Appendix B

IGSL Limited

DBFL Consulting Engineers

Blanchardstown
Town Centre Development
North Co. Dublin

Ground Investigation Report

Report No. 23311

September 2021

Report

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FOREWORD

The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards

The ground investigation works for this project have been carried out by IGSL in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930 (1999), BS 1377 (Parts 1 to 9) and Engineers Ireland Specification & Related Documents for Ground Investigation in Ireland (2006). A new National Annex for use in the Republic of Ireland is currently in circulation for comment and will be adopted in the near future. In the mean time, the following Irish (IS) and European Standards or Norms are referenced:

- IS EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- IS EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- IS EN ISO 14688-1:2002 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- IS EN ISO 14688-2:2004 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Classification Principles
- IS EN ISO 14689-1:2004 Geotechnical Investigation and Testing - Identification & Classification of Rock, Part 1: Identification & Description

Reporting

Recommendations made and opinions expressed in this report are based on the strata observed in the exploratory holes, together with the results of in-situ and laboratory tests. No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations.

The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points.

This report has been prepared for DBFL Consulting Engineers and the information should not be used without prior written permission. The recommendations developed in this report specifically relate to the proposed development. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Boring Procedures

Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variations is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

Rotary Drilling Procedures
Rotary drilling methods have been used to recover bedrock samples in line with Section 3.5 of IS EN 1997-2:2007 and IS EN ISO 22475-1. Where cable percussive boreholes terminated prematurely on an obstruction within overburden, open hole drilling methods (odex or symmetrix) were utilized to advance the drillholes through the superficial deposits with coring in bedrock. The key objectives of the rock sampling were to obtain high core recovery (TCR), minimize sample disturbance and facilitate accurate identification of strength, weathering and discontinuity characteristics.

In-Situ Testing
Standard penetration tests were conducted strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005 and the Energy Ratio (E_r). A calibration certificate is available upon request. The E_r is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005).

Groundwater
The depth of entry of any influx of groundwater is recorded during the course of boring operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Engineering Logging
Soil and rock identification has been based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2002 and IS EN ISO 14689-1:2004. Rock weathering classification conforms to IS EN ISO 14689-1:2003 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2003. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Retention of Samples
Samples shall be retained for a period of 60 days following approval of the final factual report, as detailed in the Scope of Works.

1.0 Introduction and Objectives

It is proposed to redevelop three existing car parks at the Blanchardstown Town Centre in North Co. Dublin. The car park sites are denoted Site A, B and C as shown on Figure 1.

