	TM38/PM20
Chromium III	20.3	38.7	46.8	45.9	44.0	30.9	33.2	25.2	48.9	26.5	<0.5 mg/kg	NONE/NONE
Total Organic Carbon #	0.72	0.46	0.59	0.50	8.92	0.53	11.51	1.33	14.67	1.01	<0.02 %	TM21/PM24
Alkali Reserve	-	-	-	-	-	-	-	-	-	-	<0.000 gNaOH/100g	TM160/PM110
pH #	8.56	8.76	8.79	8.70	8.23	8.56	8.21	8.66	8.20	8.65	<0.01 pH units	TM73/PM11
Mass of raw test portion	0.1091	0.098	0.1094	0.1029	0.1121	0.1032	0.1164	0.1059	0.132	0.0989	kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	kg	NONE/PM17

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	178-180	181-183	184	185	186	187	188	189			
Sample ID	BH17	BH17	BH01	BH01	BH02	BH09	BH11	BH17			
Depth	0.00-0.60	1.00-2.00	1.60-2.00	3.40-4.00	2.00-3.00	3.40-4.00	0.70-1.70	2.20-3.00			
COC No / misc											
Containers	V J T	V J T	T	T	T	T	T	T			
Sample Date	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2			
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021			
									LOD/LOR	Units	Method No.
Antimony	<1	1	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Arsenic [#]	9.3	12.1	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Barium [#]	24	250	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Cadmium [#]	<0.1	1.5	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Chromium [#]	52.2	54.2	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Copper [#]	21	18	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Lead [#]	10	32	-	-	-	-	-	-	<5	mg/kg	TM30/PM15
Mercury [#]	0.2	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Molybdenum [#]	1.2	4.9	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Nickel [#]	16.8	34.1	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM15
Selenium [#]	<1	1	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Sulphur as S	-	-	0.05	0.30	0.05	0.09	0.06	0.32	<0.01	%	TM30/PM15
Total Sulphate as SO4 BRE	-	-	0.06	0.16	0.03	0.05	0.08	0.16	<0.01	%	TM50/PM29
Zinc [#]	69	118	-	-	-	-	-	-	<5	mg/kg	TM30/PM15
PAH MS											
Naphthalene [#]	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	-	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Acenaphthene [#]	<0.05	<0.05	-	-	-	-	-	-	<0.05	mg/kg	TM4/PM8
Fluorene [#]	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Phenanthrene [#]	0.06	0.04	-	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Fluoranthene [#]	0.10	0.06	-	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Pyrene [#]	0.10	0.05	-	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.08	<0.06	-	-	-	-	-	-	<0.06	mg/kg	TM4/PM8
Chrysene [#]	0.09	0.05	-	-	-	-	-	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene [#]	0.11	<0.07	-	-	-	-	-	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.07	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene [#]	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Dibenz(a,h)anthracene [#]	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.06	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	-	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
PAH 6 Total [#]	0.34	<0.22	-	-	-	-	-	-	<0.22	mg/kg	TM4/PM8
PAH 17 Total	0.67	<0.64	-	-	-	-	-	-	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.08	<0.05	-	-	-	-	-	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.03	<0.02	-	-	-	-	-	-	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	-	-	-	-	-	-	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	115	121	-	-	-	-	-	-	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	44	<30	-	-	-	-	-	-	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	178-180	181-183	184	185	186	187	188	189			
Sample ID	BH17	BH17	BH01	BH01	BH02	BH09	BH11	BH17			
Depth	0.00-0.60	1.00-2.00	1.60-2.00	3.40-4.00	2.00-3.00	3.40-4.00	0.70-1.70	2.20-3.00			
COC No / misc											
Containers	V J T	V J T	T	T	T	T	T	T			
Sample Date	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2			
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021			
									LOD/LOR	Units	Method No.
TPH CWG											
Aliphatics											
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH CU_1D_AL) #	<0.2	<0.2	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH CU_1D_AL) #	<4	<4	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH CU_1D_AL) #	<7	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH CU_1D_AL) #	44	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	44	<26	-	-	-	-	-	-	<26	mg/kg	TM5/PM8/PM16
>C6-C10 (HS_1D_AL)	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	39	<10	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
Aromatics											
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH CU_1D_AR) #	<0.2	<0.2	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH CU_1D_AR) #	<4	<4	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH CU_1D_AR) #	<7	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH CU_1D_AR) #	135	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	29	<7	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	164	<26	-	-	-	-	-	-	<26	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatic(C5-40) (EH+HS CU_1D_Total)	208	<52	-	-	-	-	-	-	<52	mg/kg	TM5/PM8/PM16
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	14	<10	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	110	<10	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	-	-	-	-	-	-	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : Solid

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

EMT Sample No.	178-180	181-183	184	185	186	187	188	189			
Sample ID	BH17	BH17	BH01	BH01	BH02	BH09	BH11	BH17			
Depth	0.00-0.60	1.00-2.00	1.60-2.00	3.40-4.00	2.00-3.00	3.40-4.00	0.70-1.70	2.20-3.00			
COC No / misc									Please see attached notes for all abbreviations and acronyms		
Containers	V J T	V J T	T	T	T	T	T	T			
Sample Date	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil										
Batch Number	2	2	2	2	2	2	2	2			
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021			
Natural Moisture Content	13.4	21.8	-	-	-	-	-	-	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.8	17.9	-	-	-	-	-	-	<0.1	%	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	-	-	-	-	-	-	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	0.1153	0.2831	0.0176	0.0324	0.0208	0.2339	<0.0015	g/l	TM38/PM20
Chromium III	52.2	54.2	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.19	0.67	-	-	-	-	-	-	<0.02	%	TM21/PM24
Alkali Reserve	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g	TM160/PM110
pH #	8.58	8.68	8.16	8.14	8.40	8.76	8.52	8.52	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.0951	0.1071	-	-	-	-	-	-		kg	NONE/PM17
Mass of dried test portion	0.09	0.09	-	-	-	-	-	-		kg	NONE/PM17

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117			
Sample ID	BH01	BH01	BH02	BH02	BH03	BH03	BH04	BH04	BH05	BH05			
Depth	0.00-1.60	3.00-3.40	0.00-1.40	1.40-2.00	0.00-1.70	1.70-2.00	0.00-1.10	2.50-3.00	0.20-1.60	1.60-2.00			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil												
Batch Number	2	2	2	2	2	2	2	2	2	2		LOD/LOR	Units
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021		Method No.	
Dissolved Antimony#	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic#	0.0136	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	0.136	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17	
Dissolved Barium#	<0.003	0.027	0.020	0.014	0.048	0.055	0.009	0.007	0.025	0.047	mg/l	TM30/PM17	
Dissolved Barium (A10) #	<0.03	0.27	0.20	0.14	0.48	0.55	0.09	0.07	0.25	0.47	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	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	mg/kg	TM30/PM17	
Dissolved Chromium#	0.0023	<0.0015	0.0021	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17	
Dissolved Chromium (A10) #	0.023	<0.015	0.021	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17	
Dissolved Copper#	<0.007	<0.007	0.013	<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	0.13	<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	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	mg/kg	TM30/PM17	
Dissolved Molybdenum#	0.004	0.013	0.013	0.010	0.012	0.023	0.031	0.019	0.023	0.025	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.04	0.13	0.13	0.10	0.12	0.23	0.31	0.19	0.23	0.25	mg/kg	TM30/PM17	
Dissolved Nickel#	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<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	<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	mg/kg	TM30/PM17	
Dissolved Zinc#	<0.003	<0.003	0.011	<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	0.11	<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	0.00003	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	0.0003	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	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	mg/kg	TM26/PM0	
Fluoride	<0.3	<0.3	0.8	0.3	0.5	0.3	0.3	0.3	0.4	<0.3	mg/l	TM173/PM0	
Fluoride	<3	<3	8	<3	5	3	<3	<3	4	<3	mg/kg	TM173/PM0	
Sulphate as SO4#	44.0	8.6	56.0	34.3	89.3	72.4	94.9	11.6	54.6	21.0	<0.5	mg/l	TM38/PM0
Sulphate as SO4#	440	86	560	343	893	724	949	116	546	210	<5	mg/kg	TM38/PM0
Chloride#	1.9	0.7	1.9	0.6	0.7	0.4	0.3	0.4	0.7	0.7	<0.3	mg/l	TM38/PM0
Chloride#	19	7	19	6	7	4	<3	4	7	7	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	6	3	6	5	5	3	<2	3	3	<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	60	30	60	50	50	30	<20	30	30	<20	mg/kg	TM60/PM0	
pH	9.75	8.40	8.06	8.75	8.20	8.10	7.94	8.08	8.02	8.22	<0.01	pH units	TM73/PM0
Total Dissolved Solids#	175	61	171	138	279	171	215	67	181	87	<35	mg/l	TM20/PM0
Total Dissolved Solids#	1750	610	1711	1380	2789	1711	2149	670	1810	870	<350	mg/kg	TM20/PM0

Please include all sections of this report if it is reproduced

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147			
Sample ID	BH07	BH07	BH08	BH08	BH09	BH09	BH10	BH10	BH11	BH11			
Depth	0.60-1.00	1.00-2.00	0.40-1.20	2.00-3.00	0.20-0.90	2.00-3.00	0.20-1.00	1.00-2.00	0.00-0.70	1.70-2.70			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil												
Batch Number	2	2	2	2	2	2	2	2	2	2		LOD/LOR	Units
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021		Method No.	
Dissolved Antimony#	<0.002	<0.002	0.004	<0.002	0.004	<0.002	<0.002	0.003	<0.002	<0.002	mg/l	TM30/PM17	
Dissolved Antimony (A10) #	<0.02	<0.02	0.04	<0.02	0.04	<0.02	<0.02	0.03	<0.02	<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic#	<0.0025	<0.0025	0.0035	<0.0025	<0.0025	<0.0025	0.0096	<0.0025	0.0102	<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	<0.025	0.035	<0.025	<0.025	<0.025	0.096	<0.025	0.102	<0.025	mg/kg	TM30/PM17	
Dissolved Barium#	<0.003	<0.003	0.005	<0.003	0.069	<0.003	0.010	<0.003	0.006	<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	<0.03	<0.03	0.05	<0.03	0.69	<0.03	0.10	<0.03	0.06	<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	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	mg/kg	TM30/PM17	
Dissolved Chromium#	<0.0015	<0.0015	<0.0015	<0.0015	0.0210	<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	0.210	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17	
Dissolved Copper#	<0.007	<0.007	0.007	<0.007	0.219	<0.007	<0.007	<0.007	0.009	<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	2.19	<0.07	<0.07	<0.07	0.09	<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	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	mg/kg	TM30/PM17	
Dissolved Molybdenum#	0.012	0.016	0.004	0.012	0.010	0.017	0.005	0.015	0.008	0.020	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.12	0.16	0.04	0.12	0.10	0.17	0.05	0.15	0.08	0.20	mg/kg	TM30/PM17	
Dissolved Nickel#	<0.002	<0.002	<0.002	<0.002	0.020	<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	0.20	<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	<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	mg/kg	TM30/PM17	
Dissolved Zinc#	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.005	<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	0.05	<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVAF#	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<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	0.0002	<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	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	mg/kg	TM26/PM0	
Fluoride	<0.3	<0.3	0.6	0.3	<0.3	<0.3	<0.3	0.4	0.4	0.4	<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	6	3	<3	<3	<3	4	4	4	<3	mg/kg	TM173/PM0
Sulphate as SO4#	4.8	7.9	25.1	1.9	9.4	0.7	60.6	4.2	<0.5	4.8	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	48	79	251	19	94	7	606	42	<5	48	<5	mg/kg	TM38/PM0
Chloride#	0.4	0.4	0.6	<0.3	2.3	<0.3	0.3	<0.3	0.7	0.5	<0.3	mg/l	TM38/PM0
Chloride #	4	4	6	<3	23	<3	3	<3	7	5	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2	3	<2	13	<2	4	<2	7	<2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20	30	<20	130	<20	40	<20	70	<20	<20	mg/kg	TM60/PM0
pH	8.23	8.24	8.13	8.15	11.94	8.67	8.21	8.31	8.21	8.20	<0.01	pH units	TM73/PM0
Total Dissolved Solids#	56	54	124	40	400	59	149	52	101	58	<35	mg/l	TM20/PM0
Total Dissolved Solids #	560	540	1240	400	3999	590	1490	520	1010	580	<350	mg/kg	TM20/PM0

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

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177			
Sample ID	BH12	BH12	BH13	BH13	BH14	BH14	BH15	BH15	BH16	BH16			
Depth	0.00-0.70	1.00-2.50	0.30-0.70	1.00-2.00	0.30-0.90	0.90-2.00	0.30-0.80	1.90-3.00	0.30-0.80	1.00-2.00			
COC No / misc											Please see attached notes for all abbreviations and acronyms		
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021			
Sample Type	Soil												
Batch Number	2	2	2	2	2	2	2	2	2	2		LOD/LOR	Units
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021		Method No.	
Dissolved Antimony#	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic#	<0.0025	<0.0025	<0.0025	<0.0025	0.0079	<0.0025	0.0070	<0.0025	0.0040	<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	0.079	<0.025	0.070	<0.025	0.040	<0.025	mg/kg	TM30/PM17	
Dissolved Barium#	<0.003	<0.003	<0.003	0.010	0.007	0.007	0.005	0.003	0.004	<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	<0.03	<0.03	<0.03	0.10	0.07	0.07	0.05	0.03	0.04	<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	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	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	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	mg/kg	TM30/PM17	
Dissolved Copper#	<0.007	<0.007	<0.007	<0.007	0.008	<0.007	0.011	<0.007	<0.007	<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	0.08	<0.07	0.11	<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	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	mg/kg	TM30/PM17	
Dissolved Molybdenum#	0.007	0.017	0.018	0.019	0.005	0.020	0.005	0.012	0.005	0.015	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.07	0.17	0.18	0.19	0.05	0.20	0.05	0.12	0.05	0.15	mg/kg	TM30/PM17	
Dissolved Nickel#	<0.002	<0.002	<0.002	<0.002	<0.002	<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	<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	<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	mg/kg	TM30/PM17	
Dissolved Zinc#	0.005	<0.003	<0.003	<0.003	0.004	<0.003	0.004	<0.003	<0.003	<0.003	mg/l	TM30/PM17	
Dissolved Zinc (A10) #	0.05	<0.03	<0.03	<0.03	0.04	<0.03	0.04	<0.03	<0.03	<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVAF#	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<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	0.0002	<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	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	mg/kg	TM26/PM0	
Fluoride	0.3	<0.3	0.4	<0.3	0.4	0.3	0.6	0.3	0.6	<0.3	mg/l	TM173/PM0	
Fluoride	<3	<3	4	<3	4	<3	6	3	6	<3	mg/kg	TM173/PM0	
Sulphate as SO4#	5.7	1.6	5.4	2.7	<0.5	3.3	5.6	3.2	0.8	3.1	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	57	16	54	27	<5	33	56	32	8	31	<5	mg/kg	TM38/PM0
Chloride#	0.5	<0.3	0.5	0.4	1.0	<0.3	0.6	<0.3	<0.3	<0.3	mg/l	TM38/PM0	
Chloride #	5	<3	5	4	10	<3	6	<3	<3	<3	mg/kg	TM38/PM0	
Dissolved Organic Carbon	5	<2	2	<2	5	<2	5	<2	4	<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	50	<20	<20	<20	50	<20	50	<20	40	<20	mg/kg	TM60/PM0	
pH	8.19	8.14	8.33	8.15	8.14	7.98	8.12	8.10	8.13	7.93	<0.01	pH units	TM73/PM0
Total Dissolved Solids#	64	39	63	39	104	55	108	76	83	60	<35	mg/l	TM20/PM0
Total Dissolved Solids #	640	390	630	390	1040	550	1080	760	830	600	<350	mg/kg	TM20/PM0

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : CEN 10:1 1 Batch

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

EMT Sample No.	178-180	181-183									
Sample ID	BH17	BH17									
Depth	0.00-0.60	1.00-2.00									
COC No / misc											
Containers	V J T	V J T									
Sample Date	29/09/2021	29/09/2021									
Sample Type	Soil	Soil									
Batch Number	2	2									
Date of Receipt	30/09/2021	30/09/2021								LOD/LOR	Units
										Method No.	
Dissolved Antimony#	<0.002	<0.002								<0.002	mg/l
Dissolved Antimony (A10) #	<0.02	<0.02								<0.02	mg/kg
Dissolved Arsenic #	0.0033	<0.0025								<0.0025	mg/l
Dissolved Arsenic (A10) #	0.033	<0.025								<0.025	mg/kg
Dissolved Barium #	<0.003	<0.003								<0.003	mg/l
Dissolved Barium (A10) #	<0.03	<0.03								<0.03	mg/kg
Dissolved Cadmium #	<0.0005	<0.0005								<0.0005	mg/l
Dissolved Cadmium (A10) #	<0.005	<0.005								<0.005	mg/kg
Dissolved Chromium #	<0.0015	<0.0015								<0.0015	mg/l
Dissolved Chromium (A10) #	<0.015	<0.015								<0.015	mg/kg
Dissolved Copper #	<0.007	<0.007								<0.007	mg/l
Dissolved Copper (A10) #	<0.07	<0.07								<0.07	mg/kg
Dissolved Lead #	<0.005	<0.005								<0.005	mg/l
Dissolved Lead (A10) #	<0.05	<0.05								<0.05	mg/kg
Dissolved Molybdenum #	0.005	0.012								<0.002	mg/l
Dissolved Molybdenum (A10) #	0.05	0.12								<0.02	mg/kg
Dissolved Nickel #	<0.002	<0.002								<0.002	mg/l
Dissolved Nickel (A10) #	<0.02	<0.02								<0.02	mg/kg
Dissolved Selenium #	<0.003	<0.003								<0.003	mg/l
Dissolved Selenium (A10) #	<0.03	<0.03								<0.03	mg/kg
Dissolved Zinc #	<0.003	<0.003								<0.003	mg/l
Dissolved Zinc (A10) #	<0.03	<0.03								<0.03	mg/kg
Mercury Dissolved by CVAF #	<0.00001	<0.00001								<0.00001	mg/l
Mercury Dissolved by CVAF #	<0.0001	<0.0001								<0.0001	mg/kg
Phenol	<0.01	<0.01								<0.01	mg/l
Phenol	<0.1	<0.1								<0.1	mg/kg
Fluoride	<0.3	0.6								<0.3	mg/l
Fluoride	<3	6								<3	mg/kg
Sulphate as SO4 #	3.2	3.1								<0.5	mg/l
Sulphate as SO4 #	32	31								<5	mg/kg
Chloride #	<0.3	<0.3								<0.3	mg/l
Chloride #	<3	<3								<3	mg/kg
Dissolved Organic Carbon	<2	<2								<2	mg/l
Dissolved Organic Carbon	<20	<20								<20	mg/kg
pH	8.35	7.92								<0.01	pH units
Total Dissolved Solids #	63	<35								<35	mg/l
Total Dissolved Solids #	630	<350								<350	mg/kg

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

Please include all sections of this report if it is reproduced.

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

EMT Sample No.	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147				
Sample ID	BH07	BH07	BH08	BH08	BH09	BH09	BH10	BH10	BH11	BH11				
Depth	0.60-1.00	1.00-2.00	0.40-1.20	2.00-3.00	0.20-0.90	2.00-3.00	0.20-1.00	1.00-2.00	0.00-0.70	1.70-2.70				
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	2	2	2	2	2	2	2	2	2	2				
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021				
Solid Waste Analysis														
Total Organic Carbon #	0.33	0.39	9.13	0.37	1.93	0.34	0.81	0.57	8.29	6.49	3	5	6	<0.02 %
Sum of BTEX	<0.025	<0.025	<0.025 ^{SV}	<0.025	<0.025	<0.025	<0.025 ^{SV}	<0.025	<0.025 ^{SV}	<0.025	6	-	-	<0.025 mg/kg
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
Mineral Oil	<30	<30	<30	<30	30	<30	<30	<30	<30	<30	500	-	-	<30 mg/kg
PAH Sum of 6 #	<0.22	<0.22	2.93	<0.22	2.44	<0.22	0.79	<0.22	2.68	0.77	-	-	-	<0.22 mg/kg
PAH Sum of 17	<0.64	<0.64	6.05	<0.64	4.86	<0.64	1.47	<0.64	5.54	1.57	100	-	-	<0.64 mg/kg
CEN 10:1 Leachate														
Arsenic #	<0.025	<0.025	0.035	<0.025	<0.025	<0.025	0.096	<0.025	0.102	<0.025	0.5	2	25	<0.025 mg/kg
Barium #	<0.03	<0.03	0.05	<0.03	0.69	<0.03	0.10	<0.03	0.06	<0.03	20	100	300	<0.03 mg/kg
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
Chromium #	<0.015	<0.015	<0.015	<0.015	0.210	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015 mg/kg
Copper #	<0.07	<0.07	<0.07	<0.07	2.19	<0.07	<0.07	<0.07	0.09	<0.07	2	50	100	<0.07 mg/kg
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.01	0.2	2	<0.0001 mg/kg
Molybdenum #	0.12	0.16	0.04	0.12	0.10	0.17	0.05	0.15	0.08	0.20	0.5	10	30	<0.02 mg/kg
Nickel #	<0.02	<0.02	<0.02	<0.02	0.20	<0.02	<0.02	<0.02	0.02	<0.02	0.4	10	40	<0.02 mg/kg
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
Antimony #	<0.02	<0.02	0.04	<0.02	0.04	<0.02	<0.02	<0.02	0.03	<0.02	0.06	0.7	5	<0.02 mg/kg
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
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	<0.03	4	50	200	<0.03 mg/kg
Total Dissolved Solids #	560	540	1240	400	3999	590	1490	520	1010	580	4000	60000	100000	<350 mg/kg
Dissolved Organic Carbon	<20	<20	30	<20	130	<20	40	<20	70	<20	500	800	1000	<20 mg/kg
Dry Matter Content Ratio	112.4	93.5	75.8	91.5	85.0	84.2	92.7	82.2	69.2	86.7	-	-	-	<0.1 %
pH #	8.57	8.66	7.81	8.44	11.86	8.57	8.13	8.59	7.93	8.41	-	-	-	<0.01 pH units
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
Fluoride	<3	<3	6	3	<3	<3	<3	4	4	4	-	-	-	<3 mg/kg
Sulphate as SO4 #	48	79	251	19	94	7	606	42	<5	48	1000	20000	50000	<5 mg/kg
Chloride #	4	4	6	<3	23	<3	3	<3	7	5	800	15000	25000	<3 mg/kg

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

EMT Sample No.	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177				
Sample ID	BH12	BH12	BH13	BH13	BH14	BH14	BH15	BH15	BH16	BH16				
Depth	0.00-0.70	1.00-2.50	0.30-0.70	1.00-2.00	0.30-0.90	0.90-2.00	0.30-0.80	1.90-3.00	0.30-0.80	1.00-2.00				
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	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021	29/09/2021				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	2	2	2	2	2	2	2	2	2	2				
Date of Receipt	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021	30/09/2021				
Solid Waste Analysis														
Total Organic Carbon #	0.72	0.46	0.59	0.50	8.92	0.53	11.51	1.33	14.67	1.01	3	5	6	<0.02 %
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025 ^{SV}	<0.025	<0.025 ^{SV}	<0.025	<0.025 ^{SV}	<0.025	6	-	-	<0.025 mg/kg
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
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30 mg/kg
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	8.03	<0.22	3.83	0.44	4.16	0.28	-	-	-	<0.22 mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	15.94	<0.64	7.49	0.90	8.43	<0.64	100	-	-	<0.64 mg/kg
CEN 10:1 Leachate														
Arsenic #	<0.025	<0.025	<0.025	<0.025	0.079	<0.025	0.070	<0.025	0.040	<0.025	0.5	2	25	<0.025 mg/kg
Barium #	<0.03	<0.03	<0.03	0.10	0.07	0.07	0.05	0.03	0.04	<0.03	20	100	300	<0.03 mg/kg
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
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
Copper #	<0.07	<0.07	<0.07	<0.07	0.08	<0.07	0.11	<0.07	<0.07	<0.07	2	50	100	<0.07 mg/kg
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001 mg/kg
Molybdenum #	0.07	0.17	0.18	0.19	0.05	0.20	0.05	0.12	0.05	0.15	0.5	10	30	<0.02 mg/kg
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02 mg/kg
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
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.7	5	<0.02 mg/kg
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
Zinc #	0.05	<0.03	<0.03	<0.03	0.04	<0.03	0.04	<0.03	<0.03	<0.03	4	50	200	<0.03 mg/kg
Total Dissolved Solids #	640	390	630	390	1040	550	1080	760	830	600	4000	60000	100000	<350 mg/kg
Dissolved Organic Carbon	50	<20	<20	<20	50	<20	50	<20	40	<20	500	800	1000	<20 mg/kg
Dry Matter Content Ratio	82.6	91.7	82.0	87.6	80.1	87.6	77.1	85.4	68.2	90.5	-	-	-	<0.1 %
pH #	8.56	8.76	8.79	8.70	8.23	8.56	8.21	8.66	8.20	8.65	-	-	-	<0.01 pH units
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
Fluoride	<3	<3	4	<3	4	<3	6	3	6	<3	-	-	-	<3 mg/kg
Sulphate as SO ₄ #	57	16	54	27	<5	33	56	32	8	31	1000	20000	50000	<5 mg/kg
Chloride #	5	<3	5	4	10	<3	6	<3	<3	<3	800	15000	25000	<3 mg/kg

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton
EMT Job No: 21/15238

Report : EN12457_2

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

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Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
21/15238	2	BH01	0.00-1.60	88-90	PAHs & Possible lubricating oil
21/15238	2	BH01	3.00-3.40	91-93	No interpretation possible
21/15238	2	BH02	0.00-1.40	94-96	PAHs & Possible lubricating oil
21/15238	2	BH02	1.40-2.00	97-99	No interpretation possible
21/15238	2	BH03	0.00-1.70	100-102	No interpretation possible
21/15238	2	BH03	1.70-2.00	103-105	No interpretation possible
21/15238	2	BH04	0.00-1.10	106-108	No interpretation possible
21/15238	2	BH04	2.50-3.00	109-111	No interpretation possible
21/15238	2	BH05	0.20-1.60	112-114	PAHs & Possible lubricating oil
21/15238	2	BH05	1.60-2.00	115-117	No interpretation possible
21/15238	2	BH07	0.60-1.00	118-120	No interpretation possible
21/15238	2	BH07	1.00-2.00	121-123	No interpretation possible
21/15238	2	BH08	0.40-1.20	124-126	No interpretation possible
21/15238	2	BH08	2.00-3.00	127-129	No interpretation possible
21/15238	2	BH09	0.20-0.90	130-132	PAHs, possible trace lubricating oil and possible naturally occurring compounds
21/15238	2	BH09	2.00-3.00	133-135	No interpretation possible
21/15238	2	BH10	0.20-1.00	136-138	No interpretation possible
21/15238	2	BH10	1.00-2.00	139-141	No interpretation possible
21/15238	2	BH11	0.00-0.70	142-144	PAHs & Naturally occurring compounds
21/15238	2	BH11	1.70-2.70	145-147	No interpretation possible
21/15238	2	BH12	0.00-0.70	148-150	No interpretation possible
21/15238	2	BH12	1.00-2.50	151-153	No interpretation possible
21/15238	2	BH13	0.30-0.70	154-156	No interpretation possible
21/15238	2	BH13	1.00-2.00	157-159	No interpretation possible
21/15238	2	BH14	0.30-0.90	160-162	PAHs & Naturally occurring compounds
21/15238	2	BH14	0.90-2.00	163-165	No interpretation possible
21/15238	2	BH15	0.30-0.80	166-168	PAHs & Naturally occurring compounds
21/15238	2	BH15	1.90-3.00	169-171	No interpretation possible
21/15238	2	BH16	0.30-0.80	172-174	PAHs & Naturally occurring compounds
21/15238	2	BH16	1.00-2.00	175-177	No interpretation possible
21/15238	2	BH17	0.00-0.60	178-180	Tarmac/bitumen
21/15238	2	BH17	1.00-2.00	181-183	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
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). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	2	BH01	0.00-1.60	89	05/10/2021	General Description (Bulk Analysis)	soil/stones
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH01	3.00-3.40	92	05/10/2021	General Description (Bulk Analysis)	soil/stones
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH02	0.00-1.40	95	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH02	1.40-2.00	98	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH03	0.00-1.70	101	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH03	1.70-2.00	104	05/10/2021	General Description (Bulk Analysis)	soil/stones
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH04	0.00-1.10	107	05/10/2021	General Description (Bulk Analysis)	soil/stones
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD

Element Materials Technology

Asbestos Analysis

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	2	BH04	0.00-1.10	107	05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH04	2.50-3.00	110	05/10/2021	General Description (Bulk Analysis)	soil/stones
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH05	0.20-1.60	113	05/10/2021	General Description (Bulk Analysis)	Soil/Stone
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH05	1.60-2.00	116	05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH07	0.60-1.00	119	05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH07	1.00-2.00	122	05/10/2021	General Description (Bulk Analysis)	Soil/Stone
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH08	0.40-1.20	125	05/10/2021	General Description (Bulk Analysis)	Soil/Stone
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH08	2.00-3.00	128	05/10/2021	General Description (Bulk Analysis)	Soil/Stone
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH09	0.20-0.90	131	05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH09	2.00-3.00	134	05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	2	BH09	2.00-3.00	134	05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH10	0.20-1.00	137	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH10	1.00-2.00	140	05/10/2021	Asbestos Level Screen	NAD
					05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH11	0.00-0.70	143	05/10/2021	Asbestos Level Screen	NAD
					05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH11	1.70-2.70	146	05/10/2021	Asbestos Level Screen	NAD
					05/10/2021	General Description (Bulk Analysis)	Soil/Stone
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH12	0.00-0.70	149	05/10/2021	Asbestos Level Screen	NAD
					05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH12	1.00-2.50	152	06/10/2021	Asbestos Level Screen	soil/stones
					06/10/2021	General Description (Bulk Analysis)	NAD
					06/10/2021	Asbestos Fibres	NAD
					06/10/2021	Asbestos ACM	NAD
					06/10/2021	Asbestos Type	NAD
21/15238	2	BH13	0.30-0.70	155	06/10/2021	Asbestos Level Screen	NAD
					06/10/2021	General Description (Bulk Analysis)	soil/stones
					06/10/2021	Asbestos Fibres	NAD
					06/10/2021	Asbestos ACM	NAD
					06/10/2021	Asbestos Type	NAD
21/15238	2	BH13	1.00-2.00	158	06/10/2021	Asbestos Level Screen	NAD
					05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
21/15238	2	BH13	1.00-2.00	158	05/10/2021	Asbestos Level Screen	NAD

Element Materials Technology

Asbestos Analysis

Client Name: Ground Investigations Ireland
Reference: 10551-04-21
Location: St Teresas Gardens
Contact: Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15238	2	BH14	0.30-0.90	161	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH14	0.90-2.00	164	05/10/2021	General Description (Bulk Analysis)	soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH15	0.30-0.80	167	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH15	1.90-3.00	170	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH16	0.30-0.80	173	05/10/2021	General Description (Bulk Analysis)	Soil
					05/10/2021	Asbestos Fibres	NAD
					05/10/2021	Asbestos ACM	NAD
					05/10/2021	Asbestos Type	NAD
					05/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH16	1.00-2.00	176	06/10/2021	General Description (Bulk Analysis)	soil
					06/10/2021	Asbestos Fibres	NAD
					06/10/2021	Asbestos ACM	NAD
					06/10/2021	Asbestos Type	NAD
					06/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH17	0.00-0.60	179	06/10/2021	General Description (Bulk Analysis)	soil
					06/10/2021	Asbestos Fibres	NAD
					06/10/2021	Asbestos ACM	NAD
					06/10/2021	Asbestos Type	NAD
					06/10/2021	Asbestos Level Screen	NAD
21/15238	2	BH17	1.00-2.00	182	06/10/2021	General Description (Bulk Analysis)	soil
					06/10/2021	Asbestos Fibres	NAD
					06/10/2021	Asbestos ACM	NAD
					06/10/2021	Asbestos Type	NAD
					06/10/2021	Asbestos Level Screen	NAD

Element Materials Technology

Notification of Deviating Samples

Client Name: Ground Investigations Ireland

Reference: 10551-04-21

Location: St Teresas Gardens

Contact: Barry Sexton

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.: 21/15238

SOILS

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.

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 $35^{\circ}\text{C} \pm 5^{\circ}\text{C}$ unless otherwise stated. Moisture content for CEN Leachate tests are dried at $105^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

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 overestimate 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.

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.

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.

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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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 CO ₂ 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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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: 21/15238

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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 First edition (2006)	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
TM160	Titrimetric determination of acid reserve to pH 4.0 or alkali reserve to pH 10.0 based on method C14.2 Canadian Government (2013).	PM110	Preparation of a 10% (w/w) aqueous solution of soil in distilled water			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	

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



Attention : James Cashen
Date : 20th October, 2021
Your reference : 10511-04-21
Our reference : Test Report 21/16253 Batch 1
Location : St Teresa's Garden
Date samples received : 15th October, 2021
Status : Final Report
Issue : 1

Five samples were received for analysis on 15th October, 2021 of which five 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

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10511-04-21
Location: St Teresa's Garden
Contact: James Cashen
EMT Job No: 21/16253

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	1-5	6-10	11-15	16-20	21-25								
Sample ID	BH01	BH05	BH06	BH14	BH17								
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G								
Sample Date	13/10/2021 10:25	13/10/2021 11:15	13/10/2021 15:10	13/10/2021 13:00	13/10/2021 11:50								
Sample Type	Ground Water												
Batch Number	1	1	1	1	1								
Date of Receipt	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021								
Dissolved Arsenic#	<2.5	3.0	3.9	<2.5	<2.5						<2.5	ug/l	TM30/PM14
Dissolved Barium#	52	113	18	52	70						<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5						<0.5	ug/l	TM30/PM14
Dissolved Boron	54	95	44	49	68						<12	ug/l	TM30/PM14
Dissolved Cadmium#	<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	<1.5						<1.5	ug/l	TM30/PM14
Dissolved Copper#	<7	<7	<7	<7	<7						<7	ug/l	TM30/PM14
Dissolved Lead#	<5	<5	<5	<5	<5						<5	ug/l	TM30/PM14
Dissolved Mercury#	<1	<1	<1	<1	<1						<1	ug/l	TM30/PM14
Dissolved Nickel#	2	13	<2	4	8						<2	ug/l	TM30/PM14
Dissolved Selenium#	<3	<3	<3	<3	<3						<3	ug/l	TM30/PM14
Dissolved Vanadium#	<1.5	<1.5	3.5	<1.5	<1.5						<1.5	ug/l	TM30/PM14
Dissolved Zinc#	<3	<3	20	4	7						<3	ug/l	TM30/PM14
PAH MS													
Naphthalene#	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM4/PM30
Acenaphthylene#	<0.013	<0.013	<0.013	<0.013	<0.013						<0.013	ug/l	TM4/PM30
Acenaphthene#	<0.013	0.031	<0.013	<0.013	<0.013						<0.013	ug/l	TM4/PM30
Fluorene#	<0.014	0.127	<0.014	<0.014	<0.014						<0.014	ug/l	TM4/PM30
Phenanthrene#	<0.011	0.497	<0.011	<0.011	0.025						<0.011	ug/l	TM4/PM30
Anthracene#	<0.013	0.030	<0.013	<0.013	<0.013						<0.013	ug/l	TM4/PM30
Fluoranthene#	0.022	0.214	<0.012	<0.012	0.016						<0.012	ug/l	TM4/PM30
Pyrene#	0.024	0.256	<0.013	<0.013	0.018						<0.013	ug/l	TM4/PM30
Benzo(a)anthracene#	<0.015	0.056	<0.015	<0.015	<0.015						<0.015	ug/l	TM4/PM30
Chrysene#	0.012	0.067	<0.011	<0.011	<0.011						<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene#	<0.018	0.066	<0.018	<0.018	<0.018						<0.018	ug/l	TM4/PM30
Benzo(a)pyrene#	<0.016	0.025	<0.016	<0.016	<0.016						<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene#	<0.011	<0.011	<0.011	<0.011	<0.011						<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene#	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene#	<0.011	0.011	<0.011	<0.011	<0.011						<0.011	ug/l	TM4/PM30
Coronene	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM4/PM30
PAH 6 Total#	<0.068	0.316	<0.068	<0.068	<0.068						<0.068	ug/l	TM4/PM30
PAH 17 Total	<0.295	1.380	<0.295	<0.295	<0.295						<0.295	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	0.05	<0.01	<0.01	<0.01						<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	0.02	<0.01	<0.01	<0.01						<0.01	ug/l	TM4/PM30
B(ghi)Perylene + I(123cd)Pyrene	<0.022	<0.022	<0.022	<0.022	<0.022						<0.022	ug/l	TM4/PM30
Sum of 4DW PAHs	<0.04	0.08	<0.04	<0.04	<0.04						<0.04	ug/l	TM4/PM30
PAH Surrogate % Recovery	80	74	75	77	81						<0	%	TM4/PM30
Methyl Tertiary Butyl Ether#	<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	ug/l	TM15/PM10
Toluene#	<5	<5	<5	<5	<5						<5	ug/l	TM15/PM10
Ethylbenzene#	<1	<1	<1	<1	<1						<1	ug/l	TM15/PM10
m/p-Xylene#	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10

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.

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10511-04-21
Location: St Teresa's Garden
Contact: James Cashen
EMT Job No: 21/16253

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	1-5	6-10	11-15	16-20	21-25							
Sample ID	BH01	BH05	BH06	BH14	BH17							
Depth												
COC No / misc												
Containers	V H P G	V H P G	V H P G	V H P G	V H P G							
Sample Date	13/10/2021 10:25	13/10/2021 11:15	13/10/2021 15:10	13/10/2021 13:00	13/10/2021 11:50							
Sample Type	Ground Water											
Batch Number	1	1	1	1	1							
Date of Receipt	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021							
o-Xylene #	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	88	96	99	97	99					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	106	106	105	99	99					<0	%	TM15/PM10
Mineral Oil (C10-C40)	1630	660	<10	1989	400					<10	ug/l	TM5/PM16/PM30
TPH CWG												
Aliphatics												
>C5-C6 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	139	<5					<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	60	<10	610	<10					<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	410	<10	1230	<10					<10	ug/l	TM5/PM16/PM30
>C21-C35 #	1540	190	<10	10	400					<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	1540	660	<10	1989	400					<10	ug/l	TM5/PM16/PM30
Aromatics												
>C5-EC7 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10	<10					<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5					<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	70	<10	<10	<10					<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	100	<10	<10	<10					<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	750	<10	<10	<10	<10					<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	750	170	<10	<10	<10					<10	ug/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	2290	830	<10	1989	400					<10	ug/l	TM5/PM16/PM30
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15					<0.15	mg/l	TM26/PM0
Sulphate as SO ₄ #	60.9	88.2	43.7	66.4	61.8					<0.5	mg/l	TM38/PM0
Chloride #	34.9	37.7	18.0	25.8	38.6					<0.3	mg/l	TM38/PM0
Ortho Phosphate as P #	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/l	TM38/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006					<0.006	mg/l	TM38/PM0
Total Ammonia as N #	0.41	0.28	0.03	0.08	0.12					<0.03	mg/l	TM38/PM0
Total Dissolved Chromium III	<6	<6	<6	<6	<6					<6	ug/l	TM0/PM0
Sulphide	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM107/PM0
Anionic Surfactants	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/l	TM33/PM0
BOD (Settled) #	<1	1	<1	7	<1					<1	mg/l	TM58/PM0
COD (Settled) #	40	23	<7	70	20					<7	mg/l	TM57/PM0
Fats Oils and Grease	<4	<4	<4	<4	<4					<4	mg/l	TM187/PM30
Free/Residual Chlorine	<0.02	<0.02	<0.02	0.06	<0.02					<0.02	mg/l	TM66/PM0

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10511-04-21
Location: St Teresa's Garden
Contact: James Cashen
EMT Job No: 21/16253

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HN₃

Please include all sections of this report if it is reproduced

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

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10511-04-21
Location: St Teresa's Garden
Contact: James Cashen
EMT Job No: 21/16253

SVOC Report :

Liquid

EMT Sample No.	1-5	6-10	11-15	16-20	21-25						
Sample ID	BH01	BH05	BH06	BH14	BH17						
Depth											
COC No / misc	V H P G	V H P G	V H P G	V H P G	V H P G						
Containers											
Sample Date	13/10/2021 10:25	13/10/2021 11:15	13/10/2021 15:10	13/10/2021 13:00	13/10/2021 11:50						
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1						
Date of Receipt	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021						
SVOC MS											
Phenols											
2-Chlorophenol [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
2-Methylphenol [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
2-Nitrophenol	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
2,4-Dichlorophenol [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
2,4-Dimethylphenol	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
2,4,5-Trichlorophenol [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
2,4,6-Trichlorophenol	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Chloro-3-methylphenol [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
4-Methylphenol	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Nitrophenol	<30AA	<30AA	<30AA	<30AA	<30AA					<10	ug/l TM16/PM30
Pentachlorophenol	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Phenol	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
PAHs											
2-Chloronaphthalene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
2-Methylnaphthalene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Phthalates											
Bis(2-ethylhexyl) phthalate	<15AA	<15AA	<15AA	<15AA	<15AA					<5	ug/l TM16/PM30
Butylbenzyl phthalate	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Di-n-butyl phthalate [#]	<4.5AA	<4.5AA	<4.5AA	<4.5AA	<4.5AA					<1.5	ug/l TM16/PM30
Di-n-Octyl phthalate	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Diethyl phthalate [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Dimethyl phthalate	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Other SVOCs											
1,2-Dichlorobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
1,2,4-Trichlorobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
1,3-Dichlorobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
1,4-Dichlorobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
2-Nitroaniline	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
2,4-Dinitrotoluene [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
2,6-Dinitrotoluene	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
3-Nitroaniline	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Bromophenylphenylether [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Chloroaniline	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Chlorophenylphenylether [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
4-Nitroaniline	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Azobenzene [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Bis(2-chloroethoxy)methane [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Bis(2-chloroethyl)ether [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Carbazole [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Dibenzofuran [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Hexachlorobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Hexachlorobutadiene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Hexachlorocyclopentadiene	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Hexachloroethane [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Isophorone [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
N-nitrosodi-n-propylamine [#]	<1.5AA	<1.5AA	<1.5AA	<1.5AA	<1.5AA					<0.5	ug/l TM16/PM30
Nitrobenzene [#]	<3AA	<3AA	<3AA	<3AA	<3AA					<1	ug/l TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	80AA	54 ^{SV} AA	76AA	79AA	78AA					<0	% TM16/PM30
Surrogate Recovery p-Terphenyl-d14	85AA	55 ^{SV} AA	81AA	85AA	82AA					<0	% TM16/PM30

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 10511-04-21
Location: St Teresa's Garden
Contact: James Cashen
EMT Job No: 21/16253

VOC Report : Liquid

EMT Sample No.	1-5	6-10	11-15	16-20	21-25						
Sample ID	BH01	BH05	BH06	BH14	BH17						
Depth											
COC No / misc											
Containers	V H P G	V H P G	V H P G	V H P G	V H P G						
Sample Date	13/10/2021 10:25	13/10/2021 11:15	13/10/2021 15:10	13/10/2021 13:00	13/10/2021 11:50						
Sample Type	Ground Water										
Batch Number	1	1	1	1	1						
Date of Receipt	15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021						
VOC MS											
Dichlorodifluoromethane	<2	<2	<2	<2	<2						
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1						
Chloromethane #	<3	<3	<3	<3	<3						
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1						
Bromomethane	<1	<1	<1	<1	<1						
Chloroethane #	<3	<3	<3	<3	<3						
Trichlorodifluoromethane #	<3	<3	<3	<3	<3						
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3						
Dichloromethane (DCM) #	<3	<3	<3	<3	<3						
trans-1,2-Dichloroethene #	<3	<3	<3	<3	<3						
1,1-Dichloroethane #	<3	<3	<3	<3	<3						
cis-1,2-Dichloroethene #	<3	<3	<3	<3	<3						
2,2-Dichloropropane	<1	<1	<1	<1	<1						
Bromoform #	<2	<2	<2	<2	<2						
Chloroform #	<2	<2	<2	<2	<2						
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2						
1,1-Dichloropropene #	<3	<3	<3	<3	<3						
Carbon tetrachloride #	<2	<2	<2	<2	<2						
1,2-Dichloroethane #	<2	<2	<2	<2	<2						
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5						
Trichloroethylene (TCE) #	<3	<3	<3	<3	<3						
1,2-Dichloropropane #	<2	<2	<2	<2	<2						
Dibromomethane #	<3	<3	<3	<3	<3						
Bromodichloromethane #	<2	<2	<2	<2	<2						
cis-1,3-Dichloropropene	<2	<2	<2	<2	<2						
Toluene #	<5	<5	<5	<5	<5						
trans-1,3-Dichloropropene	<2	<2	<2	<2	<2						
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2						
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3						
1,3-Dichloropropene #	<2	<2	<2	<2	<2						
Dibromochloromethane #	<2	<2	<2	<2	<2						
1,2-Dibromoethane #	<2	<2	<2	<2	<2						
Chlorobenzene #	<2	<2	<2	<2	<2						
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2						
Ethylbenzene #	<1	<1	<1	<1	<1						
m/p-Xylene #	<2	<2	<2	<2	<2						
o-Xylene #	<1	<1	<1	<1	<1						
Styrene	<2	<2	<2	<2	<2						
Bromoform #	<2	<2	<2	<2	<2						
Isopropylbenzene #	<3	<3	<3	<3	<3						
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4						
Bromobenzene #	<2	<2	<2	<2	<2						
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3						
Propylbenzene #	<3	<3	<3	<3	<3						
2-Chlorotoluene #	<3	<3	<3	<3	<3						
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3						
4-Chlorotoluene #	<3	<3	<3	<3	<3						
tert-Butylbenzene #	<3	<3	<3	<3	<3						
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3						
sec-Butylbenzene #	<3	<3	<3	<3	<3						
4-Isopropyltoluene #	<3	<3	<3	<3	<3						
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3						
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3						
n-Butylbenzene #	<3	<3	<3	<3	<3						
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3						
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2						
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3						
Hexachlorobutadiene	<3	<3	<3	<3	<3						
Naphthalene	<2	<2	<2	<2	<2						
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3						
Surrogate Recovery Toluene D8	88	96	99	97	99						
Surrogate Recovery 4-Bromofluorobenzene	106	106	105	99	99						

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Notification of Deviating Samples

Client Name: Ground Investigations Ireland

Reference: 10511-04-21

Location: St Teresa's Garden

Contact: James Cashen

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.: 21/16253

SOILS

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.

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 $35^{\circ}\text{C} \pm 5^{\circ}\text{C}$ unless otherwise stated. Moisture content for CEN Leachate tests are dried at $105^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

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 overestimate 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.

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.

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.

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
AA	x3 Dilution

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: 21/16253

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
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.				
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			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			

EMT Job No: 21/16253

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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.				
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			
TM33	Determination of Anionic surfactants by reaction with Methylene Blue to form complexes which are analysed spectrophotometrically. (MBAS)	PM0	No preparation is required.				
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			
TM37	Modified methods - TSS: USEPA 160.4 (1990), EN672-2:2003 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS	PM0	No preparation is required.	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.				
TM38/TM125	Total Nitrogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometrically.	PM0	No preparation is required.	Yes			

EMT Job No: 21/16253

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM58	APHA SMEWW 5210B:1999 22nd Edition. Comparable with ISO 5815:1989. Measurement of Biochemical Oxygen Demand. When cBOD (Carbonaceous BOD) is requested a nitrification inhibitor is added which prevents the oxidation of reduced forms of nitrogen, such as am	PM0	No preparation is required.	Yes			
TM66	Determination of Free Chlorine which reacts with DPD (N,N-diethyl-p-phenylenediamine) reagent and measured spectrophotometrically.	PM0	No preparation is required.				
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				
TM187	Hexane extractable oil and grease in Waters is determined by IR detection at absorbance 2940cm ⁻¹ using calibrated InfraCal 2, ATR-SP	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				



LABORATORY REPORT



4043

Contract Number: PSL21/7779

Report Date: 12 November 2021

Client's Reference: 10551-04-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Adam Browne

Contract Title: St Teresa's Gardens

Date Received: 29/9/2021

Date Commenced: 29/9/2021

Date Completed: 11/11/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager) S Eyre
(Senior Technician)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH01	B&T		2.00		Dark brown slightly sandy slightly gravelly CLAY.
BH01	B&T		4.00		Dark brown slightly sandy slightly gravelly CLAY.
BH02	B&T		3.00		Brown slightly sandy slightly gravelly CLAY.
BH03	B&T		2.00		Brownish slightly sandy gravelly CLAY.
BH03	B&T		3.00		Brown slightly sandy gravelly CLAY.
BH04	B&T		2.00		Brown slightly sandy slightly gravelly CLAY.
BH04	B&T		3.00		Brown slightly sandy gravelly CLAY.
BH05	B&T		2.00		Brownish grey sandy gravelly CLAY,
BH05	B&T		3.00		Brownish grey sandy gravelly CLAY,
BH07	B&T		1.00		Brown slightly sandy gravelly CLAY with cobbles.
BH07	B&T		2.00		Brown slightly sandy gravelly CLAY with many cobbles.
BH07	B&T		3.00		Dark brown slightly sandy gravelly CLAY.
BH08	B&T		1.00		Dark brown slightly sandy gravelly CLAY.
BH08	B&T		2.00		Brown slightly sandy gravelly CLAY.
BH08	B&T		3.00		Dark brown slightly sandy gravelly CLAY.
BH09	B&T		2.00		Brown silty very sandy gravelly CLAY.
BH09	B&T		3.00		Brownish grey slightly sandy gravelly CLAY.
BH10	B&T		1.00		Brown slightly sandy gravelly CLAY.
BH10	B&T		2.00		Brown slightly sandy gravelly CLAY.