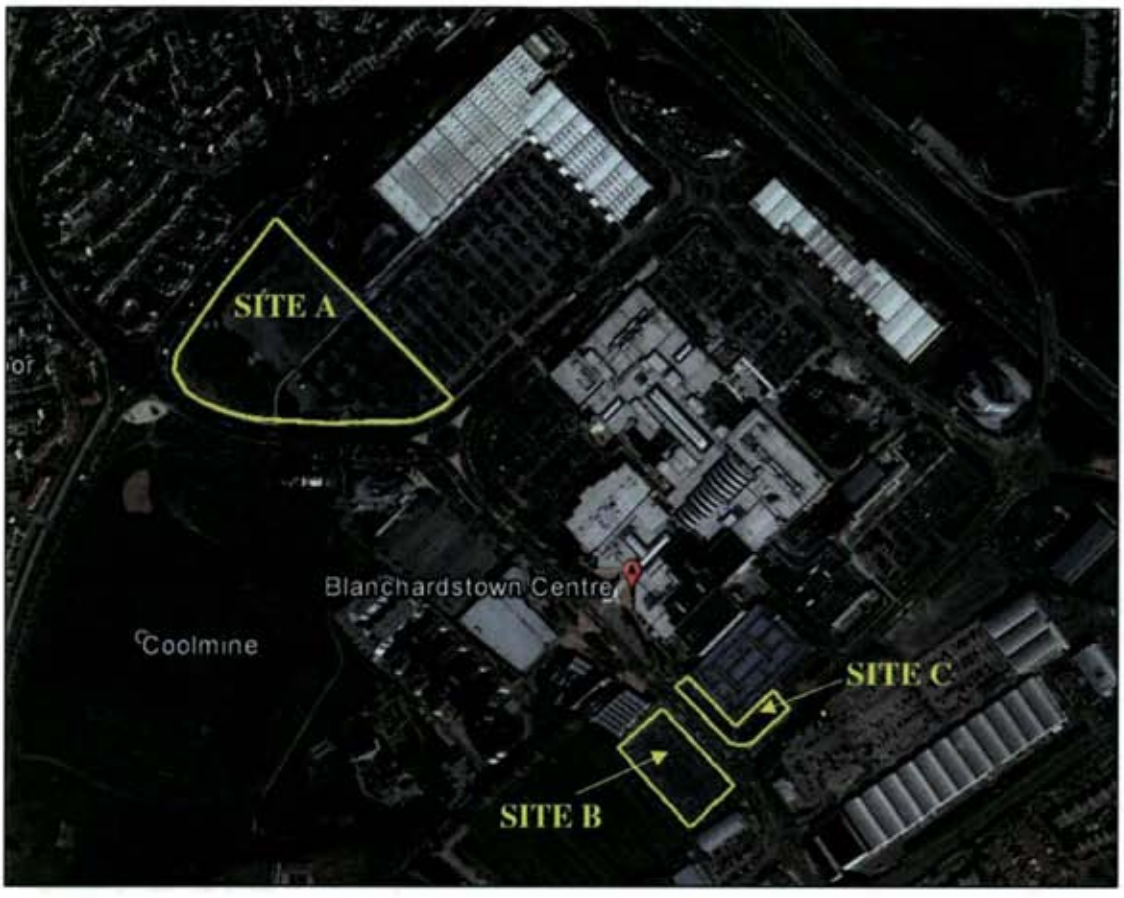


Figure 1 – Site Locations

In May 2021, IGSL Limited were appointed by the project consulting engineers, DBFL, to conduct a ground investigation at each of the three sites.

The objectives of the investigation were as follows:

- Ascertain the soil stratigraphy at the site
- Ascertain suitable bearing strata for structural foundations
- Determine the infiltration characteristics of the subsoils with respect to soakaway design
- Investigate the potential for sulphate attack on buried concrete
- Investigate for the presence of subsoil contamination
- Assess the suitability for the disposal of excavated soils to an inert landfill

This report presents the findings of the ground investigation and discusses these findings with respect to future development of this site. The environmental elements of the investigation were interpreted by O'Callaghan Moran and discussed in their Waste Characterisation Assessment, which is presented under separate cover.

2.0 Scope of Works

The exploratory works included the following:

- 22 nr. trial pits (inspection pits at rotary corehole locations)
- 22 nr. rotary coreholes
- 22 nr. window samples (at rotary corehole locations)
- 3 nr. infiltration tests
- A programme of geotechnical, chemical and environmental laboratory testing

2.1 Trial (Inspection) Pits

Trial pitting was performed in 22 locations (TP01 to TP22) using hand-digging with assistance from a 3-tonne tracked excavator. The prime purpose of the trial pits was to check for buried services in advance of rotary drilling and also to recover samples of the upper soils for environmental testing. The pits were typically dug to the target depth of 1.2 m BGL, although some pits terminated at shallower depths due to obstructions.

The trial pits were logged and sampled by an IGSL geotechnical engineer in accordance with BS 5930 (2015) and were excavated

Pit sidewalls were assessed in terms of their short-term stability and any instances of groundwater ingress were recorded. Environmental sub-samples were procured and placed in appropriate containers (amber glass jars and vials).

The trial pits were backfilled with the as-dug arisings and reinstated to the satisfaction of IGSL's site geotechnical engineer. The trial pit logs in Appendix 1 include descriptions of the soils encountered, groundwater conditions and stability of the pit sidewalls.

Since the trial pits were located within existing car parks, the surface materials comprised tarmacadam, which was underlain by a support layer of granular fill (hardcore). The total pavement construction typically extended to depths of between 0.35 and 0.5 m BGL.

The underlying soils consisted of predominately firm to stiff (locally soft to firm) brown sandy gravelly CLAY with cobbles, which remained present to the excavated depths.

In Car Park A, a thin layer of clay fill (Made Ground) was present beneath the granular fill. Some fragments of brick and plastic pipe were present within the fill material, which terminated at 0.6 m BGL. Similar material was encountered in trial pit TP20 (Car Park C) to a depth of 1.1 m BGL. Extraneous (non-natural) material in this location included fragments of concrete and plastic.

While most pits terminated within sandy gravelly clay at a depth of 1.2 m BGL, coarse granular material was encountered within the upper metre in trial pits TP01, 02, 08, 11 and 13 in Site A, and in TP16 in Site B.

All trial pits remained dry and stable during the period of excavation (typically 45 minutes). At TP02, seepage at a depth of 0.45 m BGL was attributed to surface water infiltration through the granular layer.

2.2 Window Samples

Window samples WS01 to WS22 were undertaken at each corehole and trial pit location. The prime purpose of the window samples was to recover undisturbed samples of the overburden soils from which environmental test specimens could be extracted.

Window samples are advanced by driving a steel sampling tube under constant percussive effort. The soils enter the tube within a protective plastic liner, which is withdrawn after every metre of progress. The liners are then placed in wooden channel boxes and transported to the IGSL offices where they are logged and sub-sampled as required.

Environmental sub-samples were extracted from the window sample recovery and placed in appropriate containers (amber glass jars and vials).

The window samples advanced through the base of the trial (inspection) pits, thereby commencing recovery below 1.2 m BGL in most instances.