 4043	PSL Professional Soils Laboratory	St Teresa's Gardens	Contract No: PSL21/7779 Client Ref: 10551-04-21
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SUMMARY OF LABORATORY SOIL DESCRIPTIONS



4043



St Teresa's Gardens

Contract No:

PSI 21/7779

Client Ref:

10551-04-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH01		B&T	2.00		15			30	15	15	68	Low Plasticity CL
BH01		B&T	4.00		12			24	14	10	64	Low Plasticity CL
BH02		B&T	3.00		15			25	15	10	65	Low Plasticity CL
BH03		B&T	2.00		15			25	16	9	43	Low Plasticity CL
BH03		B&T	3.00		11							
BH04		B&T	2.00		18			29	19	10	60	Low Plasticity CL
BH04		B&T	3.00		14							
BH05		B&T	2.00		11			24	15	9	33	Low Plasticity CL
BH05		B&T	3.00		11							
BH07		B&T	1.00		9.0			24	14	10	31	Low Plasticity CL
BH07		B&T	2.00		5.0			25	13	12	26	Low Plasticity CL
BH07		B&T	3.00		11			24	14	10	46	Low Plasticity CL
BH08		B&T	1.00		12							
BH08		B&T	2.00		6.0			26	14	12	31	Low Plasticity CL
BH08		B&T	3.00		3.0							
BH09		B&T	2.00		6.0							
BH09		B&T	3.00		12			25	14	11	46	Low Plasticity CL
BH10		B&T	1.00		24			39	22	17	50	Intermediate Plasticity CI
BH10		B&T	2.00		10			25	15	10	42	Low Plasticity CL

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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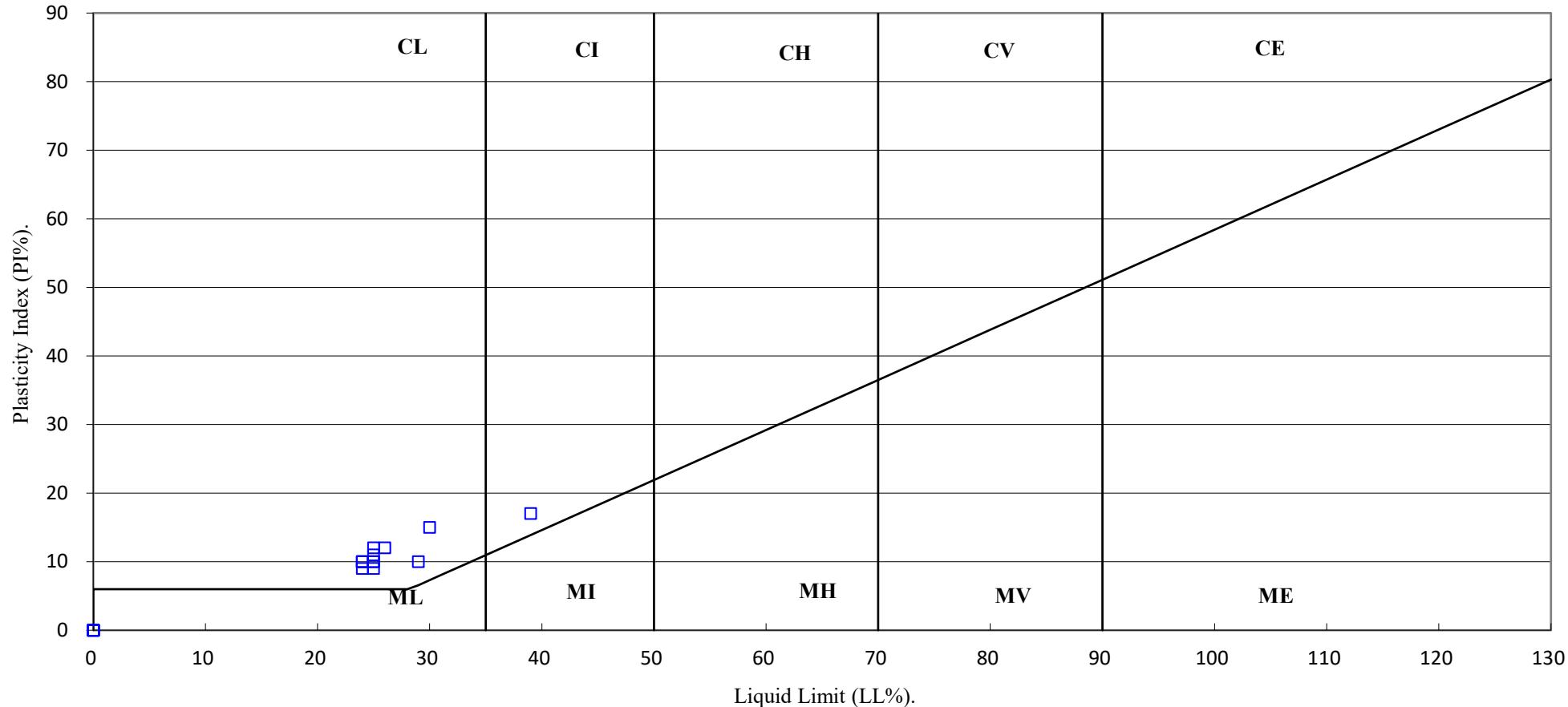
Contract No:

PSL21/7779

Client Ref:

10551-04-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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Contract No:

PSL21/7779

Client Ref:

10551-04-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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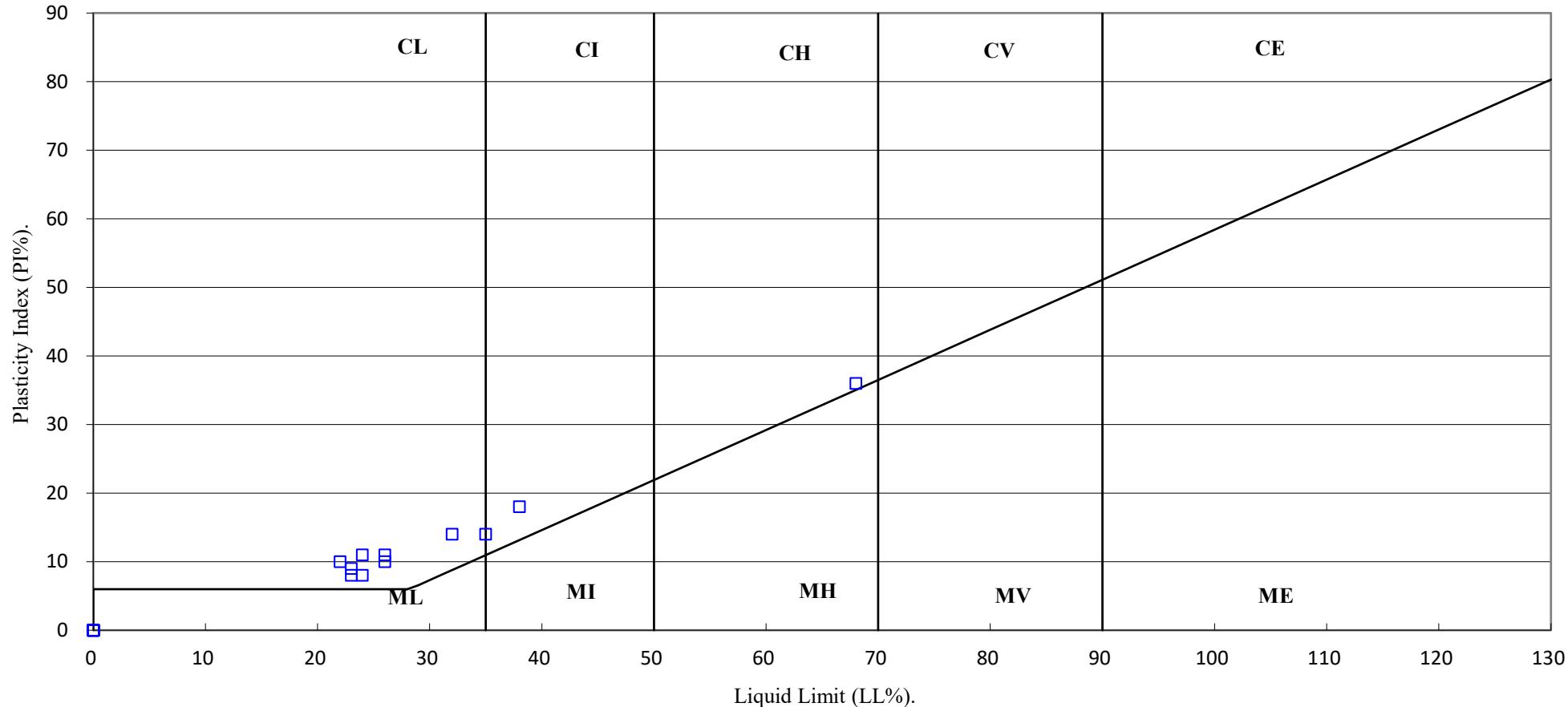
Contract No:

PSL21/7779

Client Ref:

10551-04-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:

BH01

Top Depth (m):

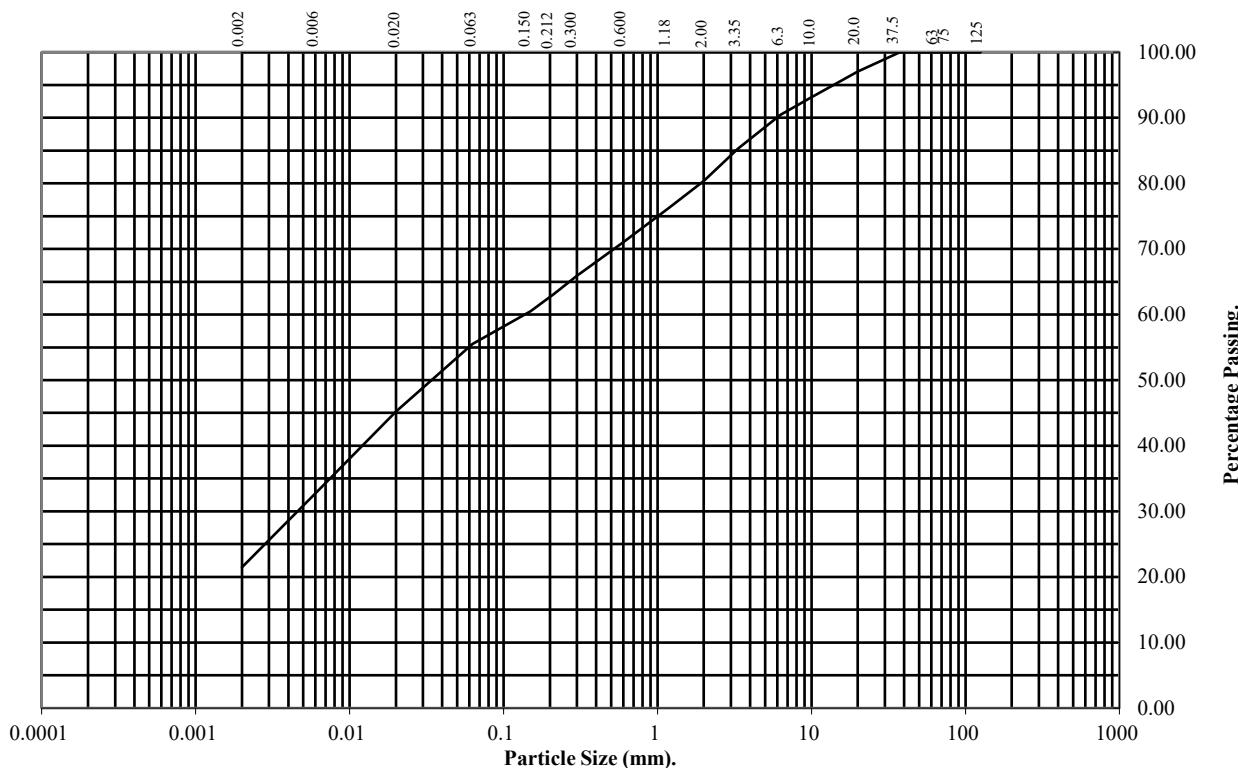
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	93
6.3	90
3.35	85
2	80
1.18	76
0.6	71
0.3	66
0.212	63
0.15	60
0.063	55

Particle Diameter	Percentage Passing
0.02	45
0.006	33
0.002	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	20
Sand	25
Silt	34
Clay	21

Remarks:

See Summary of Soil Descriptions



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Contract No:
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Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH01

Top Depth (m):

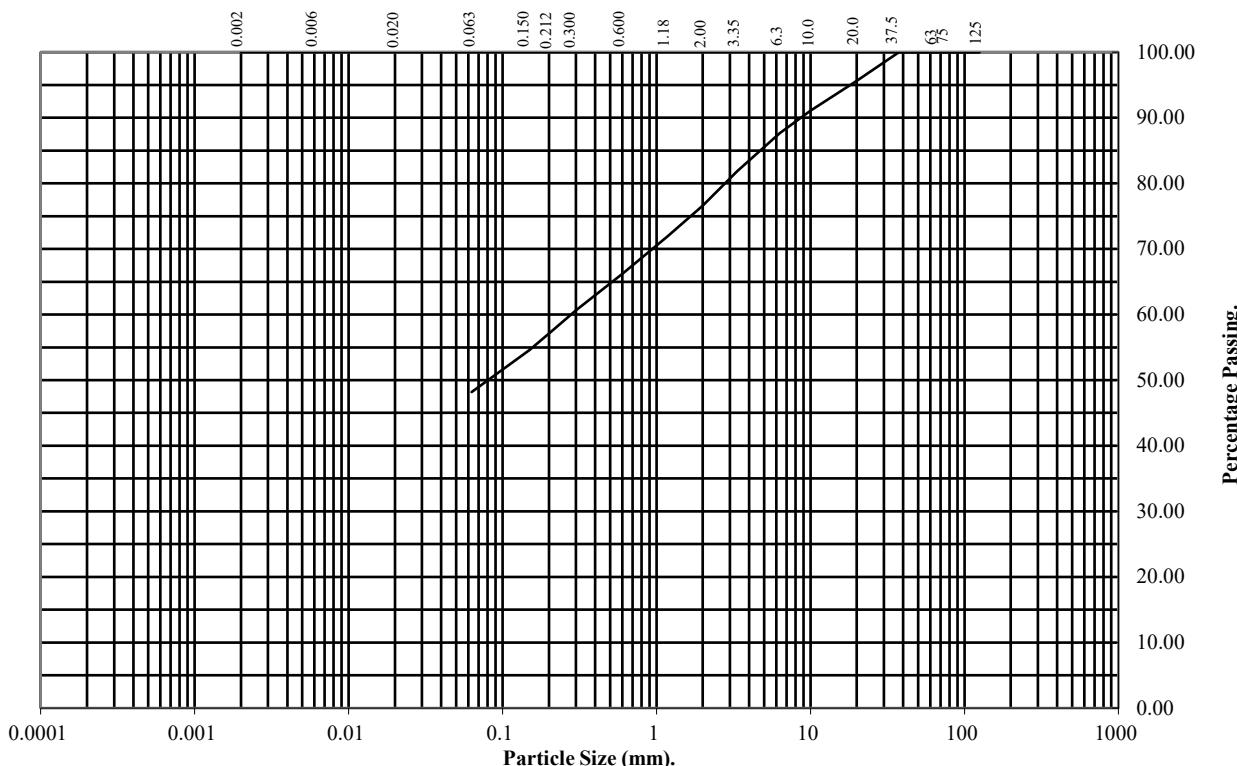
4.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	91
6.3	88
3.35	82
2	77
1.18	72
0.6	66
0.3	61
0.212	58
0.15	55
0.063	48

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	29
Silt/Clay	48

Remarks:

See Summary of Soil Descriptions



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St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH02

Top Depth (m):

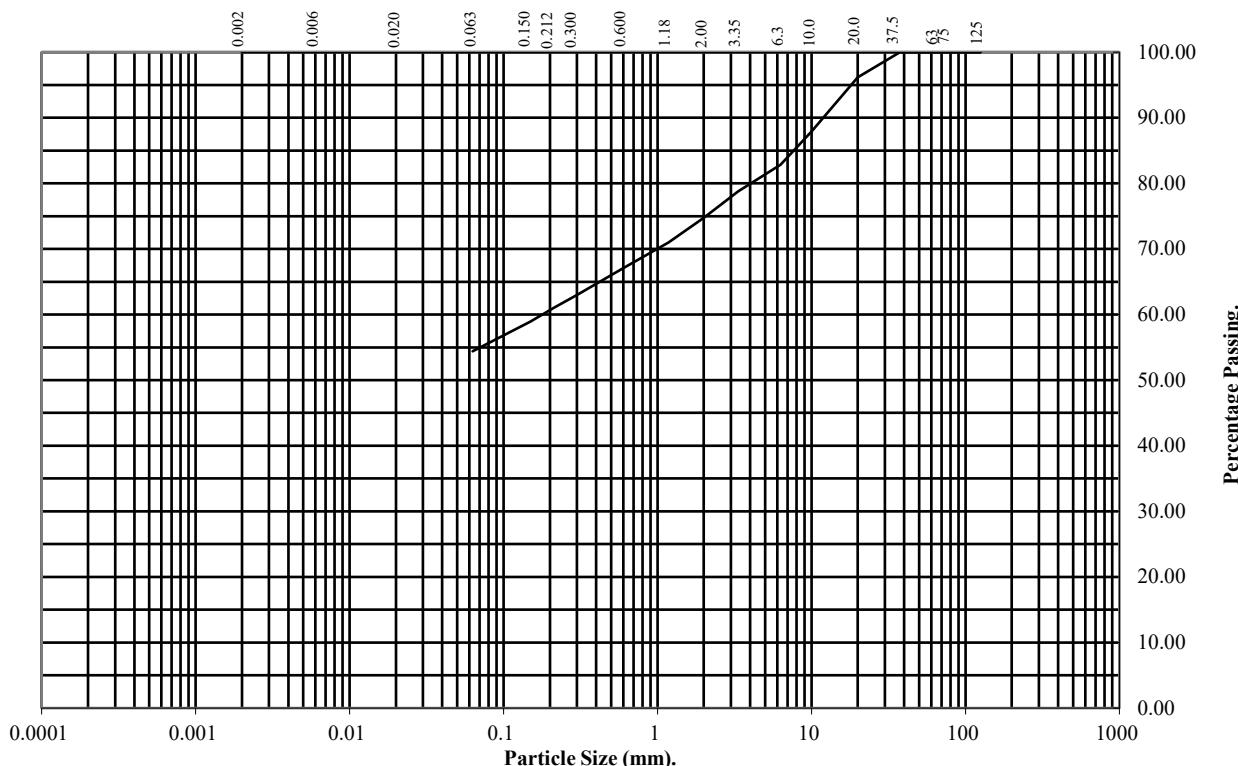
3.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	88
6.3	83
3.35	79
2	75
1.18	71
0.6	67
0.3	63
0.212	61
0.15	59
0.063	54

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	21
Silt/Clay	54

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH03

Top Depth (m):

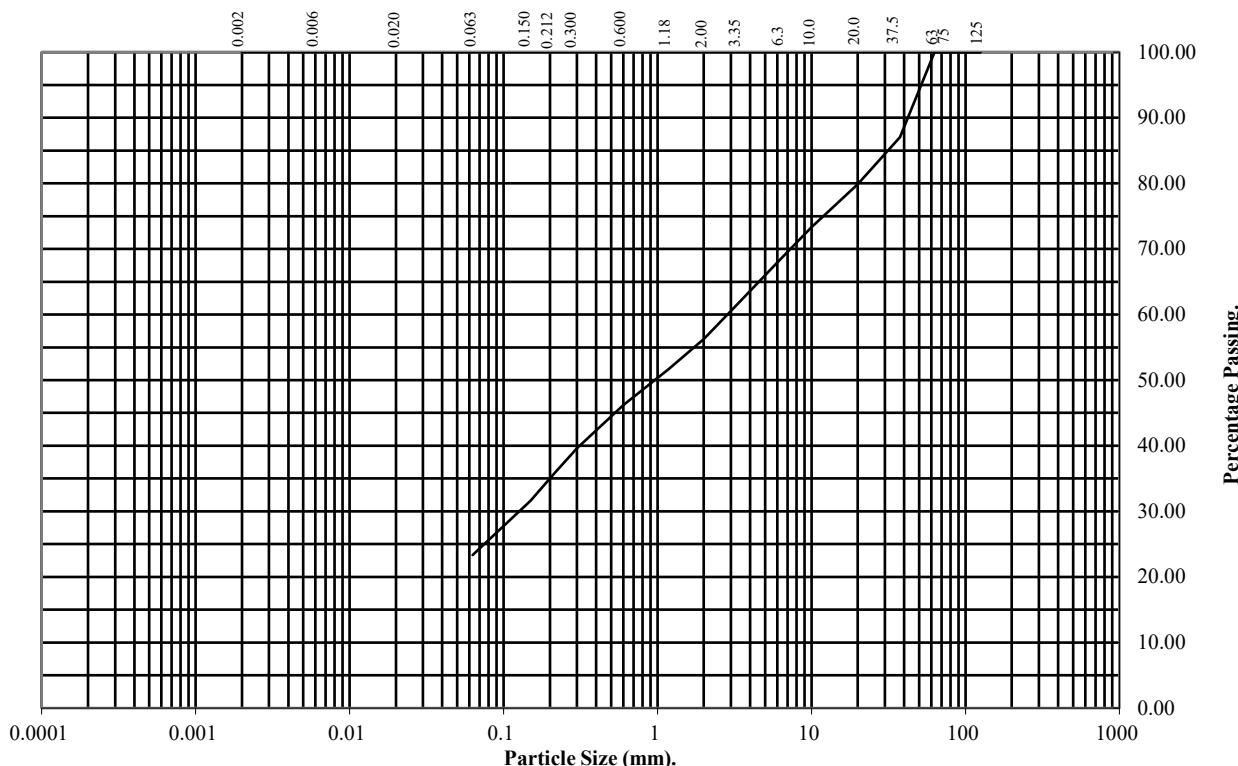
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	80
10	73
6.3	68
3.35	62
2	56
1.18	52
0.6	46
0.3	40
0.212	36
0.15	32
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	44
Sand	33
Silt/Clay	23

Remarks:

See Summary of Soil Descriptions



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Contract No:
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Client Ref:
10551-04-21

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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH04

Top Depth (m):

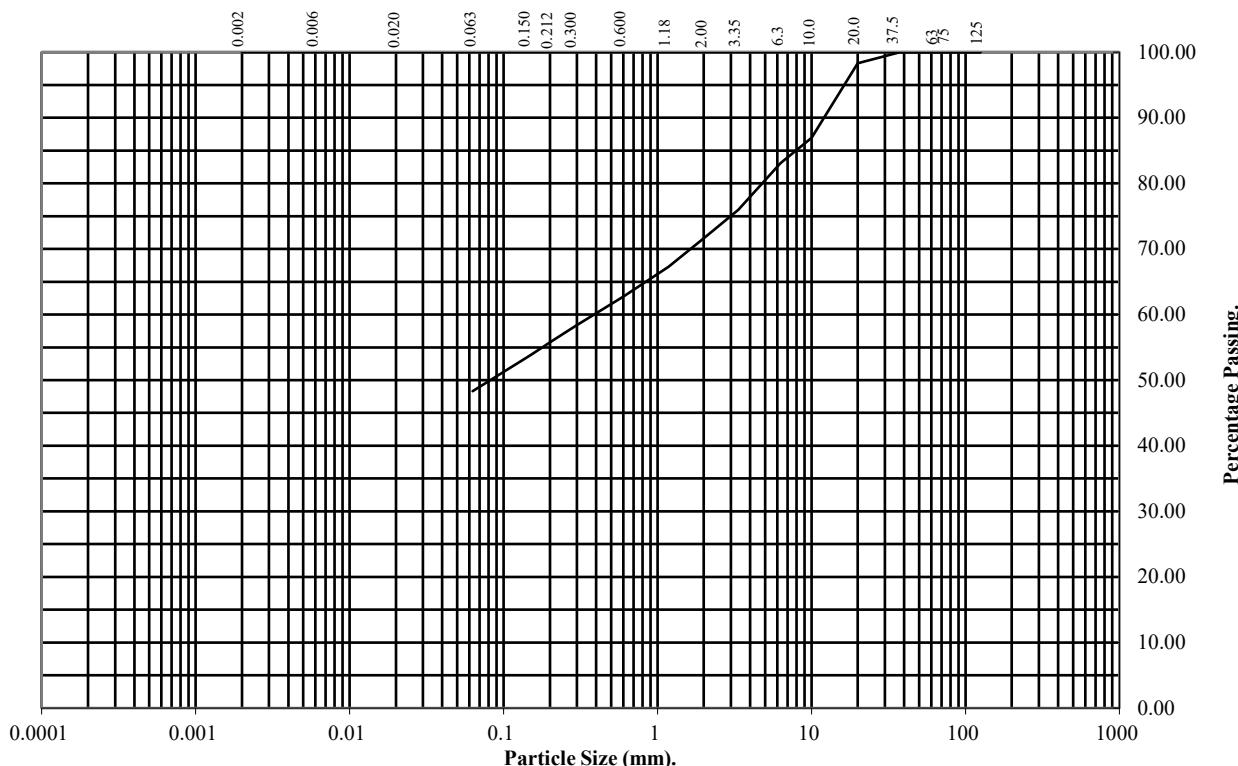
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	87
6.3	83
3.35	76
2	72
1.18	67
0.6	63
0.3	58
0.212	56
0.15	54
0.063	48

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	24
Silt/Clay	48

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH05

Top Depth (m):

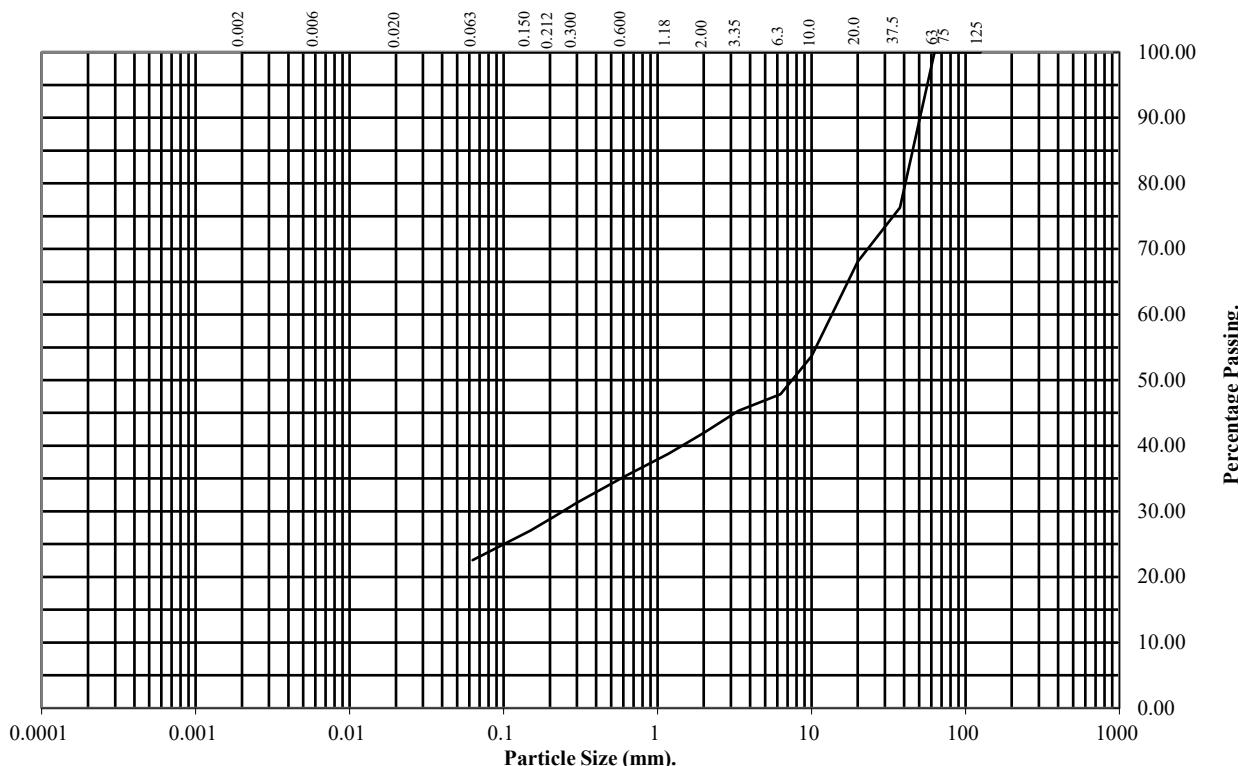
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	76
20	68
10	54
6.3	48
3.35	45
2	42
1.18	39
0.6	35
0.3	31
0.212	29
0.15	27
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	58
Sand	19
Silt/Clay	23

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH07

Top Depth (m):

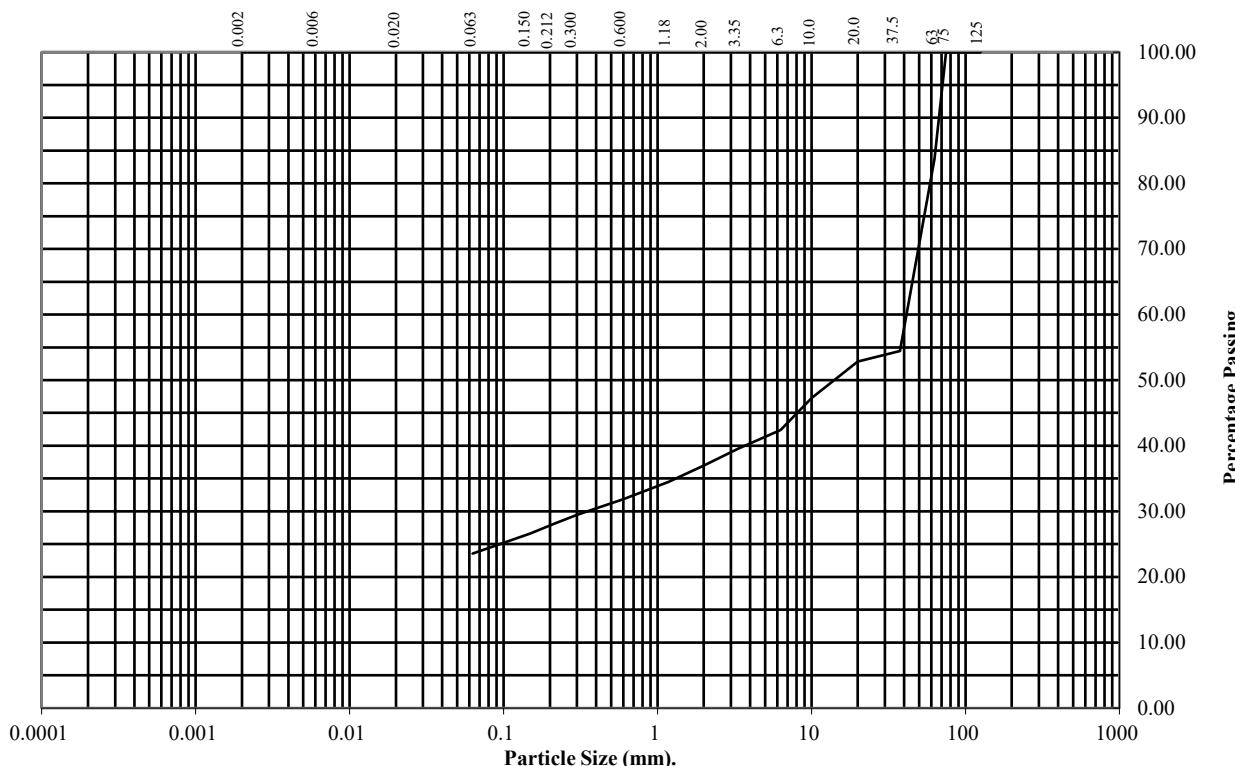
1.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	84
37.5	54
20	53
10	47
6.3	42
3.35	40
2	37
1.18	34
0.6	32
0.3	29
0.212	28
0.15	27
0.063	24

Soil Fraction	Total Percentage
Cobbles	16
Gravel	47
Sand	13
Silt/Clay	24

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH07

Top Depth (m):

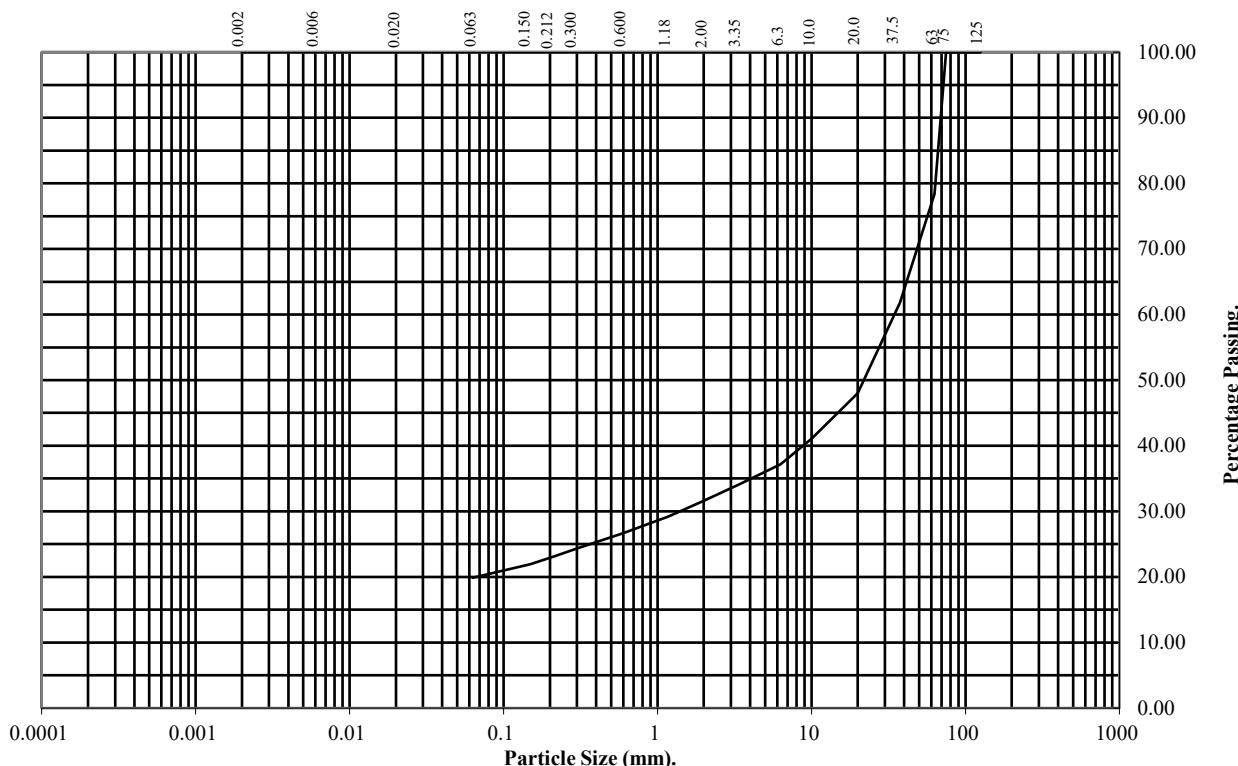
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	78
37.5	62
20	48
10	41
6.3	37
3.35	34
2	32
1.18	29
0.6	27
0.3	24
0.212	23
0.15	22
0.063	20

Soil Fraction	Total Percentage
Cobbles	22
Gravel	46
Sand	12
Silt/Clay	20

Remarks:

See Summary of Soil Descriptions



PSL

Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:

BH07

Top Depth (m):

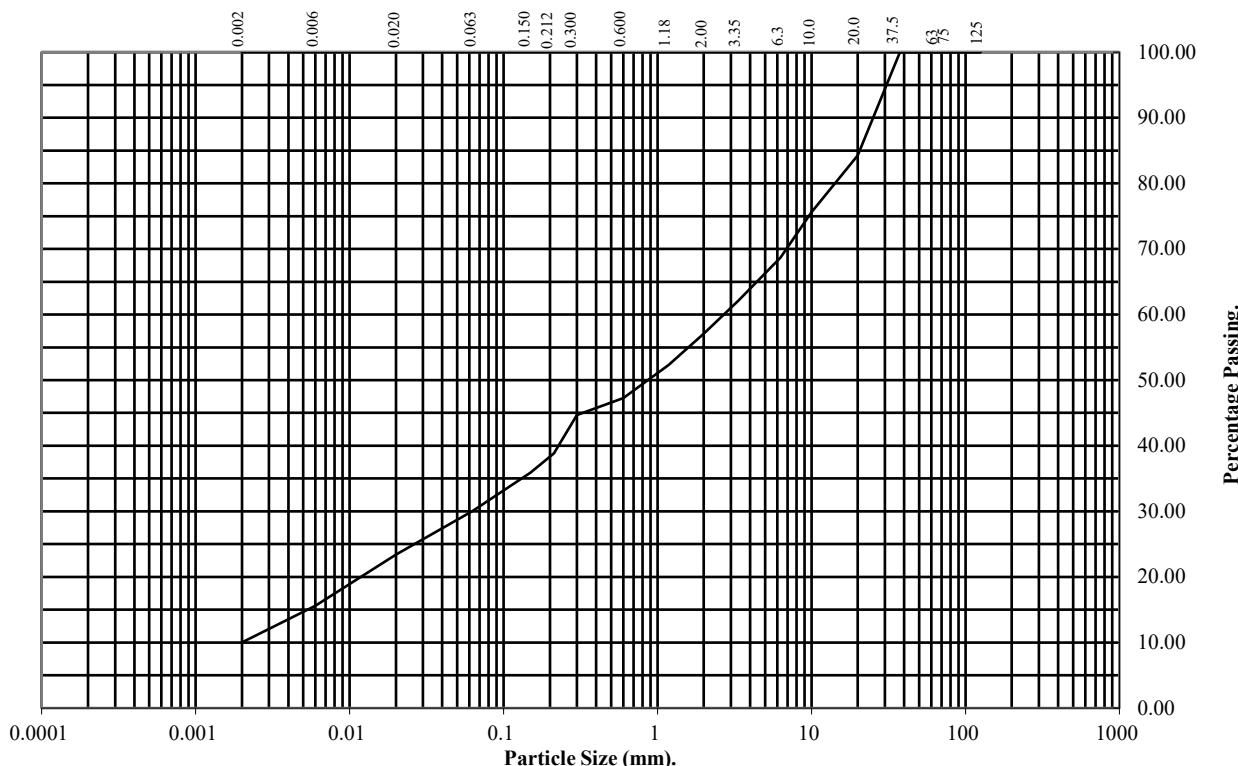
3.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	76
6.3	69
3.35	62
2	57
1.18	52
0.6	47
0.3	45
0.212	39
0.15	36
0.063	30

Particle Diameter	Percentage Passing
0.02	23
0.006	16
0.002	10

Soil Fraction	Total Percentage
Cobbles	0
Gravel	43
Sand	27
Silt	20
Clay	10

Remarks:

See Summary of Soil Descriptions



PSL

Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH08

Top Depth (m):

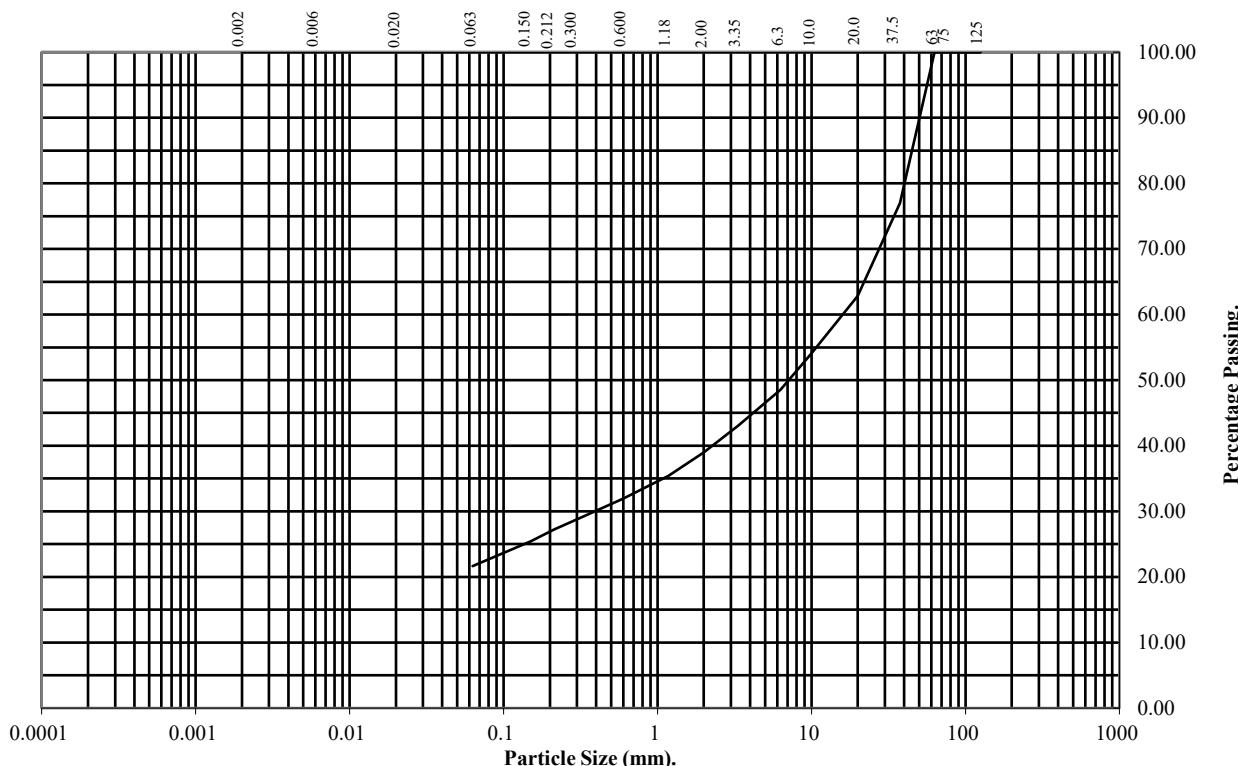
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	77
20	63
10	54
6.3	49
3.35	43
2	39
1.18	35
0.6	32
0.3	29
0.212	27
0.15	25
0.063	22

Soil Fraction	Total Percentage
Cobbles	0
Gravel	61
Sand	17
Silt/Clay	22

Remarks:

See Summary of Soil Descriptions



St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH09

Top Depth (m):

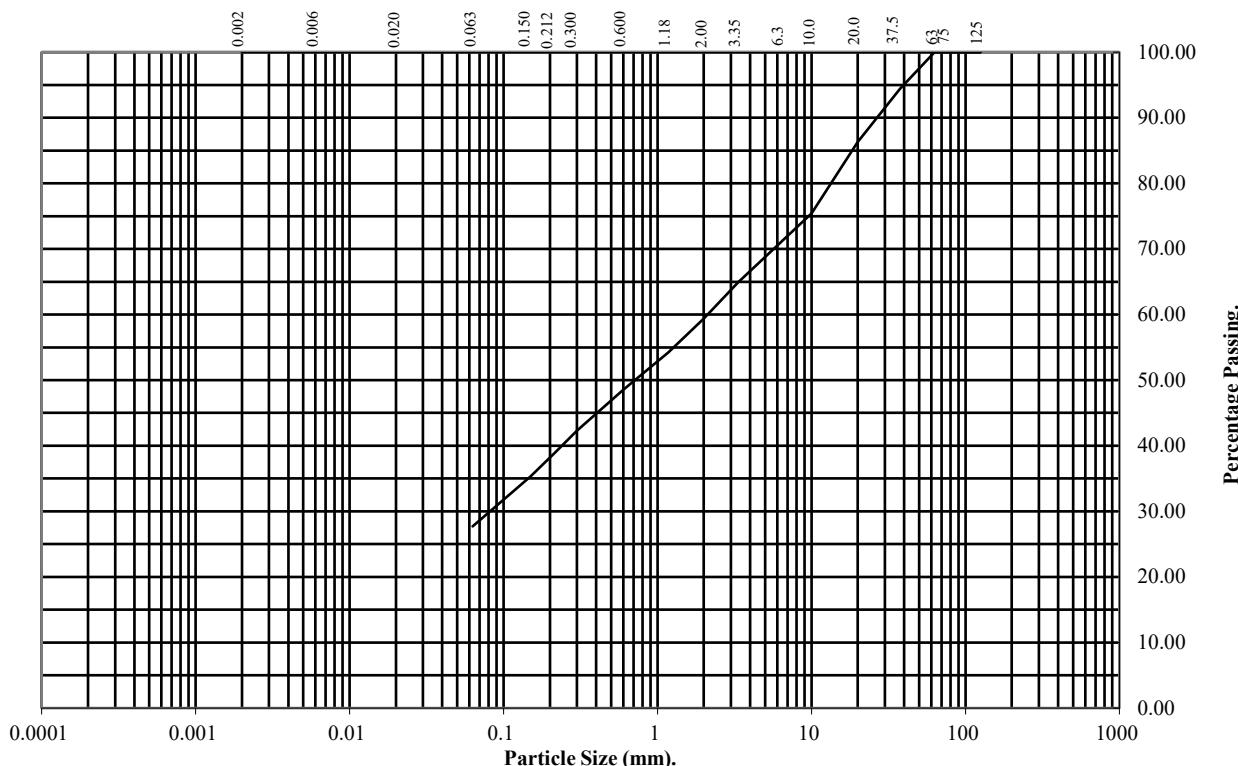
3.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	86
10	75
6.3	71
3.35	65
2	59
1.18	54
0.6	49
0.3	42
0.212	39
0.15	35
0.063	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	41
Sand	31
Silt/Clay	28

Remarks:

See Summary of Soil Descriptions



St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

4043

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH10

Top Depth (m):

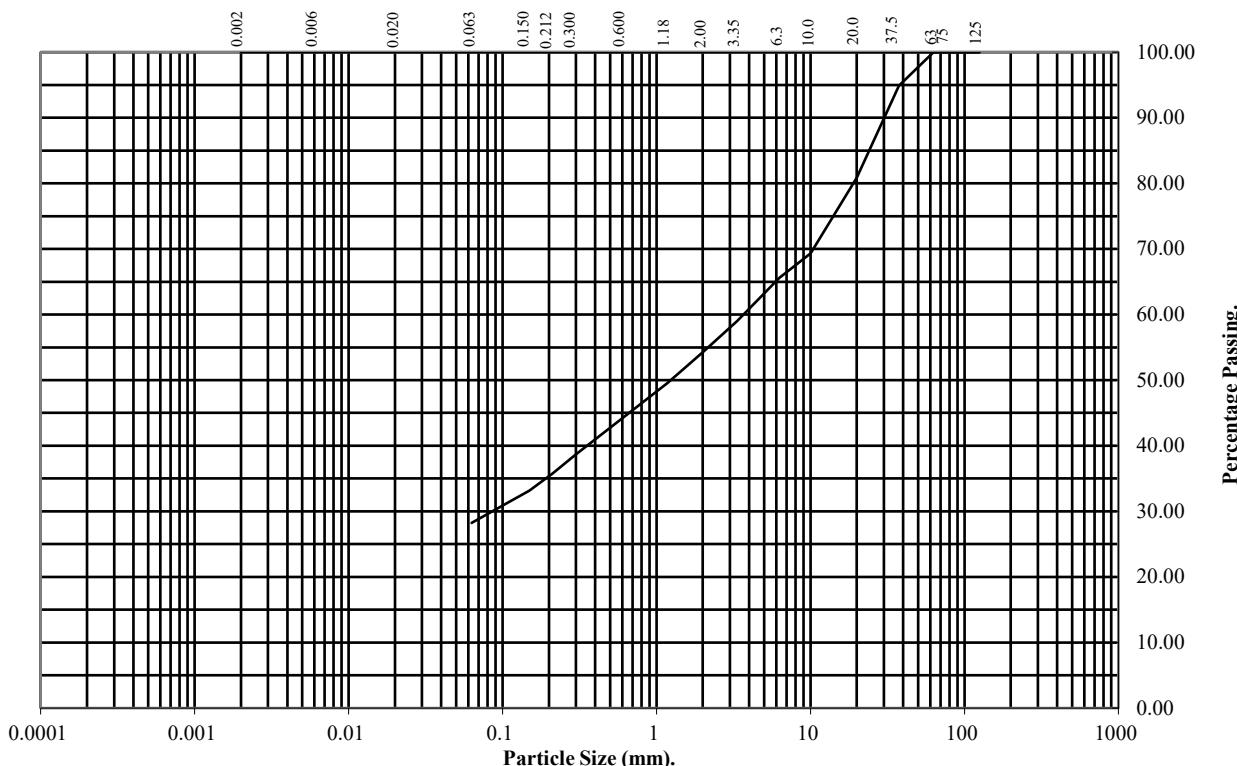
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	81
10	69
6.3	66
3.35	59
2	54
1.18	50
0.6	44
0.3	39
0.212	36
0.15	33
0.063	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	26
Silt/Clay	28

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

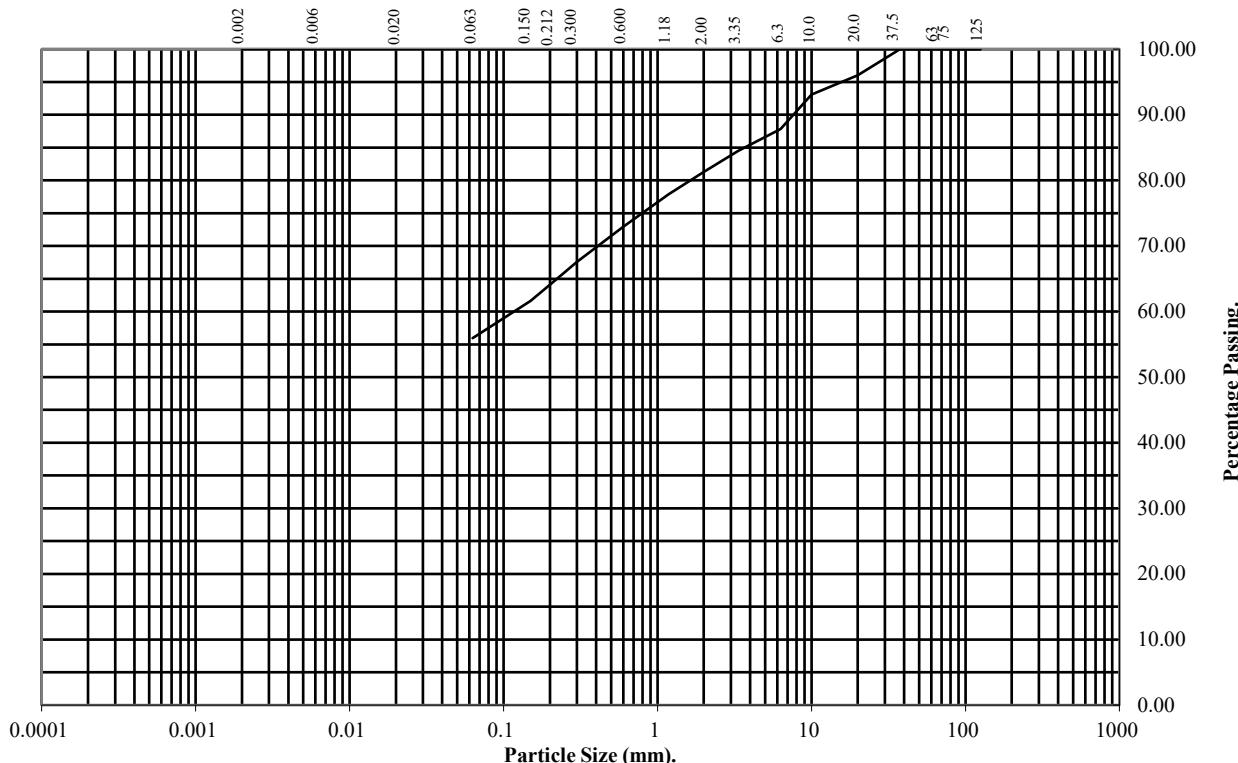
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH11 Top Depth (m): 1.00

Sample Number: B&T Base Depth(m):

Sample Type: B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	93
6.3	88
3.35	84
2	81
1.18	78
0.6	73
0.3	68
0.212	65
0.15	62
0.063	56

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	25
Silt/Clay	56

Remarks:

See Summary of Soil Descriptions



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St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:

BH11

Top Depth (m):