Similar to the trial pits, the window samples encountered firm / stiff brown sandy gravelly CLAY to the sampled depth of 2.0 m BGL. In some instances, coarse obstructions (cobbles / boulders) prevented this depth from being achieved.

The window sample records are presented in Appendix 2 of this report.

2.3 Rotary Coreholes

Following the excavation of trial pits, rotary coreholes RC01 to RC22 were drilled using a Beretta T44 tracked coring rig in order to investigate for the presence of bedrock.

Symmetrix open hole techniques were used to advance through the overburden deposits, reverting to rotary coring in bedrock. It is noted that Symmetrix drilling produces highly pulverised drill returns and therefore, soil descriptions based on these returns are very approximate.

Rotary coring of bedrock was carried out using an air/mist flush to maximize recovery. Cores of 78 mm diameter were recovered and placed securely in wooden storage boxes. The recovered core was inspected by a qualified engineering geologist and logged in detail at IGSL's laboratory.

All cores were labelled and photographed for inclusion in the report. Photographs are presented digitally for ease of browsing and to permit close examination at high resolution. Corehole records and photographs are included in Appendix 3 of this report.

Table 1 shows the terminal depth of the window samples and the depths to weathered rock in each adjacent corehole at Site A. Table 2 shows similar information for Sites B and C. Also shown are the interpreted soil descriptions below the window sample depths, although it is again stressed that these are based on highly pulverised drill returns and should be taken as approximate only.

Location	Window Sample Depth (m BGL)	Overburden below window sample depth (based on Pulverised Drill Returns only)	Depth to Weathered Bedrock (m BGL)	Elevation of Weathered Bedrock (m OD)
RC01	2.00	Clayey GRAVEL	2.10	59.03
RC02	2.00	Clayey GRAVEL	2.30	58.95
RC03	1.50	Clayey GRAVEL	2.90	58.61
RC04	1.40	Clayey GRAVEL	2.70	59.46
RC05	1.80	Gravelly CLAY	2.60	60.07
RC06	2.00	Clayey GRAVEL	2.30	59.35
RC07	2.00	Clayey GRAVEL	2.30	59.19
RC08	1.10	Gravelly CLAY	2.40	59.10
RC09	2.00	Clayey GRAVEL	2.40	59.69
RC10	2.00	Gravelly cobbly CLAY	2.60	59.21
RC11	2.00	Gravelly CLAY	2.10	59.67
RC12	1.40	Clayey GRAVEL	2.40	59.43
RC13	1.10	Gravelly CLAY / clayey GRAVEL	2.40	60.01

Table 1 – Summary of Rotary Coring – Site A

Location	Window Sample Depth (m BGL)	Overburden below window sample depth (based on Pulverised Drill Returns only)	Depth to Weathered Bedrock (m BGL)	Elevation of Weathered Bedrock (m OD)
RC14	1.60	Clayey GRAVEL	2.80	59.58
RC15	2.00	Clayey GRAVEL	2.80	59.33
RC16	1.50	Gravelly CLAY	3.50	58.52
RC17	1.40	Clayey GRAVEL	3.00	59.68
RC18	2.00	Gravelly CLAY	3.30	59.11
RC19	3.00	Gravelly CLAY	3.90	58.32
RC20	1.60	Gravelly CLAY	2.50	59.38
RC21	1.60	Gravelly CLAY	3.00	58.28
RC22	1.50	Gravelly CLAY	3.00	58.12

Table 2 – Summary of Rotary Coring – Sites B and C

It can be seen from Table 1 that the depth to weathered bedrock at Site A ranged between approximately 2 and 3 m BGL (58.6 to 60.0 mOD) across the site. At Sites B and C, the depth to bedrock mostly ranged between approximately 2.5 and 3.5 m BGL (58.3 to 59.7 mOD)

The overlying overburden soils were assessed as gravelly clays or clayey gravels. However, it is noted that the water flush medium used during rotary drilling can "wash-out" clay soils, giving the drill returns the appearance of coarse granular material.

The bedrock was classified as predominately weak to strong black / dark grey fine-grained muddy LIMESTONE. The limestone was predominately fresh to locally slightly weathered and Pyrite crystallisation was locally evident.

Total Core Recovery (TCR) was 100% for all runs. Solid Core Recovery (SCR) was generally in the range 60 to 90% within the upper weathered limestone, locally reducing to 16% where the bedrock horizon was highly weathered and fractured. RQD values showed similar variations.

Photo 1 shows typical core recovery of the upper Limestone at Site A (RC03). The weathered (fractured) condition of the upper bedrock is clearly evident.