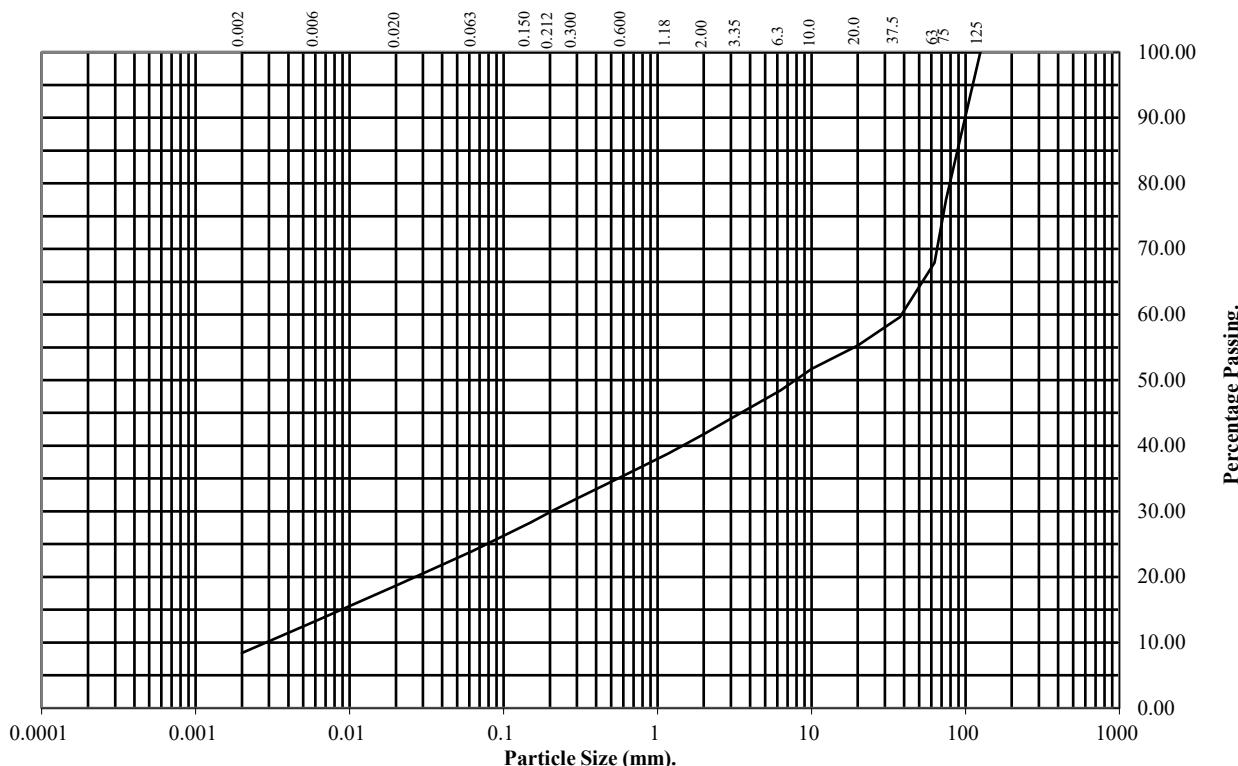
4.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	78
63	68
37.5	60
20	55
10	52
6.3	48
3.35	45
2	42
1.18	39
0.6	35
0.3	32
0.212	30
0.15	28
0.063	24

Particle Diameter	Percentage Passing
0.02	19
0.006	13
0.002	8

Soil Fraction	Total Percentage
Cobbles	32
Gravel	26
Sand	18
Silt	16
Clay	8

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH13

Top Depth (m):

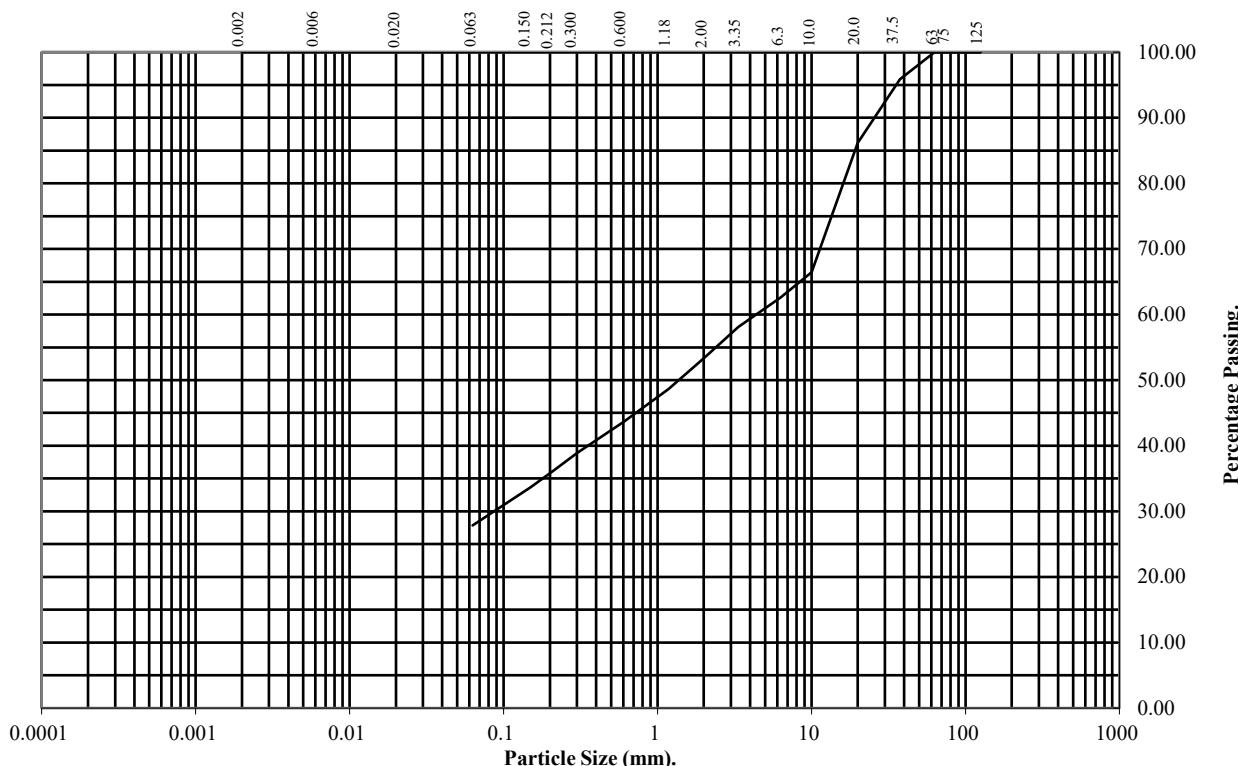
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	86
10	66
6.3	63
3.35	58
2	53
1.18	49
0.6	44
0.3	39
0.212	36
0.15	34
0.063	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	25
Silt/Clay	28

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

4043

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:

BH14

Top Depth (m):

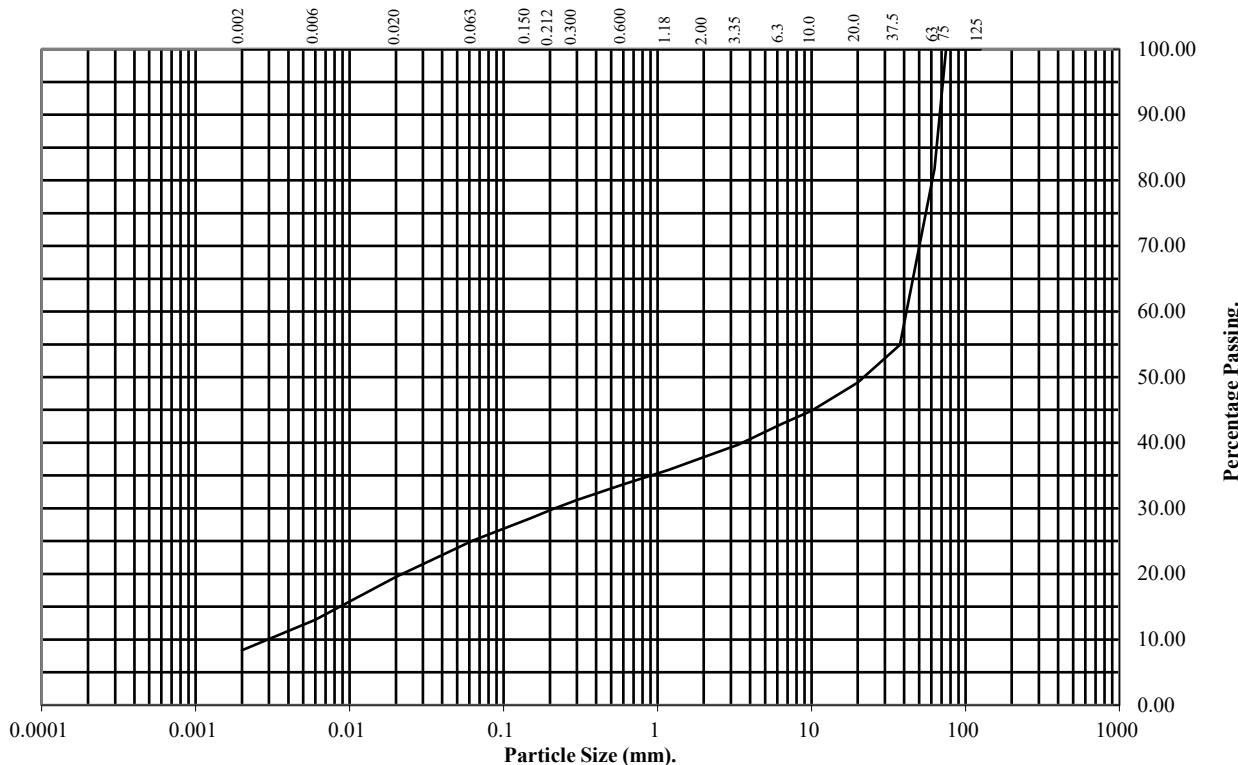
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	82
37.5	55
20	49
10	45
6.3	43
3.35	40
2	38
1.18	36
0.6	34
0.3	31
0.212	30
0.15	28
0.063	25

Particle Diameter	Percentage Passing
0.02	20
0.006	13
0.002	8

Soil Fraction	Total Percentage
Cobbles	18
Gravel	44
Sand	13
Silt	17
Clay	8

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH15

Top Depth (m):

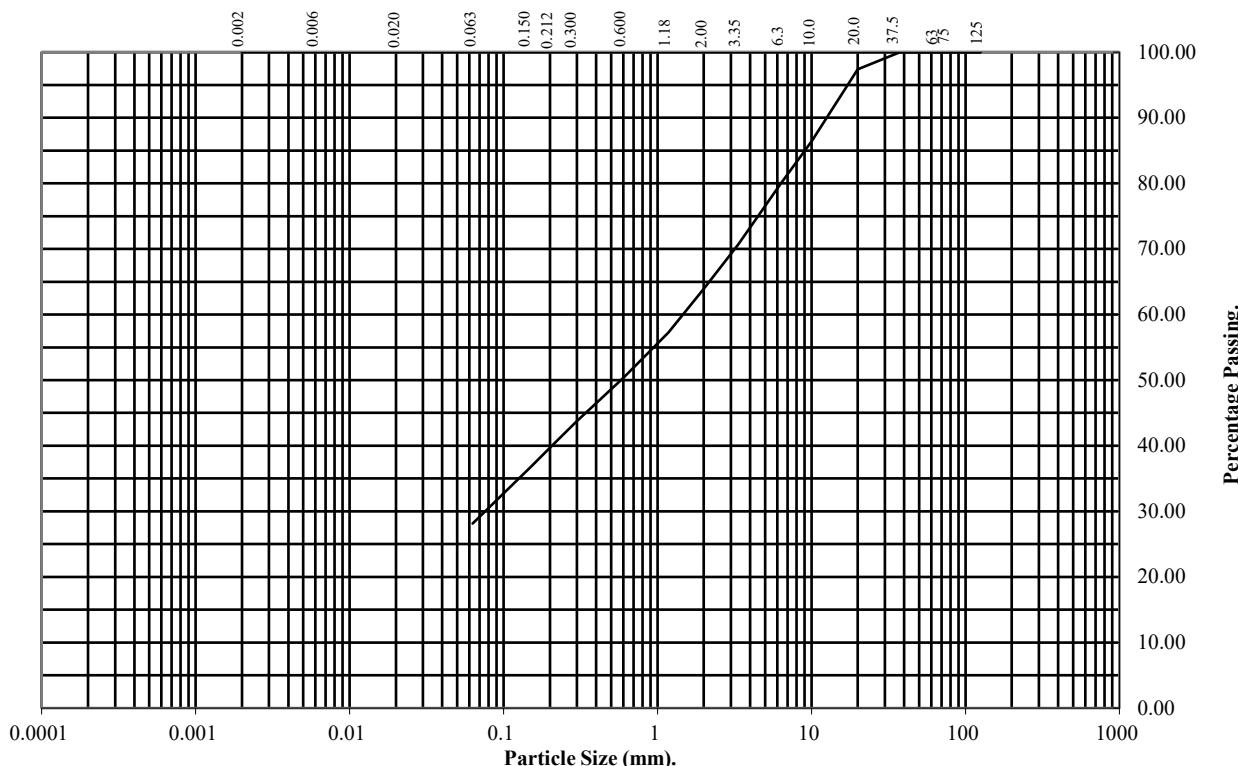
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	86
6.3	80
3.35	71
2	64
1.18	57
0.6	50
0.3	44
0.212	40
0.15	37
0.063	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	36
Sand	36
Silt/Clay	28

Remarks:

See Summary of Soil Descriptions



St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

4043

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH16

Top Depth (m):

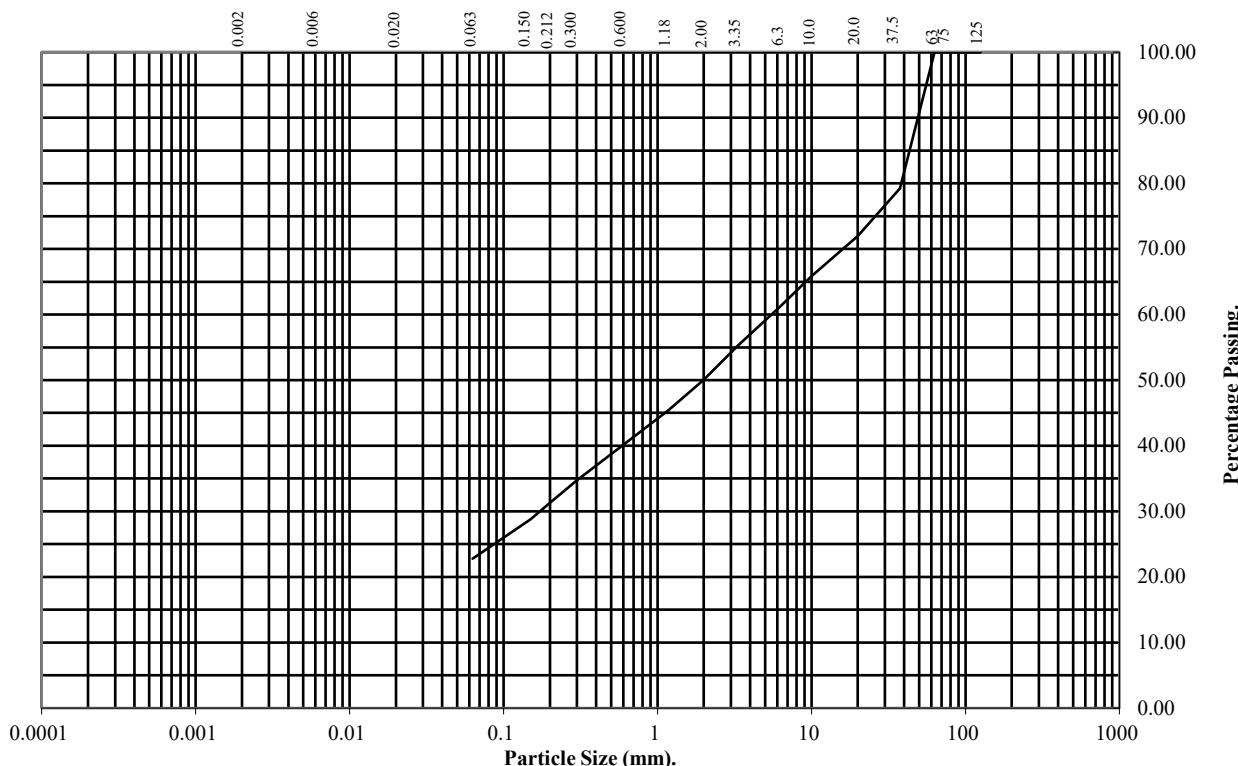
2.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	79
20	72
10	66
6.3	61
3.35	55
2	50
1.18	45
0.6	40
0.3	35
0.212	32
0.15	29
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	50
Sand	27
Silt/Clay	23

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH17

Top Depth (m):

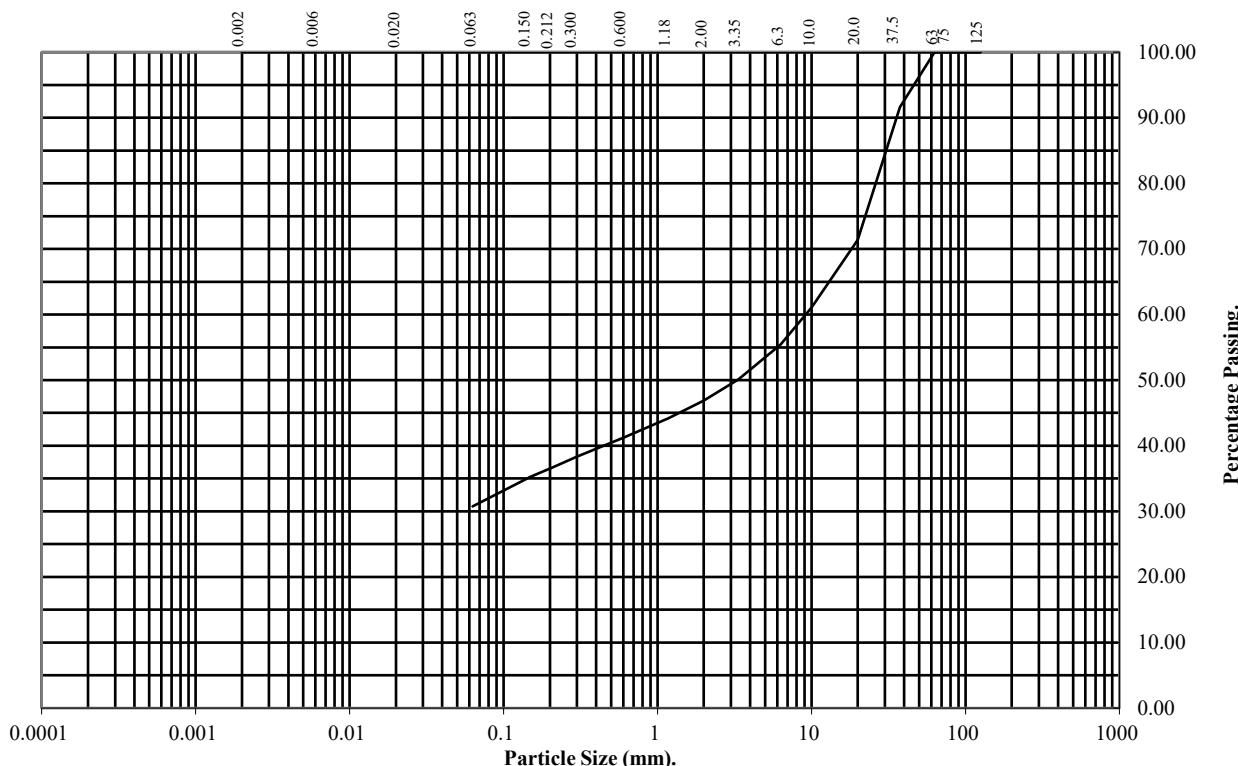
1.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	71
10	61
6.3	55
3.35	50
2	47
1.18	44
0.6	41
0.3	38
0.212	37
0.15	35
0.063	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	53
Sand	16
Silt/Clay	31

Remarks:

See Summary of Soil Descriptions



St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

BH17

Top Depth (m):

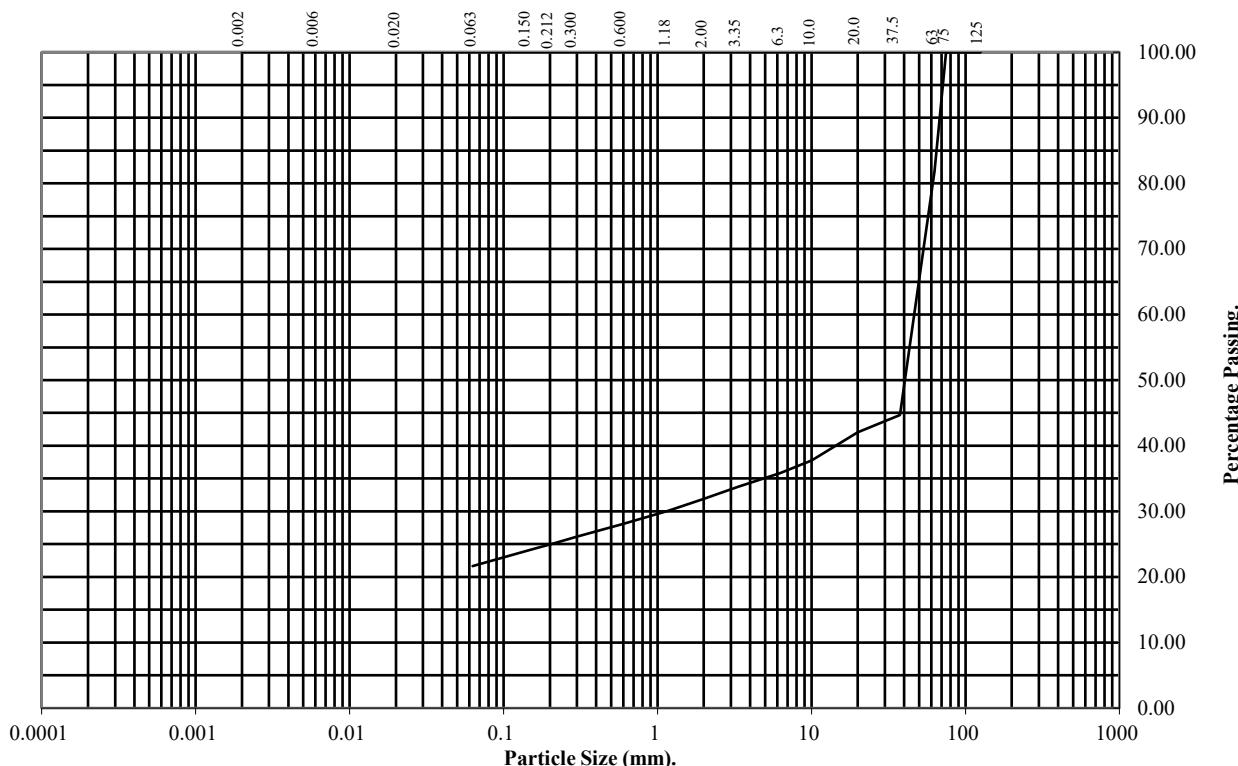
3.00

Sample Number:

Base Depth(m):

Sample Type:

B&T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	82
37.5	45
20	42
10	38
6.3	36
3.35	34
2	32
1.18	30
0.6	28
0.3	26
0.212	25
0.15	24
0.063	22

Soil Fraction	Total Percentage
Cobbles	18
Gravel	50
Sand	10
Silt/Clay	22

Remarks:

See Summary of Soil Descriptions



PSL

Professional Soils Laboratory

St Teresa's Gardens

Contract No:
PSL21/7779
Client Ref:
10551-04-21

ANALYTICAL TEST REPORT

Contract no: 101583
Contract name: St. Teresa's Gardens
Client reference: PSL21/7779
Clients name: Professional Soils Laboratory
Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 15 October 2021

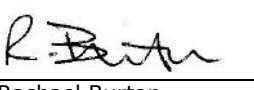
Analysis started: 15 October 2021

Analysis completed: 22 October 2021

Report issued: 22 October 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: 
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			101583-1	101583-2	101583-3
Sample id			BH07	BH11	BH14
Depth (m)			2.00	1.00	2.00
Date sampled			-	-	-
Test	Method	Units			
Total Organic Carbon (TOC)	CE197	% w/w C	0.8	3.9	1.0
Estimate of OMC (calculated from TOC)	CE197	% w/w	1.3	6.7	1.8

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w



LABORATORY REPORT



4043

Contract Number: PSL21/7784

Report Date: 01 November 2021

Client's Reference: 10551-04-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Adam Browne

Contract Title: St Teresa's Gardens

Date Received: 29/9/2021

Date Commenced: 29/9/2021

Date Completed: 1/11/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
(Senior Technician)

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Doncaster DN4 0AR
tel: +44 (0)844 815 6641
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e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS



4043



St. Teresa's Garden

Contract No:

PSI 21/7784

Client Ref:

10551-04-21

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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St. Teresa's Garden

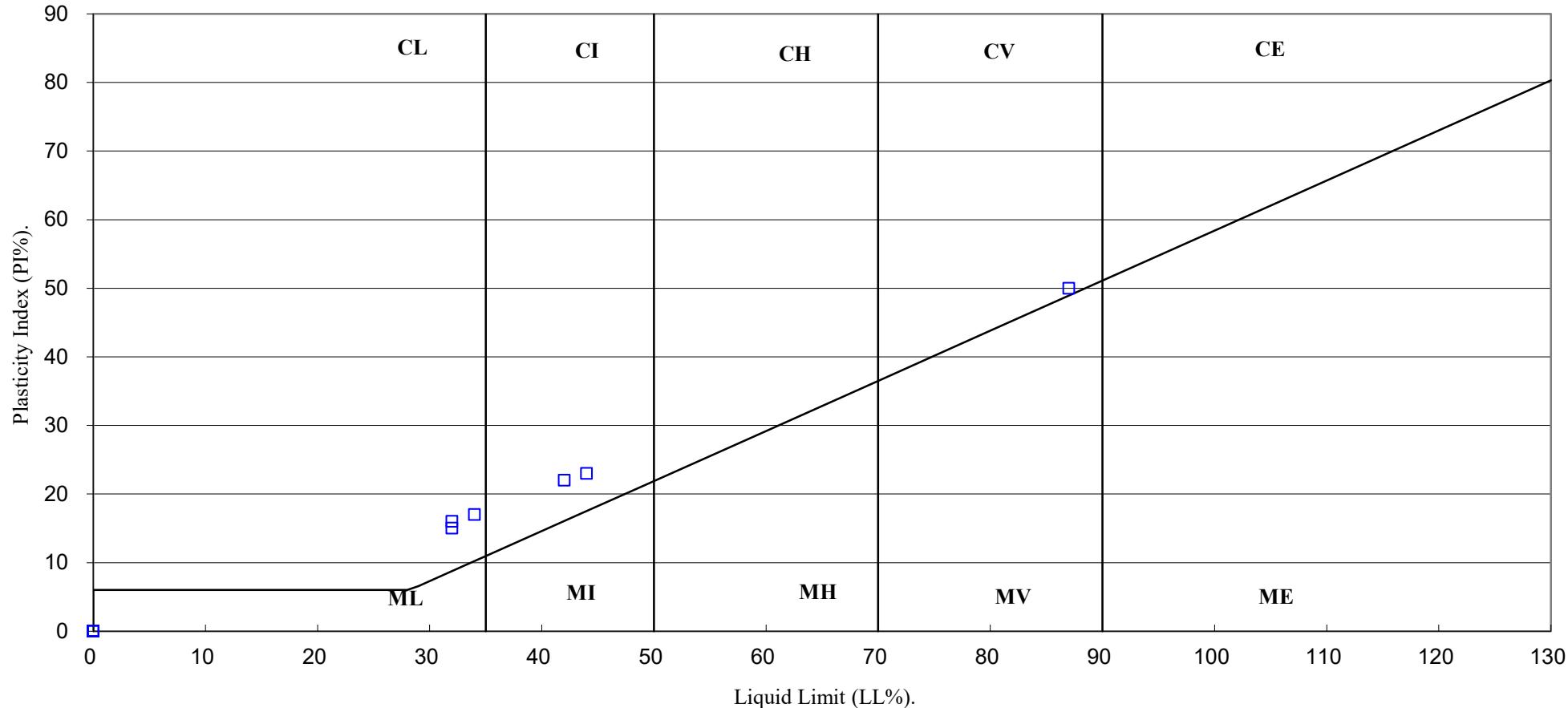
Contract No:

PSL21/7784

Client Ref:

10551-04-21

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



PSL

Professional Soils Laboratory

St. Teresa's Garden

Contract No:

PSL21/7784

Client Ref:

10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-01

Top Depth (m):

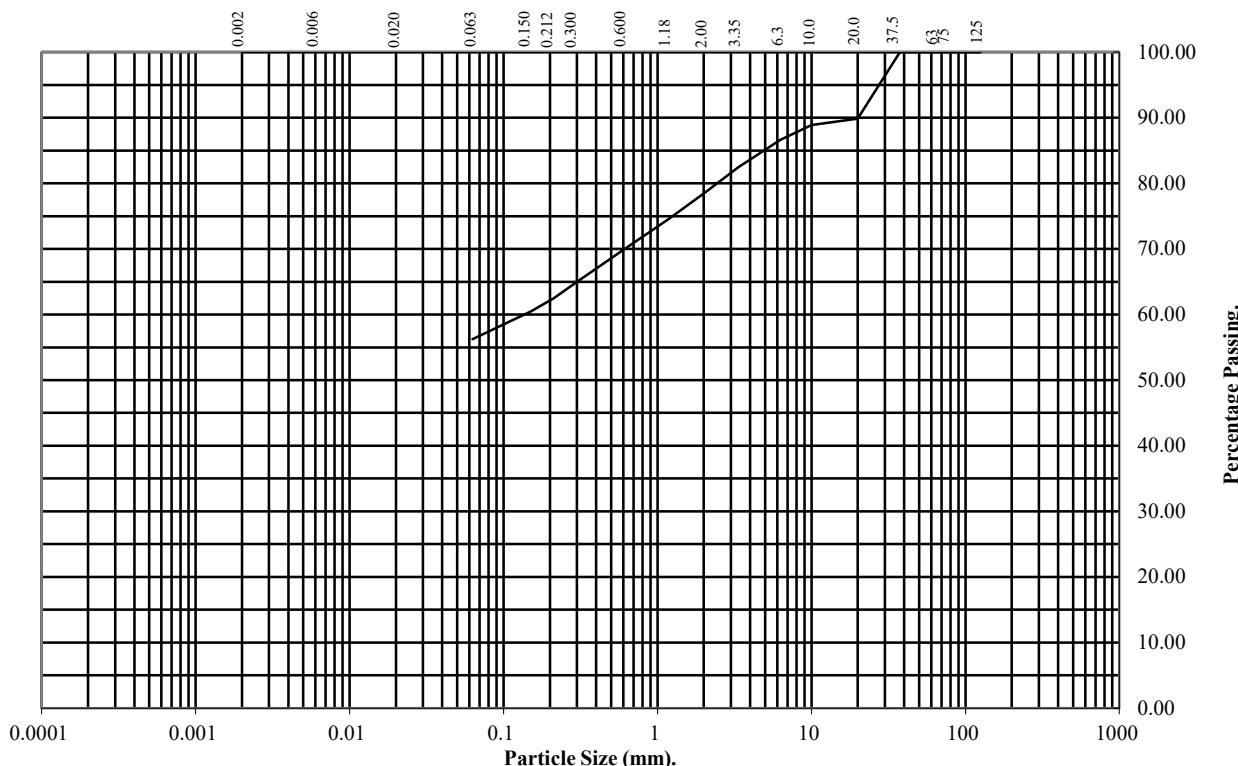
1.50

Sample Number:

Base Depth(m):

Sample Type:

B + T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	89
6.3	87
3.35	82
2	78
1.18	75
0.6	70
0.3	65
0.212	63
0.15	60
0.063	56

Soil Fraction	Total Percentage
Cobbles	0
Gravel	22
Sand	22
Silt/Clay	56

Remarks:

See Summary of Soil Descriptions



St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-01

Top Depth (m):

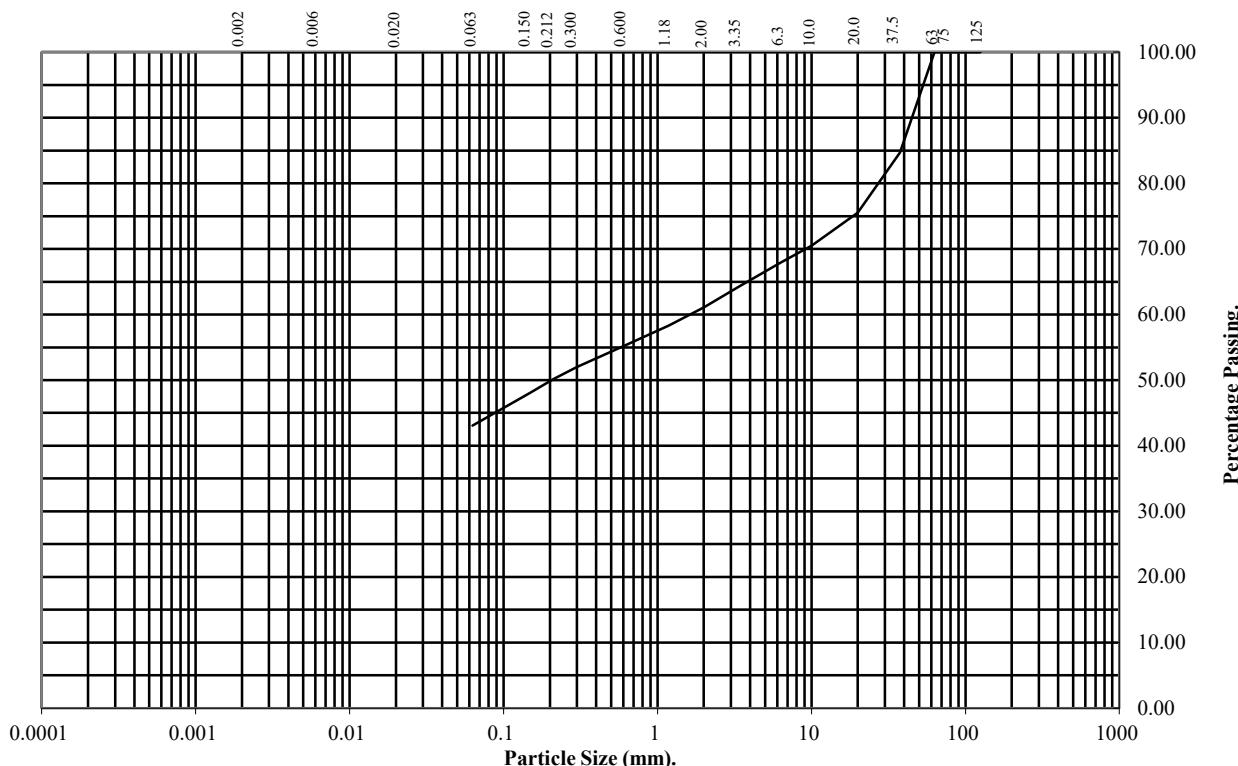
2.50

Sample Number:

Base Depth(m):

Sample Type:

B + T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	85
20	75
10	71
6.3	68
3.35	64
2	61
1.18	58
0.6	55
0.3	52
0.212	50
0.15	48
0.063	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	39
Sand	18
Silt/Clay	43

Remarks:

See Summary of Soil Descriptions



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St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-02

Top Depth (m):

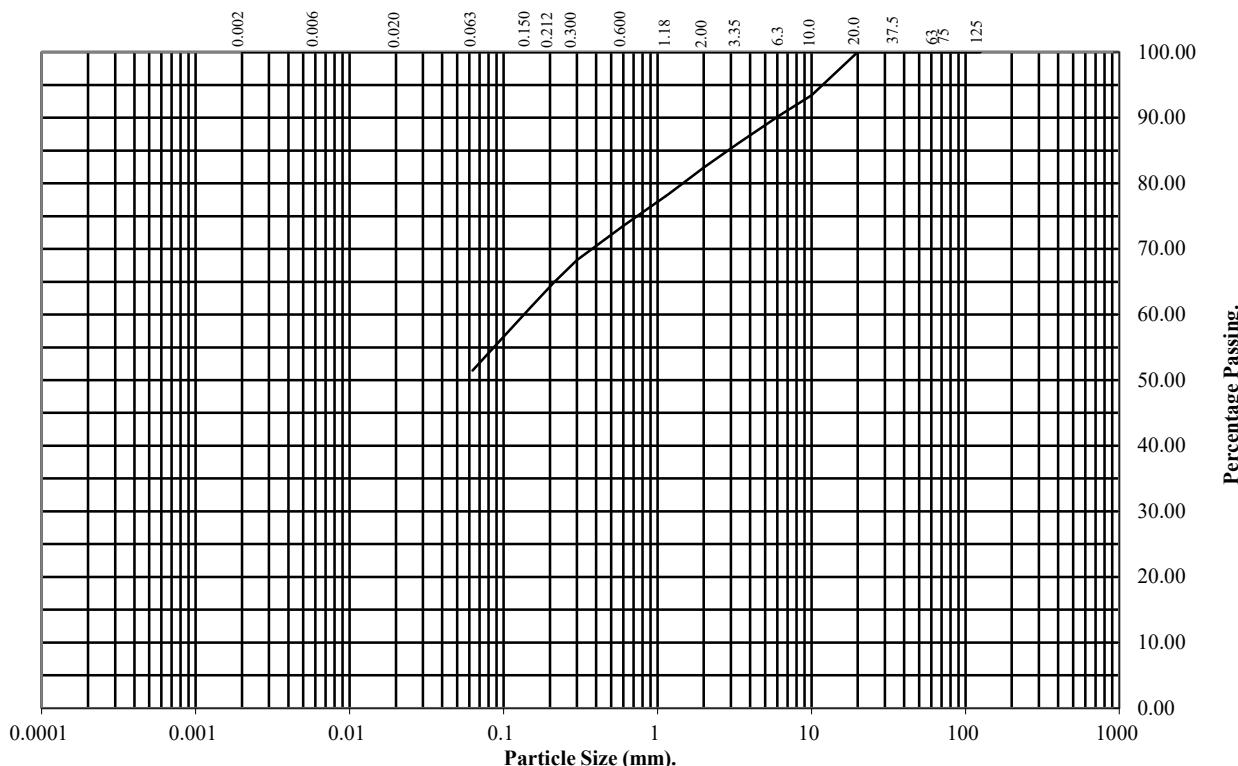
1.50

Sample Number:

Base Depth(m):

Sample Type:

B + T

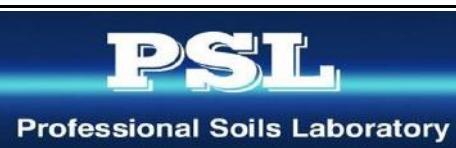


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	93
6.3	90
3.35	86
2	82
1.18	78
0.6	74
0.3	68
0.212	65
0.15	61
0.063	51

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	31
Silt/Clay	51

Remarks:

See Summary of Soil Descriptions



St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-02

Top Depth (m):

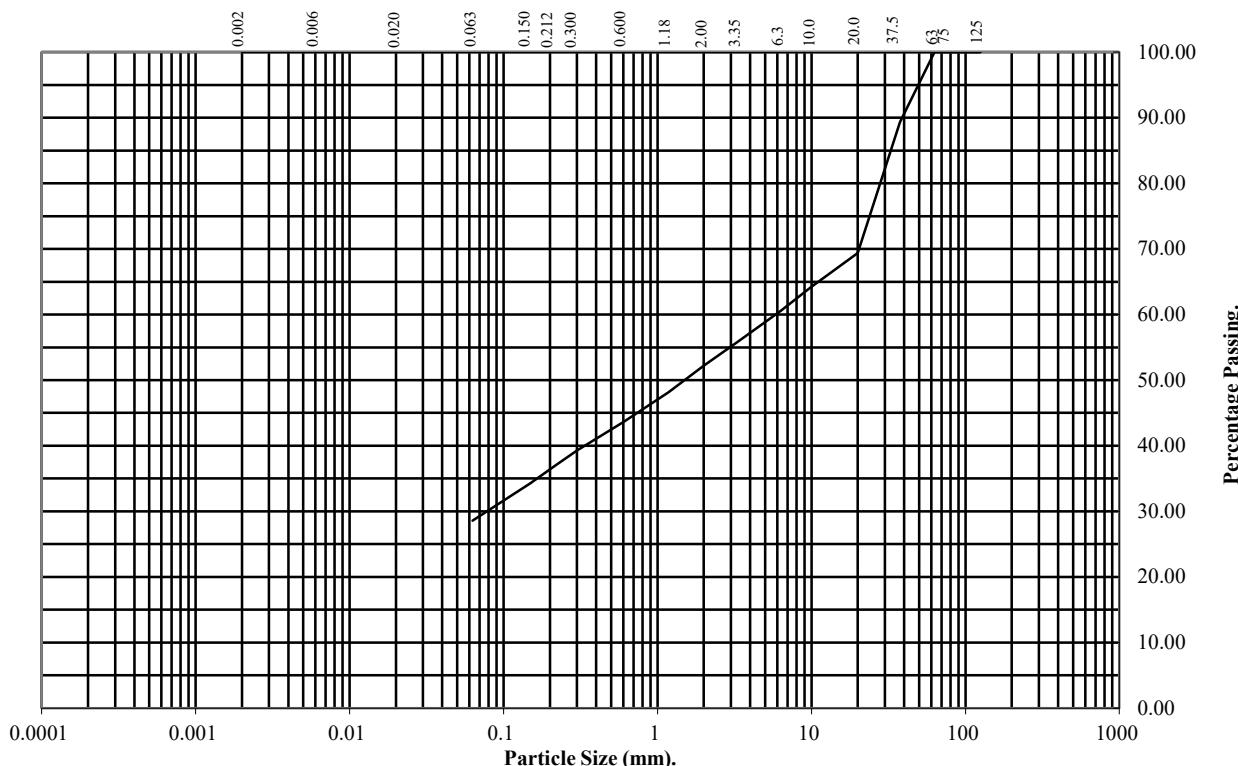
2.50

Sample Number:

Base Depth(m):

Sample Type:

B + T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	89
20	69
10	64
6.3	61
3.35	56
2	52
1.18	48
0.6	44
0.3	39
0.212	37
0.15	34
0.063	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	48
Sand	23
Silt/Clay	29

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

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St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-03

Top Depth (m):

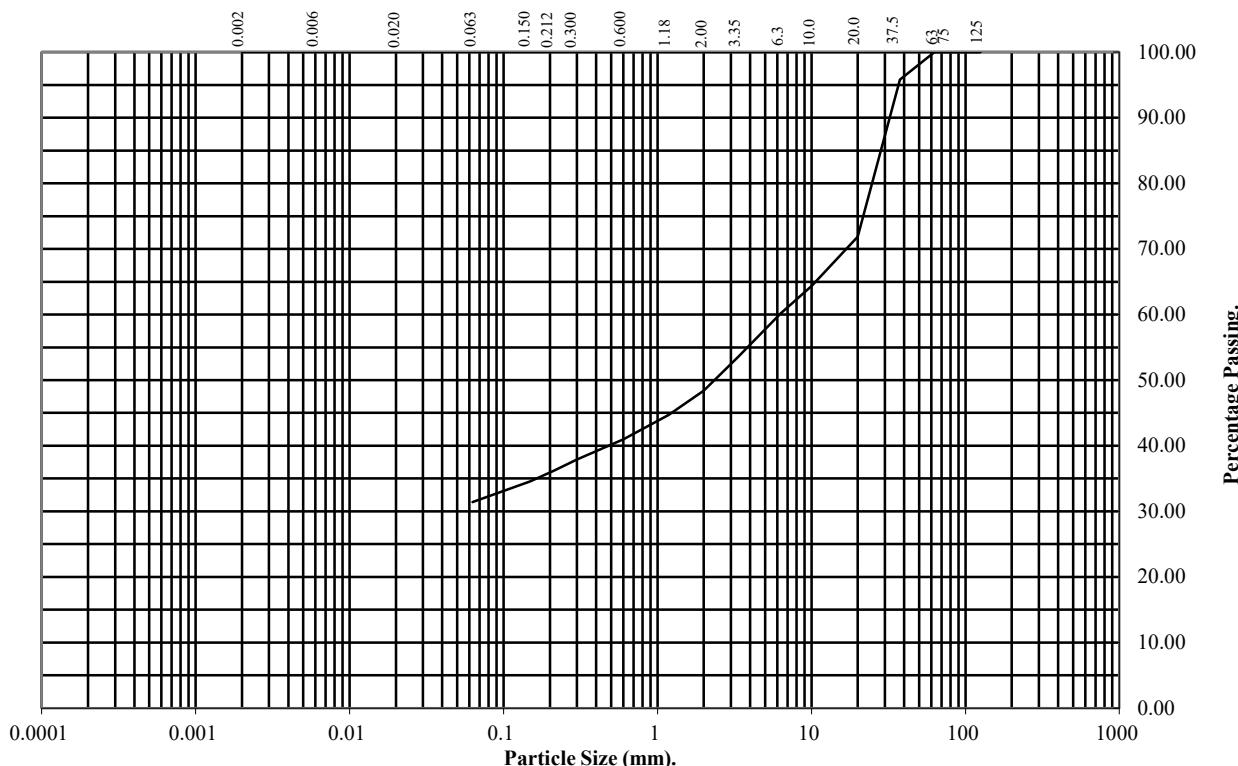
1.50

Sample Number:

Base Depth(m):

Sample Type:

B + T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	72
10	64
6.3	60
3.35	54
2	48
1.18	45
0.6	41
0.3	38
0.212	36
0.15	35
0.063	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	17
Silt/Clay	31

Remarks:

See Summary of Soil Descriptions



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Professional Soils Laboratory

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St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:

TP-03

Top Depth (m):

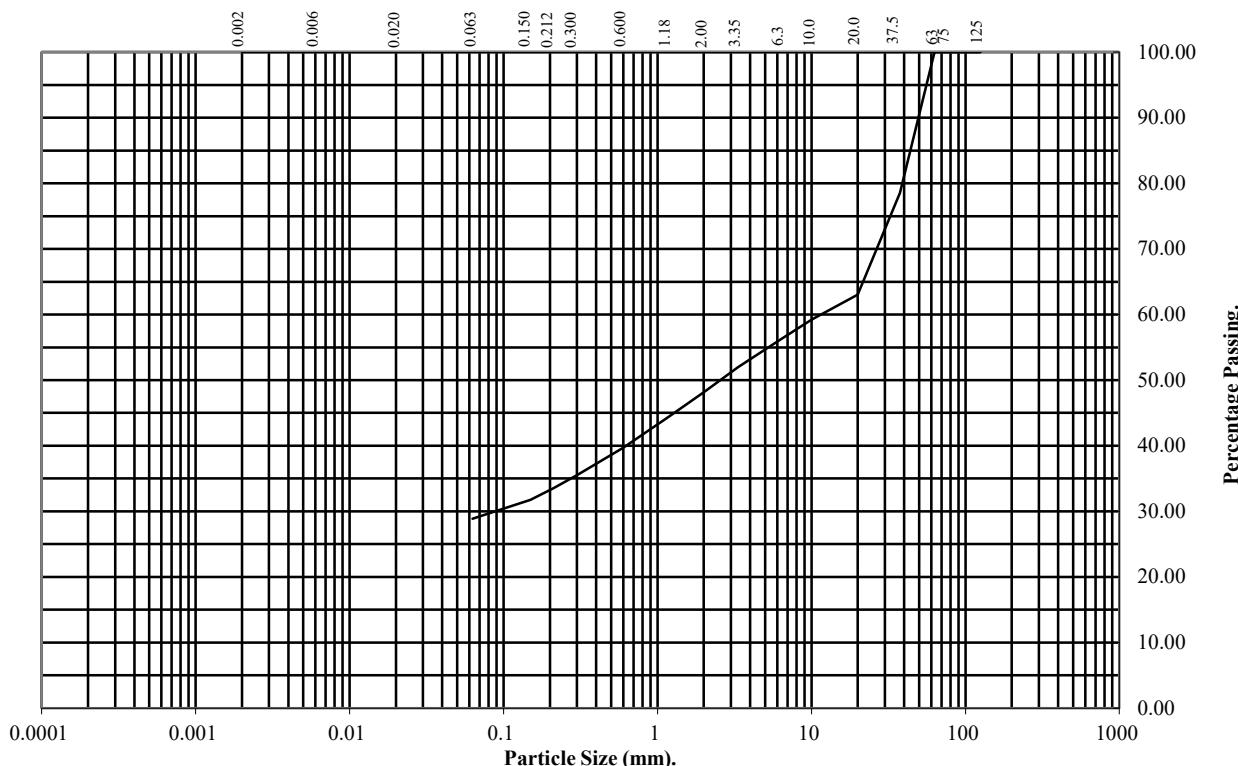
2.50

Sample Number:

Base Depth(m):

Sample Type:

B + T



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	79
20	63
10	59
6.3	56
3.35	52
2	48
1.18	44
0.6	40
0.3	36
0.212	34
0.15	32
0.063	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	19
Silt/Clay	29

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

4043

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-01

Top Depth (m): 1.50

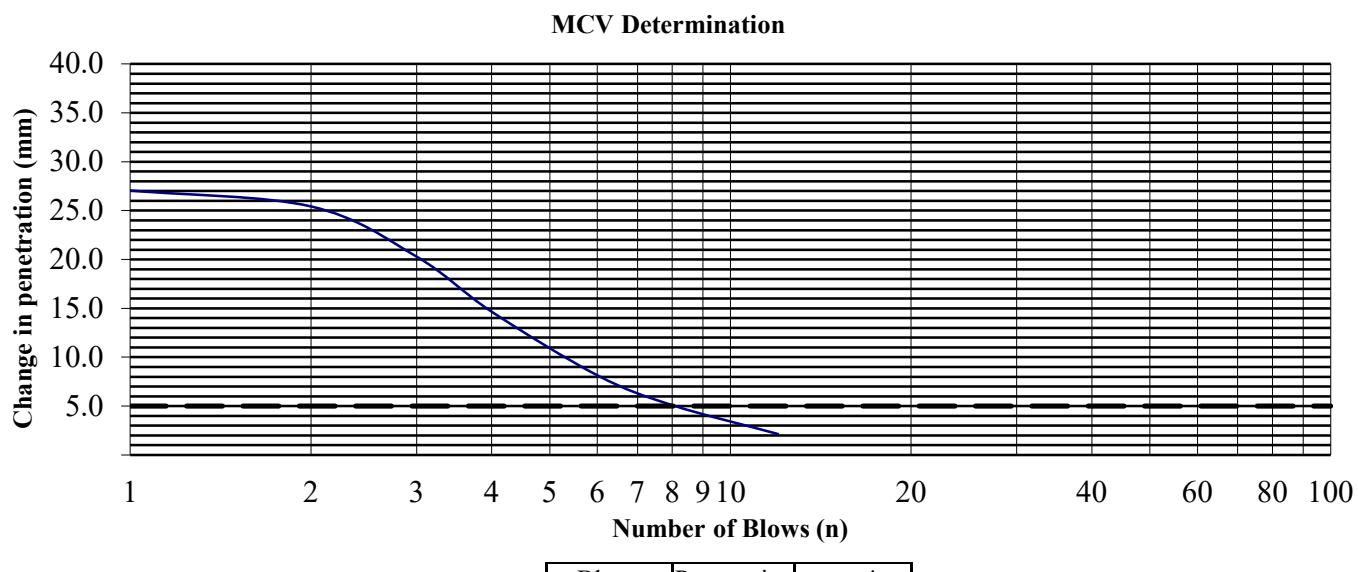
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	10
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	105.2	27.1
2	92.4	25.4
3	83.6	20.3
4	78.1	14.7
6	70.4	8.2
8	67.0	5.1
12	63.4	2.1
16	63.5	
24	62.3	
32	61.9	
48	61.2	
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	54
MCV	8.4