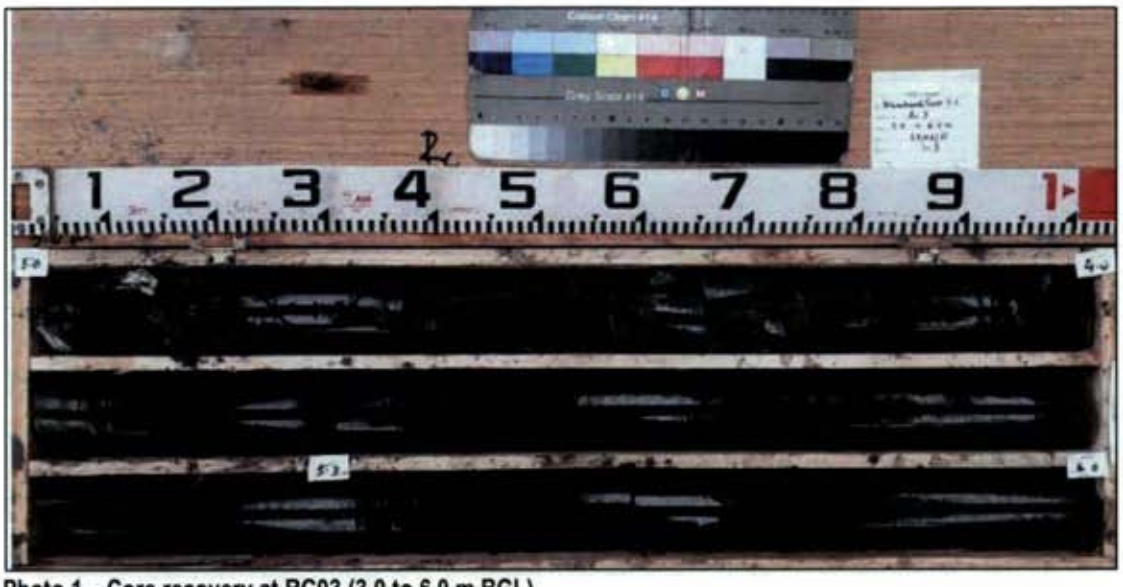


Photo 1 – Core recovery at RC03 (3.0 to 6.0 m BGL)

Photo 2 shows typical core recovery of the upper bedrock at Site B (RC15). Fracturing (weathering) of the upper limestone is clearly evident within the upper metre of recovery, with fresher rock present below approximately 4 m BGL.

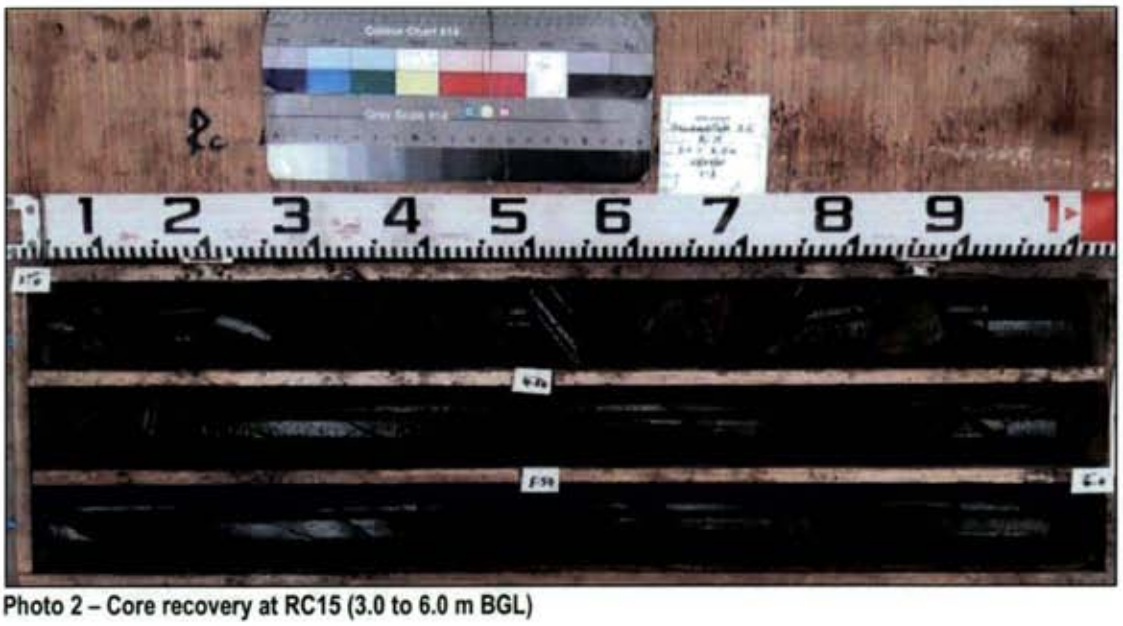


Photo 2 – Core recovery at RC15 (3.0 to 6.0 m BGL)

Photo 3 shows typical core recovery at Site C (RC21). The bedrock is generally fresh (intact) from the outset and only slightly fractured.