PSL
Professional Soils Laboratory

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-01

Top Depth (m): 2.50

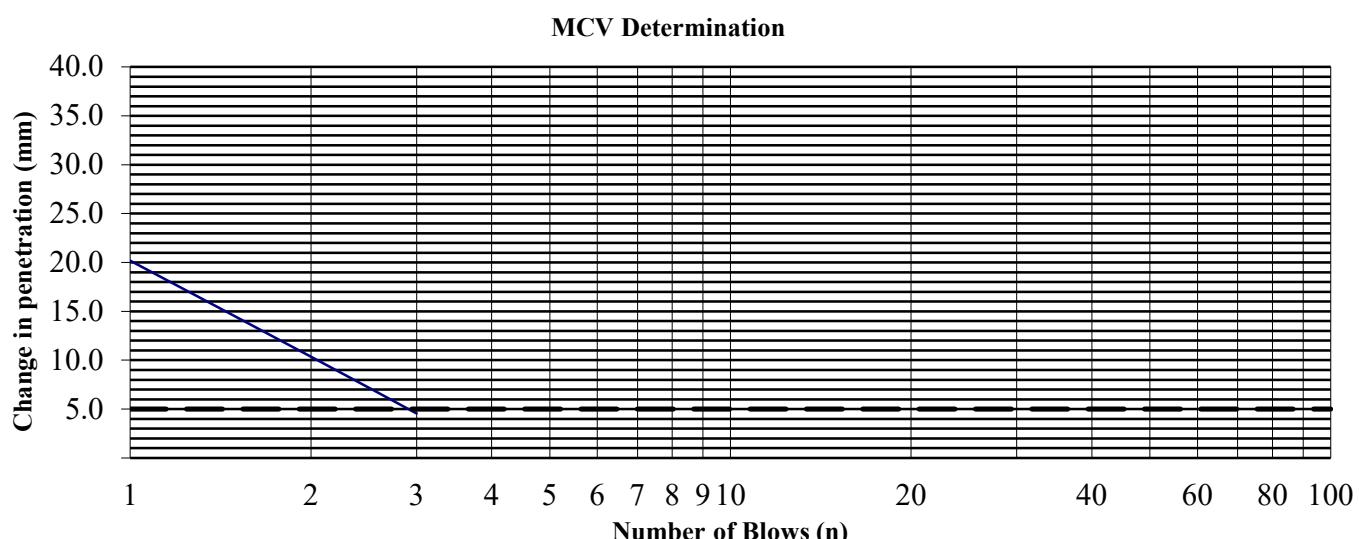
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	25
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	59.2	20.2
2	47.8	10.4
3	41.7	4.6
4	39.0	
6	37.7	
8	37.5	
12	37.1	
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	21
MCV	4.6



PSL

Professional Soils Laboratory

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-02

Top Depth (m): 1.50

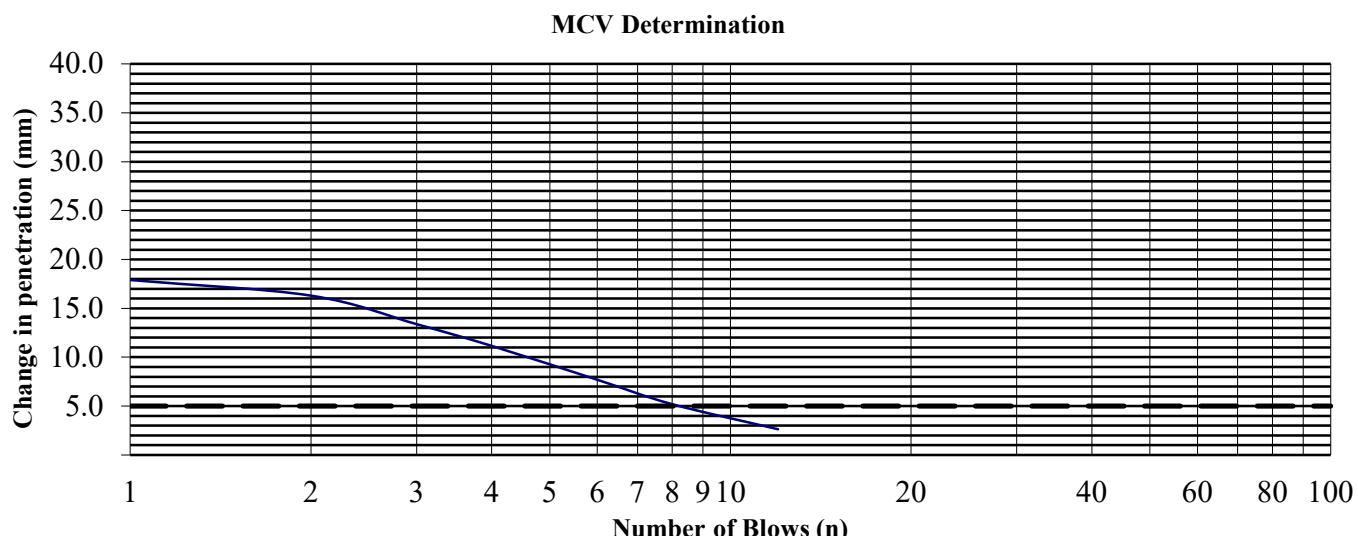
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	70.0	17.9
2	61.3	16.3
3	55.7	13.4
4	52.1	11.2
6	47.7	7.7
8	45.0	5.2
12	42.3	2.6
16	40.9	
24	40.0	
32	39.8	
48	39.7	
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	17
MCV	9.0



PSL
Professional Soils Laboratory

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-02

Top Depth (m): 2.50

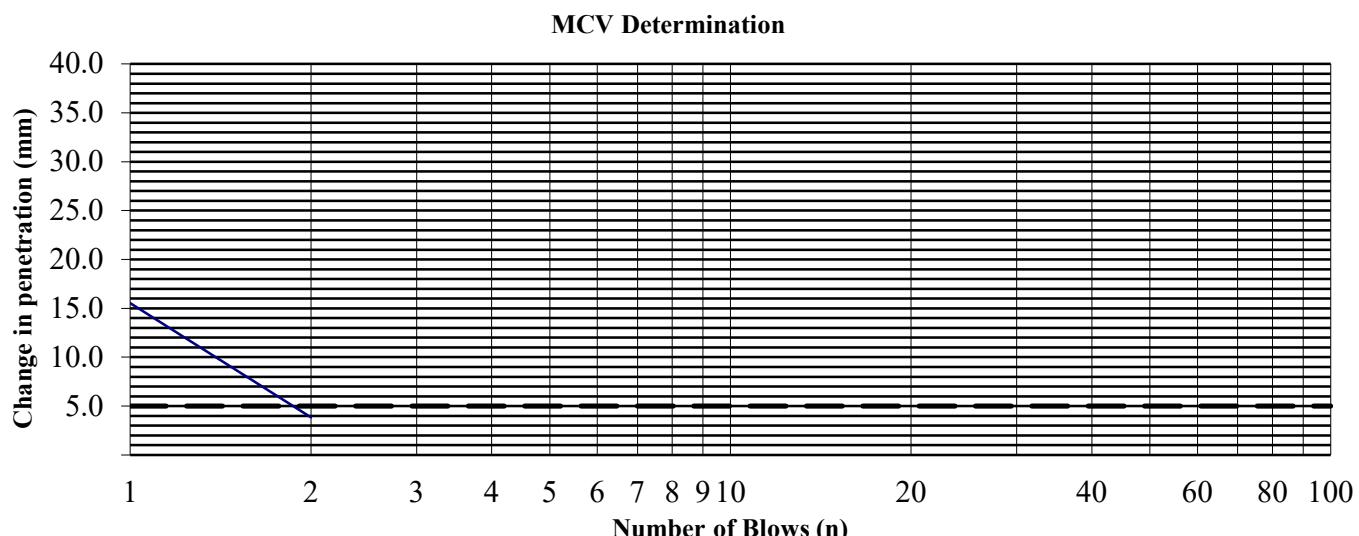
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	31
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	54.6	15.5
2	42.6	3.9
3	39.7	
4	39.1	
6	38.8	
8	38.7	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	16
MCV	2.7



PSL

Professional Soils Laboratory

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-03

Top Depth (m): 1.50

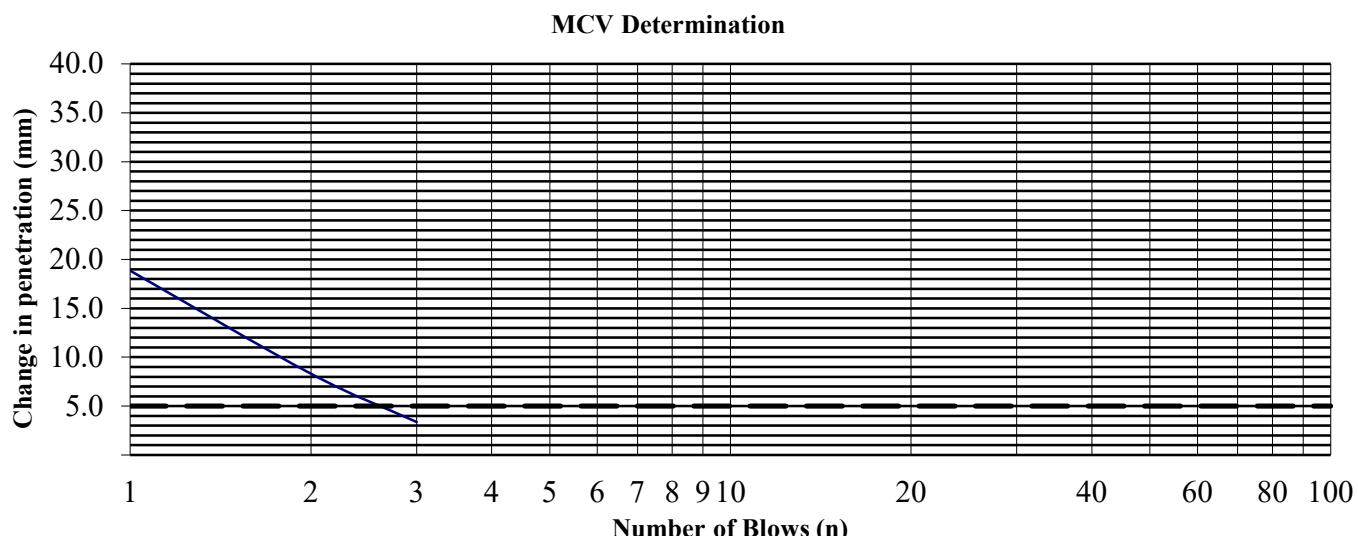
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	28
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	58.9	18.9
2	46.7	8.3
3	42.1	3.4
4	40.1	
6	39.7	
8	38.4	
12	38.7	
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	17
MCV	3.7



PSL

Professional Soils Laboratory

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:

TP-03

Top Depth (m): 2.50

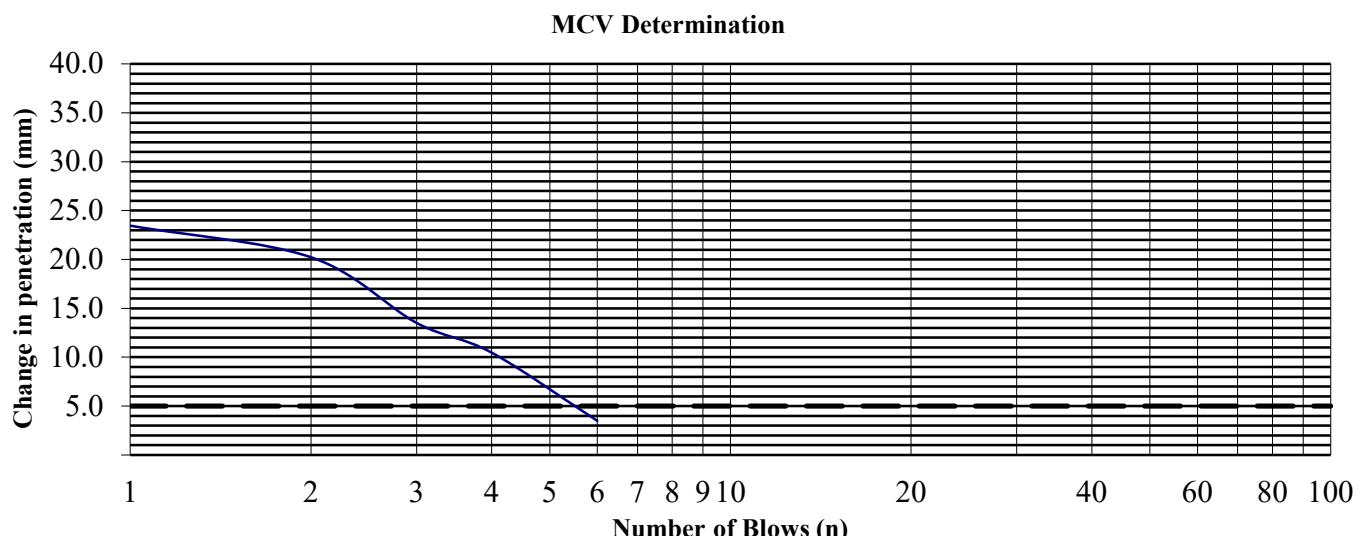
Sample Number:

Base Depth (m):

Sample Type:

B + T

Material Retained on the 20mm BS Test Sieve (%):	37
Interpretation based on steepest straight line intercept with 5mm change in penetration.	



Blows (N)	Penetration (mm)	n to 4n (mm)
1	70.6	23.5
2	57.9	20.2
3	50.3	13.5
4	47.2	10.5
6	40.0	3.5
8	37.7	
12	36.8	
16	36.7	
24	36.5	
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	15
MCV	6.4



PSL
Professional Soils Laboratory
4043

St. Teresa's Garden

Contract No:
PSL21/7784
Client Ref:
10551-04-21



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH01	9.35-9.44	1	D	⊥	120.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 1		1	D	⊥	84.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 2		1	D	⊥	41.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 3		1	D	⊥	36.0	102.0	4.00	10404	102.0	0.384	1.38	0.53

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.53		
Mean	0.70		
Max	0.79		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH01	10.95-11.02	1	D	⊥	78.0	102.0	5.20	10404	102.0	0.500	1.38	0.69
Cut 1		1	D	⊥	39.0	102.0	5.60	10404	102.0	0.538	1.38	0.74
Cut 2		1	D	⊥	49.0	102.0	4.00	10404	102.0	0.384	1.38	0.53
Cut 3		1	D	⊥	27.0	102.0	3.20	10404	102.0	0.308	1.38	0.42

Description 1 : Black/Grey
 Description 2 :
 Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.42		
Mean	0.60		
Max	0.74		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

<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

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH01	11.95-12.05	1	D	⊥	110.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 1		1	D	⊥	48.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 2		1	D	⊥	50.0	102.0	2.40	10404	102.0	0.231	1.38	0.32
Cut 3		1	D	⊥	32.0	102.0	2.00	10404	102.0	0.192	1.38	0.26

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.26		
Mean	0.51		
Max	0.79		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH02	6.22-6.32	1	D	⊥	132.0	102.0	18.00	10404	102.0	1.730	1.38	2.38
Cut 1		1	D	⊥	72.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 2		1	D	⊥	60.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 3		1	D	⊥	46.0	102.0	9.00	10404	102.0	0.865	1.38	1.19

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.19		
Mean	1.79		
Max	2.38		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH02	7.09-7.15	1	D	⊥	26.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 1		1	D	⊥	41.0	102.0	3.00	10404	102.0	0.288	1.38	0.40
Cut 2		1	D	⊥	20.0	102.0	3.00	10404	102.0	0.288	1.38	0.40
Cut 3		1	D	⊥	21.0	102.0	2.30	10404	102.0	0.221	1.38	0.30

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.30		
Mean	0.47		
Max	0.79		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

<0.05

U.C.S. MN/m²

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

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James Fisher Testing Services Ireland





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH02	10.42-10.51	1	D	⊥	220.0	102.0	32.00	10404	102.0	3.076	1.38	4.24
Cut 1		1	D	⊥	48.0	102.0	13.00	10404	102.0	1.250	1.38	1.72
Cut 2		1	D	⊥	160.0	75.0	33.00	5625	75.0	5.867	1.20	7.04
Cut 3		1	D	⊥	50.0	102.0	30.00	10404	102.0	2.884	1.38	3.97

Description 1 : Black/Grey with stress crack

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.72		
Mean	4.25		
Max	7.04		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH03	6.70-6.87	1	D	⊥	180.0	102.0	43.00	10404	102.0	4.133	1.38	5.70
Cut 1		1	D	⊥	71.0	102.0	36.00	10404	102.0	3.460	1.38	4.77
Cut 2		1	D	⊥	80.0	102.0	28.00	10404	102.0	2.691	1.38	3.71
Cut 3		1	D	⊥	46.0	102.0	24.00	10404	102.0	2.307	1.38	3.18

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	3.18		
Mean	4.34		
Max	5.70		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05		0.6-1.0
0.05-0.20		1.0-5.0
0.20-0.50		5.0-25.0
0.50-2.00		25-50
2.00-4.50		50-100
4.50-9.00		100-250
9.00 +		>250

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James Fisher Testing Services Ireland





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH03	8.45-8.57	1	D	⊥	128.0	102.0	30.00	10404	102.0	2.884	1.38	3.97
Cut 1		1	D	⊥	63.0	102.0	31.00	10404	102.0	2.980	1.38	4.11
Cut 2		1	D	⊥	52.0	102.0	25.00	10404	102.0	2.403	1.38	3.31
Cut 3		1	D	⊥	44.0	102.0	18.00	10404	102.0	1.730	1.38	2.38

Description 1 : Black/Grey with white streaks & pyrite

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	2.38		
Mean	3.45		
Max	4.11		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH03	10.48-10.75	1	D	⊥	302.0	102.0	40.00	10404	102.0	3.845	1.38	5.30
Cut 1		1	D	⊥	125.0	102.0	35.00	10404	102.0	3.364	1.38	4.64
Cut 2		1	D	⊥	135.0	102.0	36.00	10404	102.0	3.460	1.38	4.77
Cut 3		1	D	⊥	88.0	102.0	35.00	10404	102.0	3.364	1.38	4.64

Description 1 : Black/Grey with white streaks & pyrite

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	4.64		
Mean	4.84		
Max	5.30		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH04	5.62-5.70	1	D	⊥	84.0	102.0	22.00	10404	102.0	2.115	1.38	2.91
Cut 1		1	D	⊥	60.0	102.0	21.00	10404	102.0	2.018	1.38	2.78
Cut 2		1	D	⊥	40.0	102.0	21.00	10404	102.0	2.018	1.38	2.78
Cut 3		1	D	⊥	21.0	102.0	22.00	10404	102.0	2.115	1.38	2.91

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	2.78		
Mean	2.85		
Max	2.91		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

 The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH04	9.40-9.55	1	D	⊥	202.0	102.0	19.00	10404	102.0	1.826	1.38	2.52
Cut 1		1	D	⊥	70.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 2		1	D	⊥	80.0	102.0	20.00	10404	102.0	1.922	1.38	2.65
Cut 3		1	D	⊥	55.0	102.0	14.00	10404	102.0	1.346	1.38	1.85

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.59		
Mean	2.15		
Max	2.65		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH04	10.71-10.80	1	D	⊥	92.0	102.0	14.00	10404	102.0	1.346	1.38	1.85
Cut 1		1	D	⊥	42.0	102.0	9.00	10404	102.0	0.865	1.38	1.19
Cut 2		1	D	⊥	58.0	102.0	7.00	10404	102.0	0.673	1.38	0.93
Cut 3		1	D	⊥	31.0	102.0	6.00	10404	102.0	0.577	1.38	0.79

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.79		
Mean	1.19		
Max	1.85		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH05	7.0-7.13	1	D	⊥	158.0	102.0	2.00	10404	102.0	0.192	1.38	0.26
Cut 1		1	D	⊥	72.0	102.0	4.00	10404	102.0	0.384	1.38	0.53
Cut 2		1	D	⊥	65.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 3		1	D	⊥	58.0	102.0	6.00	10404	102.0	0.577	1.38	0.79

Description 1 : Black/Grey, white streaks

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.26		
Mean	0.80		
Max	1.59		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Fisher Testing Services Ireland





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH05	9.0-9.2	1	D	⊥	232.0	102.0	32.00	10404	102.0	3.076	1.38	4.24
Cut 1		1	D	⊥	52.0	88.0	36.00	7744	88.0	4.649	1.29	6.00
Cut 2		1	D	⊥	50.0	88.0	25.00	7744	88.0	3.228	1.29	4.16
Cut 3		1	D	⊥	112.0	55.0	21.00	3025	55.0	6.942	1.04	7.25

Description 1 : Black/Grey with stress cracks

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	4.16		
Mean	5.41		
Max	7.25		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Fisher Testing Services Ireland





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH05	10.07-10.18	1	D	⊥	135.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 1		1	D	⊥	70.0	102.0	16.00	10404	102.0	1.538	1.38	2.12
Cut 2		1	D	⊥	52.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 3		1	D	⊥	38.0	102.0	12.00	10404	102.0	1.153	1.38	1.59

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.79		
Mean	1.62		
Max	2.12		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH06	6.2-6.25	1	D	⊥	60.0	102.0	7.00	10404	102.0	0.673	1.38	0.93
Cut 1		1	D	⊥	41.0	102.0	10.00	10404	102.0	0.961	1.38	1.32
Cut 2		1	D	⊥	28.0	67.0	20.00	4489	67.0	4.455	1.14	5.08
Cut 3		1	D	⊥	35.0	48.0	9.00	2304	48.0	3.906	0.98	3.84

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.93		
Mean	2.79		
Max	5.08		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH06	9.3-9.4	1	D	⊥	96.0	102.0	4.00	10404	102.0	0.384	1.38	0.53
Cut 1		1	D	⊥	28.0	102.0	4.20	10404	102.0	0.404	1.38	0.56
Cut 2		1	D	⊥	62.0	102.0	3.70	10404	102.0	0.356	1.38	0.49
Cut 3		1	D	⊥	30.0	102.0	4.00	10404	102.0	0.384	1.38	0.53

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.49		
Mean	0.53		
Max	0.56		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	10/11/2021
Originator	James Cashen	Date Reported	17/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH06	11.45-11.55	1	D	⊥	121.0	102.0	2.00	10404	102.0	0.192	1.38	0.26
Cut 1		1	D	⊥	75.0	102.0	9.00	10404	102.0	0.865	1.38	1.19
Cut 2		1	D	⊥	48.0	102.0	7.00	10404	102.0	0.673	1.38	0.93
Cut 3		1	D	⊥	31.0	102.0	6.00	10404	102.0	0.577	1.38	0.79

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.26		
Mean	0.80		
Max	1.19		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH07	4.5-4.6	1	D	⊥	155.0	102.0	32.00	10404	102.0	3.076	1.38	4.24
Cut 1		1	D	⊥	101.0	102.0	18.00	10404	102.0	1.730	1.38	2.38
Cut 2		1	D	⊥	50.0	102.0	24.00	10404	102.0	2.307	1.38	3.18
Cut 3		1	D	⊥	40.0	102.0	21.00	10404	102.0	2.018	1.38	2.78

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	2.38		
Mean	3.15		
Max	4.24		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH07	5.4-5.5	1	D	⊥	110.0	102.0	8.00	10404	102.0	0.769	1.38	1.06
Cut 1		1	D	⊥	76.0	102.0	4.20	10404	102.0	0.404	1.38	0.56
Cut 2		1	D	⊥	34.0	102.0	3.00	10404	102.0	0.288	1.38	0.40
Cut 3		1	D	⊥	50.0	102.0	11.00	10404	102.0	1.057	1.38	1.46

Description 1 : Black/Grey
 Description 2 :
 Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.40		
Mean	0.87		
Max	1.46		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH07	6.7-6.8	1	D	⊥	222.0	102.0	46.00	10404	102.0	4.421	1.38	6.09
Cut 1		1	D	⊥	100.0	102.0	45.00	10404	102.0	4.325	1.38	5.96
Cut 2		1	D	⊥	81.0	102.0	31.00	10404	102.0	2.980	1.38	4.11
Cut 3		1	D	⊥	76.0	71.0	27.00	5041	71.0	5.356	1.17	6.27

Description 1 : Black/Grey with White Streak

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	4.11		
Mean	5.61		
Max	6.27		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH08	5.45-5.6	1	D	⊥	141.0	102.0	30.00	10404	102.0	2.884	1.38	3.97
Cut 1		1	D	⊥	101.0	102.0	24.00	10404	102.0	2.307	1.38	3.18
Cut 2		1	D	⊥	55.0	102.0	26.00	10404	102.0	2.499	1.38	3.44
Cut 3		1	D	⊥	50.0	102.0	25.00	10404	102.0	2.403	1.38	3.31

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	3.18		
Mean	3.48		
Max	3.97		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH08	7.95-8.1	1	D	⊥	200.0	102.0	37.00	10404	102.0	3.556	1.38	4.90
Cut 1		1	D	⊥	94.0	102.0	22.00	10404	102.0	2.115	1.38	2.91
Cut 2		1	D	⊥	65.0	102.0	29.00	10404	102.0	2.787	1.38	3.84
Cut 3		1	D	⊥	50.0	102.0	19.00	10404	102.0	1.826	1.38	2.52

Description 1 : Black/Grey with White Streak

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	2.52		
Mean	3.54		
Max	4.90		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH09	6.6-6.7	1	D	⊥	174.0	102.0	22.00	10404	102.0	2.115	1.38	2.91
Cut 1		1	D	⊥	54.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 2		1	D	⊥	44.0	102.0	13.00	10404	102.0	1.250	1.38	1.72
Cut 3		1	D	⊥	98.0	74.0	11.00	5476	74.0	2.009	1.19	2.40

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.72		
Mean	2.26		
Max	2.91		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH09	8.05-8.2	1	D	⊥	186.0	102.0	24.00	10404	102.0	2.307	1.38	3.18
Cut 1		1	D	⊥	82.0	102.0	18.00	10404	102.0	1.730	1.38	2.38
Cut 2		1	D	⊥	54.0	102.0	10.00	10404	102.0	0.961	1.38	1.32
Cut 3		1	D	⊥	51.0	102.0	11.00	10404	102.0	1.057	1.38	1.46

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.32		
Mean	2.09		
Max	3.18		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH09	10.45-10.55	1	D	⊥	122.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 1		1	D	⊥	65.0	102.0	5.20	10404	102.0	0.500	1.38	0.69
Cut 2		1	D	⊥	55.0	102.0	4.00	10404	102.0	0.384	1.38	0.53
Cut 3		1	D	⊥	28.0	102.0	3.50	10404	102.0	0.336	1.38	0.46

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.46		
Mean	0.59		
Max	0.69		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH10	6.8-6.9	1	D	⊥	152.0	102.0	24.00	10404	102.0	2.307	1.38	3.18
Cut 1		1	D	⊥	64.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 2		1	D	⊥	74.0	102.0	19.00	10404	102.0	1.826	1.38	2.52
Cut 3		1	D	⊥	38.0	102.0	11.00	10404	102.0	1.057	1.38	1.46

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.46		
Mean	2.19		
Max	3.18		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH11	9.1-9.27	1	D	⊥	203.0	102.0	20.00	10404	102.0	1.922	1.38	2.65
Cut 1		1	D	⊥	90.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 2		1	D	⊥	102.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 3		1	D	⊥	61.0	102.0	7.00	10404	102.0	0.673	1.38	0.93

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.93		
Mean	1.79		
Max	2.65		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH10	9.55-9.65	1	D	⊥	126.0	102.0	3.00	10404	102.0	0.288	1.38	0.40
Cut 1		1	D	⊥	65.0	102.0	3.00	10404	102.0	0.288	1.38	0.40
Cut 2		1	D	⊥	36.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 3		1	D	⊥	38.0	102.0	2.00	10404	102.0	0.192	1.38	0.26

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.26		
Mean	0.43		
Max	0.66		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH10	11.05-11.20	1	D	⊥	121.0	102.0	10.00	10404	102.0	0.961	1.38	1.32
Cut 1		1	D	⊥	60.0	102.0	7.00	10404	102.0	0.673	1.38	0.93
Cut 2		1	D	⊥	61.0	102.0	8.00	10404	102.0	0.769	1.38	1.06
Cut 3		1	D	⊥	35.0	102.0	3.00	10404	102.0	0.288	1.38	0.40

Description 1 : Black/Grey
 Description 2 :
 Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.40		
Mean	0.93		
Max	1.32		

Test

A = axial

D = diametrical

Relationship to planes of weakness

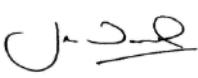
IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	17/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH11	10.34-10.48	1	D	⊥	184.0	102.0	16.00	10404	102.0	1.538	1.38	2.12
Cut 1		1	D	⊥	104.0	102.0	11.00	10404	102.0	1.057	1.38	1.46
Cut 2		1	D	⊥	71.0	102.0	20.00	10404	102.0	1.922	1.38	2.65
Cut 3		1	D	⊥	55.0	102.0	22.00	10404	102.0	2.115	1.38	2.91

Description 1 : Black/Grey, white streaks & porous

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.46		
Mean	2.29		
Max	2.91		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	18/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH11	11.30-11.48	1	D	⊥	176.0	102.0	43.00	10404	102.0	4.133	1.38	5.70
Cut 1		1	D	⊥	62.0	102.0	20.00	10404	102.0	1.922	1.38	2.65
Cut 2		1	D	⊥	85.0	102.0	16.00	10404	102.0	1.538	1.38	2.12
Cut 3		1	D	⊥	42.0	102.0	14.00	10404	102.0	1.346	1.38	1.85

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.85		
Mean	3.08		
Max	5.70		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	18/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH12	5.35-5.5	1	D	⊥	187.0	102.0	26.00	10404	102.0	2.499	1.38	3.44
Cut 1		1	D	⊥	84.0	102.0	14.00	10404	102.0	1.346	1.38	1.85
Cut 2		1	D	⊥	88.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 3		1	D	⊥	46.0	102.0	11.00	10404	102.0	1.057	1.38	1.46

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.46		
Mean	2.09		
Max	3.44		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	18/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH12	7.6-7.73	1	D	⊥	156.0	102.0	44.00	10404	102.0	4.229	1.38	5.83
Cut 1		1	D	⊥	75.0	102.0	27.00	10404	102.0	2.595	1.38	3.58
Cut 2		1	D	⊥	69.0	102.0	28.00	10404	102.0	2.691	1.38	3.71
Cut 3		1	D	⊥	53.0	61.0	19.00	3721	61.0	5.106	1.09	5.58

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	3.58		
Mean	4.68		
Max	5.83		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

<0.05

U.C.S. MN/m²

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

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	18/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH12	9.17-9.34	1	D	⊥	201.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 1		1	D	⊥	89.0	102.0	8.00	10404	102.0	0.769	1.38	1.06
Cut 2		1	D	⊥	80.0	102.0	19.00	10404	102.0	1.826	1.38	2.52
Cut 3		1	D	⊥	61.0	102.0	9.00	10404	102.0	0.865	1.38	1.19

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.06		
Mean	1.69		
Max	2.52		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH13	5.8-5.9	1	D	⊥	104.0	102.0	32.00	10404	102.0	3.076	1.38	4.24
Cut 1		1	D	⊥	66.0	102.0	37.00	10404	102.0	3.556	1.38	4.90
Cut 2		1	D	⊥	51.0	102.0	18.00	10404	102.0	1.730	1.38	2.38
Cut 3		1	D	⊥	31.0	102.0	14.00	10404	102.0	1.346	1.38	1.85

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.85		
Mean	3.35		
Max	4.90		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	D ^{e2} (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH13	6.6-6.82	1	D	⊥	232.0	102.0	47.00	10404	102.0	4.517	1.38	6.23
Cut 1		1	D	⊥	102.0	102.0	28.00	10404	102.0	2.691	1.38	3.71
Cut 2		1	D	⊥	88.0	102.0	30.00	10404	102.0	2.884	1.38	3.97
Cut 3		1	D	⊥	62.0	102.0	37.00	10404	102.0	3.556	1.38	4.90

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	3.71		
Mean	4.70		
Max	6.23		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH13	8.1-8.28	1	D	⊥	64.0	102.0	9.00	10404	102.0	0.865	1.38	1.19
Cut 1		1	D	⊥	132.0	102.0	38.00	10404	102.0	3.652	1.38	5.03
Cut 2		1	D	⊥	62.0	102.0	30.00	10404	102.0	2.884	1.38	3.97
Cut 3		1	D	⊥	70.0	102.0	28.00	10404	102.0	2.691	1.38	3.71

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.19		
Mean	3.48		
Max	5.03		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH14	7.28-7.36	1	D	⊥	100.0	102.0	28.00	10404	102.0	2.691	1.38	3.71
Cut 1		1	D	⊥	50.0	102.0	16.00	10404	102.0	1.538	1.38	2.12
Cut 2		1	D	⊥	41.0	72.0	19.00	5184	72.0	3.665	1.18	4.32
Cut 3		1	D	⊥	30.0	82.0	10.00	6724	82.0	1.487	1.25	1.86

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.86		
Mean	3.00		
Max	4.32		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH14	9.6-9.76	1	D	⊥	226.0	102.0	21.00	10404	102.0	2.018	1.38	2.78
Cut 1		1	D	⊥	103.0	102.0	35.00	10404	102.0	3.364	1.38	4.64
Cut 2		1	D	⊥	118.0	102.0	17.00	10404	102.0	1.634	1.38	2.25
Cut 3		1	D	⊥	61.0	102.0	15.00	10404	102.0	1.442	1.38	1.99

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.99		
Mean	2.92		
Max	4.64		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH14	10.45-10.54	1	D	⊥	262.0	102.0	23.00	10404	102.0	2.211	1.38	3.05
Cut 1		1	D	⊥	61.0	102.0	14.00	10404	102.0	1.346	1.38	1.85
Cut 2		1	D	⊥	172.0	77.0	21.00	5929	77.0	3.542	1.21	4.30
Cut 3		1	D	⊥	88.0	77.0	15.00	5929	77.0	2.530	1.21	3.07

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.85		
Mean	3.07		
Max	4.30		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH15	5.35-5.5	1	D	⊥	171.0	102.0	37.00	10404	102.0	3.556	1.38	4.90
Cut 1		1	D	⊥	102.0	102.0	26.00	10404	102.0	2.499	1.38	3.44
Cut 2		1	D	⊥	71.0	102.0	28.00	10404	102.0	2.691	1.38	3.71
Cut 3		1	D	⊥	62.0	102.0	19.00	10404	102.0	1.826	1.38	2.52

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	2.52		
Mean	3.64		
Max	4.90		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH15	6.6-6.8	1	D	⊥	251.0	102.0	38.00	10404	102.0	3.652	1.38	5.03
Cut 1		1	D	⊥	116.0	102.0	33.00	10404	102.0	3.172	1.38	4.37
Cut 2		1	D	⊥	130.0	102.0	34.00	10404	102.0	3.268	1.38	4.50
Cut 3		1	D	⊥	54.0	102.0	25.00	10404	102.0	2.403	1.38	3.31

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	3.31		
Mean	4.31		
Max	5.03		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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Approved Signature

James Fisher Testing Services Ireland

James Fisher
 Testing Services



James Ward, Operations Manager



Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH15	8.6-8.7	1	D	⊥	38.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 1		1	D	⊥	64.0	102.0	7.00	10404	102.0	0.673	1.38	0.93
Cut 2		1	D	⊥	40.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 3		1	D	⊥	28.0	102.0	3.60	10404	102.0	0.346	1.38	0.48

Description 1 : Black/Grey
 Description 2 :
 Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.48		
Mean	0.68		
Max	0.93		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH16	5.6-5.66	1	D	⊥	82.0	102.0	5.20	10404	102.0	0.500	1.38	0.69
Cut 1		1	D	⊥	56.0	102.0	10.00	10404	102.0	0.961	1.38	1.32
Cut 2		1	D	⊥	40.0	102.0	8.00	10404	102.0	0.769	1.38	1.06
Cut 3		1	D	⊥	31.0	102.0	4.80	10404	102.0	0.461	1.38	0.64

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.64		
Mean	0.93		
Max	1.32		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH16	6.00-6.05	1	D	⊥	58.0	102.0	4.20	10404	102.0	0.404	1.38	0.56
Cut 1		1	D	⊥	30.0	102.0	4.00	10404	102.0	0.384	1.38	0.53
Cut 2		1	D	⊥	22.0	102.0	2.80	10404	102.0	0.269	1.38	0.37
Cut 3		1	D	⊥	16.0	102.0	2.00	10404	102.0	0.192	1.38	0.26

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.26		
Mean	0.43		
Max	0.56		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH16	8.30-8.38	1	D	⊥	51.0	102.0	4.60	10404	102.0	0.442	1.38	0.61
Cut 1		1	D	⊥	49.0	102.0	3.40	10404	102.0	0.327	1.38	0.45
Cut 2		1	D	⊥	22.0	102.0	2.40	10404	102.0	0.231	1.38	0.32
Cut 3		1	D	⊥	24.0	102.0	2.60	10404	102.0	0.250	1.38	0.34

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.32		
Mean	0.43		
Max	0.56		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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Approved Signature

James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH17	6.82-6.89	1	D	⊥	86.0	102.0	15.00	10404	102.0	1.442	1.38	1.99
Cut 1		1	D	⊥	58.0	102.0	17.00	10404	102.0	1.634	1.38	2.25
Cut 2		1	D	⊥	28.0	102.0	10.00	10404	102.0	0.961	1.38	1.32
Cut 3		1	D	⊥	38.0	102.0	11.00	10404	102.0	1.057	1.38	1.46

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.32		
Mean	1.76		
Max	2.25		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

	I _{s(50)} MN/m ²	U.C.S. MN/m ²
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

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH17	10.65-10.71	1	D	⊥	88.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 1		1	D	⊥	48.0	102.0	5.00	10404	102.0	0.481	1.38	0.66
Cut 2		1	D	⊥	40.0	102.0	6.00	10404	102.0	0.577	1.38	0.79
Cut 3		1	D	⊥	21.0	102.0	4.40	10404	102.0	0.423	1.38	0.58

Description 1 : Black/Grey
 Description 2 :
 Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	0.58		
Mean	0.71		
Max	0.79		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak

I_{s(50)} MN/m²

U.C.S. MN/m²

<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

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James Fisher Testing Services Ireland

James Ward, Operations Manager





Laboratory Test Report
 Point Load Strength Index

Project :	St Teresa's Gardens	Job Number	10551-04-21
Client :	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle, Co. Dublin	Lab Ref No	ST 14055
		Date Received	01/11/2021
		Date Tested	24/11/2021
Originator	James Cashen	Date Reported	24/11/2021

Point Load Strength Index

Sample No:-	Depth (m)	Description	Type	Orientation	W (mm)	D (mm)	P (kN)	De ² (mm ²)	De (mm)	I _s	F	I _{s(50)} MN/m ²
BH17	11.83-11.90	1	D	⊥	80.0	102.0	12.00	10404	102.0	1.153	1.38	1.59
Cut 1		1	D	⊥	56.0	61.0	19.00	3721	61.0	5.106	1.09	5.58
Cut 2		1	D	⊥	26.0	61.0	12.00	3721	61.0	3.225	1.09	3.53
Cut 3		1	D	⊥	22.0	102.0	8.00	10404	102.0	0.769	1.38	1.06

Description 1 : Black/Grey

Description 2 :

Description 3 :

I _{s(50)} MN/m ² for	Description 1		
Min	1.06		
Mean	2.94		
Max	5.58		

Test

A = axial

D = diametrical

Relationship to planes of weakness

IL = irregular lump

⊥ = perpendicular

II = parallel

Extremely Weak
 Very Weak
 Weak
 Medium Strong
 Strong
 Very Strong
 Extremely Strong

I _{s(50)} MN/m ²	U.C.S. MN/m ²
<0.05	0.6-1.0
0.05-0.20	1.0-5.0
0.20-0.50	5.0-25.0
0.50-2.00	25-50
2.00-4.50	50-100
4.50-9.00	100-250
9.00 +	>250

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James Ward, Operations Manager





Laboratory Test Report
Uniaxial Compressive Strength

Project:	St Teresa's Gardens	Job Number	10551-04-21
Client:	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle. Co. Dublin	Lab Ref No	ST 14056
		Date Received	01/11/2021
		Date Tested	06/12/2021
Originator:	James Cashen	Date Reported	07/12/2021

Sample Reference	Moisture Content	Density (Mg/m³)	Uniaxial Compressive Strength (N/mm²)
BH01 10.67-10.89m	0.8	2643	38.6
BH01 12.08-12.36m	0.9	2563	22.9
BH02 5.53-5.93m	0.4	2635	63.1
BH02 10.62-10.82m	0.4	2699	42.3
BH03 7.85-8.20m	0.2	2693	34.9
BH03 9.80-10.10m	0.5	2727	41.4
BH04 7.67-7.90m	0.2	2708	69.5
BH04 10.42-10.69m	0.4	2685	38.8

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 James Ward, Operations Manager

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Laboratory Test Report
Uniaxial Compressive Strength

Project:	St Teresa's Gardens	Job Number	10551-04-21
Client:	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle. Co. Dublin	Lab Ref No	ST 14056
		Date Received	01/11/2021
		Date Tested	06/12/2021
Originator:	James Cashen	Date Reported	07/12/2021

Sample Reference	Moisture Content	Density (Mg/m³)	Uniaxial Compressive Strength (N/mm²)
BH05 7.28-7.58m	0.5	2723	72.0
BH05 9.70-9.98m	0.1	2713	47.1
BH06 6.25-6.50m	0.3	2641	43.5
BH06 9.00-9.25m	0.6	2709	21.8
BH06 11.60-11.80m	0.9	2656	29.5
BH07 5.95-6.25m	0.3	2762	59.3
BH07 9.30-9.50m	0.6	2621	26.1
BH08 5.60-5.85m	0.2	2702	28.2
BH08 9.10-9.35m	0.5	2670	27.0

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 James Ward, Operations Manager

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Laboratory Test Report
Uniaxial Compressive Strength

Project:	St Teresa's Gardens	Job Number	10551-04-21
Client:	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle. Co. Dublin	Lab Ref No	ST 14056
		Date Received	01/11/2021
		Date Tested	06/12/2021
Originator:	James Cashen	Date Reported	07/12/2021

Sample Reference	Moisture Content	Density (Mg/m³)	Uniaxial Compressive Strength (N/mm²)
BH09 5.05-5.25m	0.3	2709	67.5
BH09 6.85-7.15m	0.5	2713	57.8
BH10 9.70-9.90m	0.6	2713	50.1
BH10 12.30-12.55m	0.3	2688	53.3
BH11 8.27-8.57m	0.4	2699	49.5
BH11 12.35-12.56m	0.5	2708	52.0
BH12 4.95-5.20m	0.3	2707	51.2
BH12 7.20-7.55m	0.3	2714	55.8

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 James Ward, Operations Manager

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Laboratory Test Report
Uniaxial Compressive Strength

Project:	St Teresa's Gardens	Job Number	10551-04-21
Client:	Ground Investigations Ireland Catherinestown House, Hazelhatch Road Newcastle. Co. Dublin	Lab Ref No	ST 14056
		Date Received	01/11/2021
		Date Tested	06/12/2021
Originator:	James Cashen	Date Reported	07/12/2021

Sample Reference	Moisture Content	Density (Mg/m ³)	Uniaxial Compressive Strength (N/mm ²)
BH13 5.46-5.74m	0.3	2693	72.9
BH13 9.15-9.45m	0.1	2685	35.3
BH14 6.92-7.24m	0.1	2774	41.8
BH14 8.45-8.68m	0.7	2701	46.4
BH15 5.75-6.00m	0.4	2707	48.5
BH15 8.70-8.95m	0.6	2682	45.5
BH16 7.60-8.10m	0.2	2722	64.1
BH16 9.65-10.13m	0.4	2621	79.3
BH17 9.30-9.55m	0.7	2722	16.7
BH17 10.75-11.10m	0.3	2707	78.6

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 James Ward, Operations Manager

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APPENDIX 10 – Groundwater Monitoring



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

St. Teresa's Gardens



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GROUNDWATER MONITORING

St. Teresa's Gardens



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GROUNDWATER MONITORING

St. Teresa's Gardens

APPENDIX 11 – Gas Monitoring

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)						
 GROUND INVESTIGATIONS IRELAND <small>Geotechnical & Environmental</small>	Project Number	10551-04-21			Sample Date	27/07/2021
	Client	Aecom			Current Weather	Overcast
	Site Name	St. Teresa's Gardens			Weather Prev 24 hours	
	Sampler I.D.	C.Bo			Gas Meter Model	Geotech GA5000
Sample I.D.	WS-02	WS-05	WS-06	WS-07	WS-10	
Casing Diameter (mm)						
Standpipe Diameter (mm)	50	50	50	50	50	
Stick Up (mm)	0	250	250	250	250	
Cover Condition	Good	Good	Good	Good	Good	
Standpipe Type uPVC etc.	PVC	PVC	PVC	PVC	PVC	
Total Well Depth (m)	3	3	2.9	2	3.05	
Water Level (mBBGL)	0.74	1.2	1.12		1.75	
Odour	None	None	None	None	None	
Gas Valve/Cap Condition	Good	Good	Good	Stuck in Pipe	Good	
Flow (litre/hour)	0.1	0.1	0	0.2	0.1	
CH4 (%)	0	0	0	0.2	0	
CO2 (%)	0.3	0.7	0.3	0.3	0.1	
CO (ppm)	2	2	9	1	1	
H2S (ppm)	2	1	1	1	1	
O2 (%)	20.4	19.8	20.5	20.1	20	
Barometric Pressure	1007	1007	1007	1007	1007	
Additional Comment						

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)						
 GROUND INVESTIGATIONS IRELAND <small>Geotechnical & Environmental</small>	Project Number	10551-04-21			Sample Date	05/08/2021
	Client	Aecom			Current Weather	Overcast
	Site Name	St. Teresa's Gardens			Weather Prev 24 hours	Rain
	Sampler I.D.	C.Bo			Gas Meter Model	Geotech GA5000
Sample I.D.	WS-02	WS-05	WS-06	WS-07	WS-10	
Casing Diameter (mm)						
Standpipe Diameter (mm)	50	50	50	50	50	
Stick Up (mm)	0	250	250	250	250	
Cover Condition	Good	Good	Good	Good	Good	
Standpipe Type uPVC etc.	PVC	PVC	PVC	PVC	PVC	
Total Well Depth (m)	3	3	2.9	2	3.05	
Water Level (mBBGL)	0.85	1.13	1.05		1.72	
Odour	None	None	None	None	None	
Gas Valve/Cap Condition	Good	Good	Good	Stuck in Pipe	Good	
Flow (litre/hour)	0.3	0.1	0.2	0.2	0.2	
CH4 (%)	0	0	0	0.3	0.1	
CO2 (%)	0.4	0.4	0.1	0.2	0.4	
CO (ppm)	0	1	0	0	0	
H2S (ppm)	0	0	0	1	0	
O2 (%)	20.7	20.1	20.8	20.1	19	
Barometric Pressure	995	995	995	995	995	
Additional Comment						

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)						
 GROUND INVESTIGATIONS IRELAND <small>Geotechnical & Environmental</small>	Project Number	10551-04-21			Sample Date	11/08/2021
	Client	Aecom			Current Weather	Overcast
	Site Name	St. Teresa's Gardens			Weather Prev 24 hours	Rain
	Sampler I.D.	C.Bo			Gas Meter Model	Geotech GA5000
Sample I.D.	WS-02	WS-05	WS-06	WS-07	WS-10	
Casing Diameter (mm)						
Standpipe Diameter (mm)	50	50	50	50	50	
Stick Up (mm)	0	250	250	250	250	
Cover Condition	Good	Good	Good	Good	Good	
Standpipe Type uPVC etc.	PVC	PVC	PVC	PVC	PVC	
Total Well Depth (m)	3	3	2.9	2	3.05	
Water Level (mBBGL)	0.8	1.4	1.55		1.73	
Odour	None	None	None	None	None	
Gas Valve/Cap Condition	Good	Good	Good	Stuck in Pipe	Good	
Flow (litre/hour)	0	0	0	0	0	
CH4 (%)	0	0	0	0	0	
CO2 (%)	0.3	0.5	0.1	0.4	0.4	
CO (ppm)	1	1	1	1	1	
H2S (ppm)	0	0	0	0	0	
O2 (%)	20.5	20.2	20.7	20.2	20.2	
Barometric Pressure	1009	1009	1009	1009	1009	
Additional Comment						

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)							
 GROUND INVESTIGATIONS IRELAND <small>Geotechnical & Environmental</small>	Project Number	10551-04-21			Sample Date	17/08/2021	
	Client	Aecom			Current Weather	Overcast	
	Site Name	St. Teresa's Gardens			Weather Prev 24 hours	Rain	
	Sampler I.D.	C.Bo			Gas Meter Model	Geotech GA5000	
Sample I.D.	WS-02	WS-05	WS-06	WS-07	WS-10		
Casing Diameter (mm)							
Standpipe Diameter (mm)	50	50	50	50	50		
Stick Up (mm)	0	250	250	250	250		
Cover Condition	Good	Good	Good	Good	Good		
Standpipe Type uPVC etc.	PVC	PVC	PVC	PVC	PVC		
Total Well Depth (m)	3	3	2.9	2	3.05		
Water Level (mBBGL)	0.7	1.2	1.13		1.9		
Odour	None	None	None	None	None		
Gas Valve/Cap Condition	Good	Good	Good	Stuck in Pipe	Good		
Flow (litre/hour)	0.2	0.2	0.2	0.2	0.3		
CH4 (%)	0	0	0	0	0		
CO2 (%)	0.2	0.4	0.1	0.5	0.3		
CO (ppm)	0	0	1	0	0		
H2S (ppm)	0	0	0	0	0		
O2 (%)	20.9	20.5	20.8	20.4	20.1		
Barometric Pressure	1020	1020	1020	1020	1020		
Additional Comment				Recent digging in immediate vicinity			

Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)						
 GROUND INVESTIGATIONS IRELAND Geotechnical & Environmental	Project Number	10551-04-21			Sample Date	10/09/2021
	Client	Aecom			Current Weather	Overcast
	Site Name	St. Teresa's Gardens			Weather Prev 24 hours	Rain
	Sampler I.D.	A. Browne			Gas Meter Model	Geotech GA5000
Sample I.D.	WS-02					
Casing Diameter (mm)	68					
Standpipe Diameter (mm)	50					
Stick Up (mm)	0					
Cover Condition	Good					
Standpipe Type uPVC etc.	PVC					
Total Well Depth (m)	3					
Water Level (mBBGL)	0.84					
Odour	None					
Gas Valve/Cap Condition	Good					
Flow (litre/hour)	0.1					
CH4 (%)	0					
CO2 (%)	0.3					
CO (ppm)	1					
H2S (ppm)	0					
O2 (%)	20.3					
Barometric Pressure	1008					
Additional Comment						



Ground Investigations Ireland Gas Monitoring Field Sheet (Revision V2 September 2020)							
GII GROUND INVESTIGATIONS IRELAND Geotechnical & Environmental	Project Number	10551-04-21				Sample Date	17/10/2021
	Client	DCC				Current Weather	Dry, overcast
	Site Name	St. Teresa's Garden				Weather Prev 24 hours	Dry, overcast
	Sampler I.D.	S. Graydon				Gas Meter Model	
Sample I.D.	WS02	WS05	WS06	WS07	WS10		
Casing Diameter (mm)							
Standpipe Diameter (mm)	50	50	50	50	50		
Stick Up (mm)	0	310	300	310	340		
Cover Condition	Good	Good	Good	Good	Good		
Standpipe Type uPVC etc.	uPVC	uPVC	uPVC	uPVC	uPVC		
Total Well Depth (m)	2.94	2.85	2.88	1.96	2.98		
Water Level (mBBGL)	0.7	1	0.95	1.06	1.72		
Odour	None	None	None	None	None		
Gas Valve/Cap Condition	Good	Good	Good	Valve open	Left Loose		
Flow (litre/hour)	5.7	0	0.01	0	0		
CH4 (%)	0	0	0	0	0		
CO2 (%)	0.9	0.1	0.1	0.5	0.2		
CO (%)	0	0	0	0	0		
H2S (ppm)	0	0	0	0	0		
O2 (%)	20.3	21.1	21	20.3	20.1		
Barometric Pressure	-0.27	-0.31	-0.26	-0.29	-0.28		
Additional Comment							