Photo 3 – Core recovery at RC21 (3.0 to 6.0 m BGL)

2.4 Infiltration Tests

Infiltration tests were undertaken in three locations (SA01 to SA03) to ascertain the suitability of the sub-soils for soakaway purposes. Tests SA01 and SA02 were located within Site A, while SA03 was positioned within Site B.

Testing was performed in accordance with BRE Digest 365 'Soakaway Design'.

To obtain a measure of the infiltration rate of the sub-soils, water is poured into the test pit to ensure total saturation of the sub-soils. This procedure is typically repeated twice more, and records taken of the fall in water level against time.

All test pits encountered a surfacing of Tarmacadam and granular fill, which was underlain by firm and stiff sandy gravelly clay.

Within Site A, test SA01 recorded a minimal fall in water level, which was not sustained. Test SA02 showed no infiltration during the test period.

At Site B, SA03 recorded a slow but steady fall in water level during the test period of 90 minutes, resulting in a relatively low infiltration rate of 0.0001 m/min (1.75×10^{-6} m/s).

2.5 Groundwater

No groundwater strikes were observed during drilling, although it is noted that the water flush medium used during rotary drilling and coring can mask or obscure groundwater strikes.

Water was present in all coreholes at the end of drilling, mostly at depths in the range 2.0 to 2.5 m BGL, locally deepening to 4.4 m BGL.

Since the short period of drilling rarely permits the true water table to establish, standpipes were installed in RC01, 09 and 16 in order to permit long-term groundwater monitoring.

The site was revisited on two occasions post-fieldwork in order to record groundwater levels in the standpipes. These are summarised on Table 3.

Location	Corehole Depth (m BGL)	Top of Response Zone (m BGL)	Base of Response Zone (m BGL)	Groundwater Depth / Elevation 27/07/2021 (m BGL)	Groundwater Depth / Elevation 22/09/2021 (m BGL)
RC01	10.20	2.00	10.20	1.19 / 59.94	1.17 / 59.96
RC09	10.00	2.00	10.00	1.96 / 60.13	1.97 / 60.12
RC16	10.00	2.00	10.00	1.97 / 60.05	1.50 / 60.52

Table 3 – Summary of Groundwater Monitoring

2.6 As-Built Survey

On completion of fieldworks, the location (x,y) and elevation (z) of each exploratory location was determined by detailed survey using GPS Realtime Kinetic survey instrument.

The National Grid survey co-ordinates and ground levels related to Malin Head Datum are presented on the exploratory hole records and these were used to plot the as-built locations on the Site Plan in Appendix 7 of this report.

2.7 Waste Characterisation Assessment

The results of environmental laboratory analyses on recovered samples were issued to environmental specialists O'Callaghan Moran (OCM), who have used this data to produce a detailed Waste Characterisation Assessment (WCA).

Their report, which is presented under separate cover, classifies the samples as either Hazardous or Non-Hazardous and assigns the appropriate List of Waste (LoW) code to each. Also included are recommended waste receptors for landfill disposal purposes.

3.0 Laboratory Testing

Laboratory testing was undertaken on selected samples of soil and rock. The results of rock strength testing are included in Appendix 5, while the results of chemical and environmental testing of both soil and rock are presented in Appendix 6.

3.1 Point Load and Uniaxial Compressive Strength Tests (Rock Core Samples)

Point Load Index tests were undertaken on selected rock core samples.

The Point Load Index Test provides a rapid strength assessment from rock fragments or cores. The test specimen is compressed between two cones loaded from a hydraulic hand pump. The core fails due to the tensile forces over the diametral area between the points. The strength at failure is expressed as the point load index Is.

For purposes of comparison the Is values are corrected to give the equivalent strength for a 50 mm diameter specimen. The compressive strength of the rock (qc) can be established using a correlation suggested by Goodman where UCS ≈ 18 to 24 x Is50.

The results of rock strength testing showed Is50 values mostly in the range 1 to 3 MPa, with an average of 2.5 MPa. These values correlated to equivalent UCS values in the range 20 to 60 MPa.

Uniaxial Compressive Strength (UCS) tests showed a similar scatter of results, measuring strengths in the range 2.5 to 65 MPa, but mostly in the range 20 to 50 MPa. In accordance with Table 5 of EN ISO 14869-1, these strengths would confirm the rock to be predominately Weak to Medium Strong.

3.2 Sulphate and pH Analyses

Determination of pH values and Sulphate content were conducted on five samples by a nominated accredited environmental laboratory (Eurofins Chemtest). Results are presented in reports prepared by the laboratory (Appendix 6).

The results of water-soluble (water/soil extract) Sulphate and pH analyses of soils revealed low SO_4 levels (maximum Water-Soluble Sulphate of 0.2 g/l) and near-neutral pH levels of 8.4 to 8.8. A maximum water-soluble Sulphate level of 0.42 g/l was measured for the rock core samples.

Twelve samples of limestone, as recovered from the rotary coreholes, were tested for Total Sulphur and Acid Soluble Sulphate. Testing was undertaken by UK laboratory Nicholls Colton in accordance with EN 1744.

The tests revealed Total Sulphur contents in the range 0.12 to 0.42% in association with Acid Soluble Sulphate contents of 0.02 to 0.06% SO_4.

The Nicholls Colton report is also presented in Appendix 6.

3.3 Environmental Laboratory Testing

A total of 22 soil samples were tested in accordance with the RILTA Suite, which is used to determine the suitability of soils for disposal to a landfill. The RILTA suite includes Heavy Metals, Polycyclic Aromatic Hydrocarbons (PAH), TPH-CWG, BTEX, PCB and Total Organic Carbon (TOC) carried out on dry soil samples. Also included are leachate analyses, whereby leachate is generated in accordance with CEN 10:1 specification and this is tested for the presence of recognised contaminants including Heavy Metals, Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS). An Asbestos Screen is also included in the RILTA Suite.

The analyses were carried out by Eurofins Chemtest Laboratory and their reports are presented in Appendix 6.

4.0 Discussion

4.1 General

The ground conditions at Sites A, B and C have been shown to be relatively homogenous.

A surfacing of Tarmacadam and granular fill (Clause 804 hardcore or similar) overlies all three sites.

The underlying natural soils comprise firm to stiff brown sandy gravelly CLAY. This becomes coarser with depth, grading to clayey angular GRAVEL with cobbles. While only pulverised drill returns of this material were recovered using "open hole" drilling methods, it is likely that the coarse granular material is representative of the highly to completely weathered limestone bedrock (residual soil).

Rotary drilling and coring have confirmed the presence of bedrock at depths of between 2 and 3 m BGL at Site A, and between approximately 2.5 and 3.5 m BGL at Sites B and C. For all sites, the bedrock levels lie within an elevation range of 58 to 60 m OD.

The bedrock consists of weak to strong Limestone, which is locally heavily fractured at upper levels, while the "intact" limestone is predominately fresh, with only localised moderately weathered zones.

Groundwater strikes were not observed within the trial pits or window samples. On completion of drilling, water was observed at a shallowest depth of 1.9 m BGL in the coreholes.

Standpipes were installed within three rotary coreholes, and groundwater monitoring has shown shallowest levels of 1.2 m BGL (60.0 mOD) at Site A and 1.5 m BGL (60.5 mOD) at Site B.

4.2 Structural Foundations

While the particular details of any proposed development are not yet confirmed, it is understood that future structural foundations will be supported on the limestone bedrock.

With reference to Tables 1 and 2, it can be seen that the weathered limestone is presented at depths ranging between 2 and 3 m BGL at Site A and between approximately 2.5 and 3.5 m BGL at Sites B and C.

Where foundations are constructed directly on the limestone bedrock, an allowable bearing pressure of the order of 600 kPa could be assumed for the upper weathered and highly fractured bedrock (residual soils), increasing to c. 1.5 MPa within "intact" limestone. Based on the findings of the coreholes, it is expected that the removal of circa 0.5 metres of upper bedrock would be sufficient to reach the "intact" limestone.

4.3 Groundwater and Trench Stability

The trial pits remained stable during the period of excavation (typically 45 minutes) but were limited to a maximum depth of 1.2 m BGL. While no water was observed in the pits, this is unsurprising, given their limited depth.

Subsequent groundwater monitoring of standpipes has shown standing groundwater levels in the range 60.0 to 60.5 mOD (1.2 to 2.0 m BGL).

The observations made during trial pitting suggests that temporary foundation excavations to depths of 1.2 m BGL will remain mostly dry in the short term. Any water ingress is likely to arise from surface water infiltration and should be controllable using nominal pumping.

A key consideration if adopting trench / fill techniques for foundations will be the stability of open excavations. As noted previously, the trial pits remained stable during the period of excavation, although these were limited to 1.2 m depth. Some instability could be expected within deeper granular soils (or highly fractured weathered rock), particularly where groundwater is present.

Where excavations are left open for extended periods (e.g. drainage trenches), instability is likely to occur as the sidewalls relax, in which case trench control measures (e.g. trench box) will be required.

If basements are constructed, the associated mass excavation (typically c. 4 metres for single-level) would be expected to intercept the groundwater table. The rate of ingress is difficult to predict, since the groundwater table was not intercepted in the trial pits and therefore could not be observed. However, increased flow rates could be expected where excavations intercept the upper bedrock, which is highly fractured and will likely permit relatively free flowing ingress.

Based on the monitoring to date, water levels could rise to at least 1.2 m BGL, and possibly higher. For this reason, ongoing monitoring of standpipes would be recommended in order to provide a better understanding of the true groundwater level, and its fluctuations due to seasonal change or prolonged periods of heavy rainfall.

4.4 Excavation of Existing Materials

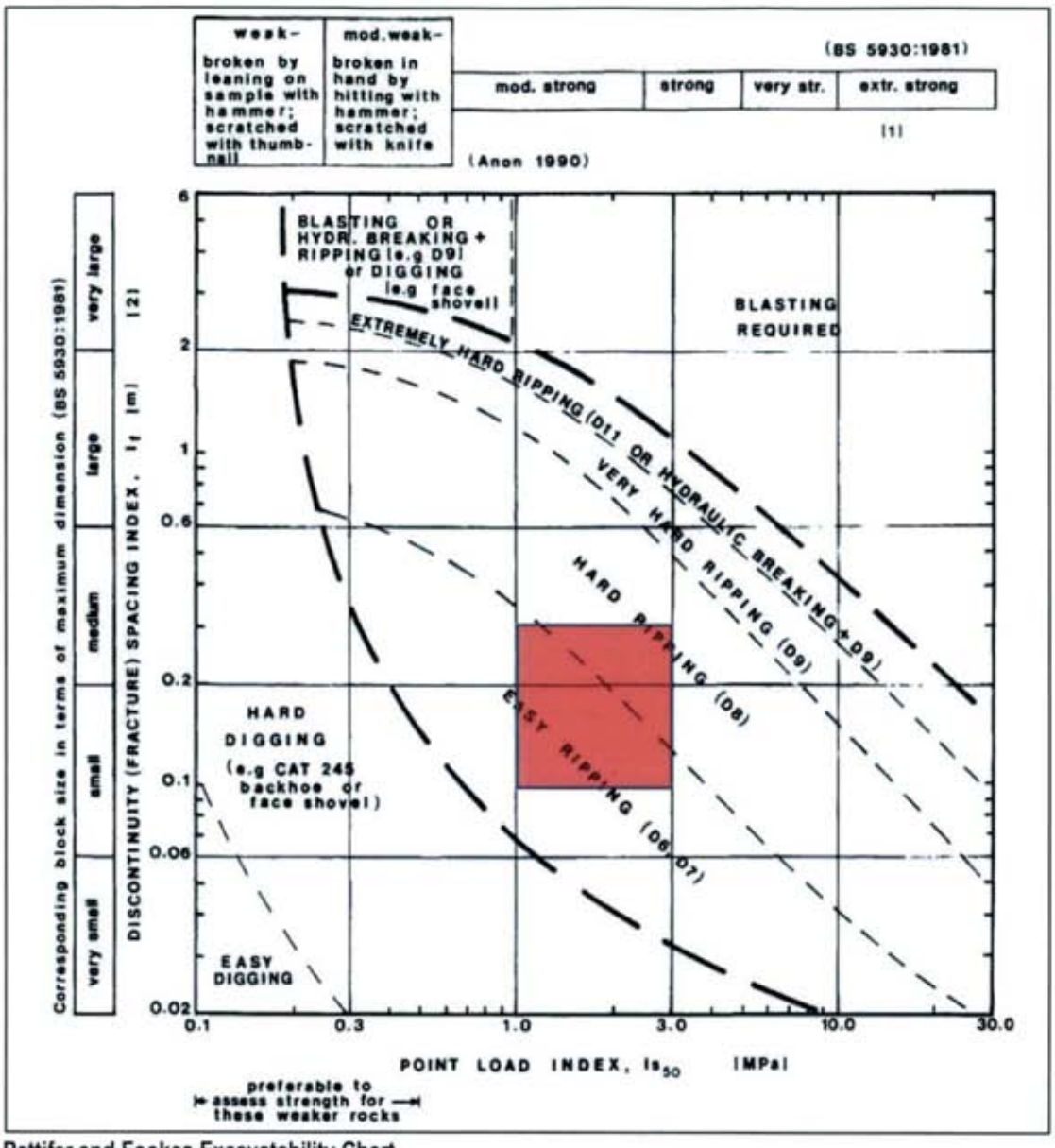
The inspection pits were excavated through firm and stiff sandy gravelly clay using a 6.5 tonne digger, which achieved the target depth of 1.2 m BGL in most locations. In some instances, the presence of large cobbles and boulders impeded excavation. However, the limited capacity of the excavator must be taken into account and it is likely that a larger machine (e.g. 20 tonne excavator equipped with a toothed bucket) could have loosened the cobbles / boulders and advanced further, possibly to the weathered bedrock horizon.

If a basement is proposed, a minimum excavation depth of circa 4 metres would be expected. With reference to Tables 1 and 2, the removal of up to 2 metres of Limestone bedrock may therefore be required in order to form the basement dig.

When estimating the excavatability of the limestone bedrock, reference should be made to the graph produced by Pettifer and Fookes, which categorises rock excavatability based on the Fracture Spacing Index and Point Load Index (Is_{50}) of the rock.

The Is_{50} values mostly range between 1 and 3 MPa. The bedrock Fracture Spacings above the typical basement depth of c. 8 m BGL are mostly clustered in the range 100 to 250 mm, although there are some instances of up to 400 mm spacings. To permit a preliminary assessment of rock excavatability with respect to the Pettifer and Fookes Chart, a typical Fracture Spacing range of 100 to 300 mm is suggested.

The adopted Fracture Spacing and Is_{50} strength ranges have been plotted on the Pettifer and Fookes chart. The relevant zone within the chart, corresponding to the adopted ranges is highlighted.



Pettifer and Fookes Excavatability Chart

Using these guideline parameters, the excavatability of the upper limestone bedrock is categorised as Easy to Hard Ripping, requiring the use of a D7 or D8 Caterpillar (32 tonne) or equivalent. However, it should be noted that the Pettifer and Fookes chart tends to underestimate the excavatability characteristics of Irish rock masses. Civil engineering contractors should be aware of this and carefully consider the difficulties associated with excavatability within intact limestone. It is therefore anticipated that large tracked excavators (40T) equipped with heavy duty hydraulic breakers (8T) will be required to efficiently or economically loosen the rock mass

Due to the nature of ripping and breaking, this will cause both vibratory and noise disturbance. Tolerable levels of both should be established and agreed with the civils contractor prior to excavation works commencing. It will be necessary to position vibration monitors adjacent to nearby structures to check that specified peak particle velocities are not exceeded.

In advance of excavation operations, it would be advisable to conduct dilapidation surveys of any vulnerable structures so that their initial condition can be established.

4.5 Chemical Attack on Buried Concrete

The results of Sulphate and pH testing showed low Sulphate and near-neutral pH levels.

With reference to Table C1 of BRE Special Digest 1: 2005, the level of Sulphate suggests a design Sulphate Class of DS-1. Assuming a static groundwater table, an ACEC (Aggressive Chemical Environment for Concrete) Classification of AC-1s is applicable, since the pH levels are greater than 5.5.

In terms of concrete to I.S. EN 206-1:2013, the chemical testing demonstrates that concrete could be manufactured to Class XA1.

4.6 Soakaway Design

Infiltration testing in two locations at Site A recorded both low and unsustained infiltration. This is not surprising, since very low permeability would be expected of the upper clay soils. In soils such as these, it is generally recommended that conventional soakaway systems are not attempted.

While deepening of the soakaways would ordinarily be considered in these circumstances, it is noted that the groundwater levels are relatively shallow (up to 1.2 m BGL) and conventional soakaway systems will not function below the water table.

At Site B, the upper soils exhibited a very low infiltration rate of 1.75×10^{-6} m/s. While consideration could be given to a soakaway system such as permeable paving or shallow trenches, the required storage volume (attenuation) is likely to be very high, which may render such designs impractical.

In light of the above, it may be preferable to discharge surface run-off water to an existing surface water system, using attenuation techniques to regulate the flow.

4.7 Potential for Pyritic Heave

As discussed in Section 2.3, the bedrock comprises grey/black "muddy" limestone. There was evidence of localised pyrite crystallisation, which is not uncommon amongst the Dublin limestones.

With regard to the potential for pyritic heave of foundations, there should be no concerns where foundations are constructed on suitably prepared limestone. Any loose / unconsolidated material (mudstone / shale) should be removed and the bedrock formation blinded with lean-mix concrete without delay. The purpose of this is to reduce the timeframe for potential oxidation.

Foundations can then be constructed directly on the lean mix concrete with no residual concerns regarding pyritic heave.

4.8 Chemical Assessment of Bedrock

Chemical analyses of rock core samples show very low Sulphate (Acid Soluble) and Sulphur levels.

If this material is subsequently crushed for re-use as capping on this site, the maximum Total Sulphur level of 0.40% satisfies the Upper Limit of 1% for Class 6F Capping, as specified in Table 6/1 of the Series 600 (Specification for Road Works).

While the chemical requirements for reuse have been satisfied, any bedrock proposed for reuse will require further assessment in accordance with Series 600 of the Specification for Roadworks in order to assess its mechanical and durability properties.

5.0 References

1. BS 5930:1999 +A2:2010 Code of Practice for Site Investigations; British Standards Institute
2. Manual of Contract Documents for Highway Works, Volume 5, Section 3, Ground Investigation, Part 4: Specification
3. BRE Special Digest 1: 2005 – Concrete in aggressive ground
4. EN 1997-3; Eurocode 7: Geotechnical Design – Part 3: Design assisted by field testing; 1997
5. BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute;1990.
6. BRE Digest 365, September 1991, British Research Establishment
7. Manual of Contract Documents for Road Works, Volume 1: Specification for Road Works (March 2007)
8. Manual of Soil Laboratory Testing, Volume 3; K.H. Head
9. ISRM – Suggested Methods for Determining Point Load Strength
10. ISRM – Suggested Methods for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials
11. TRL Report 447- Sulphate specification for structural backfills

Appendix 1

Trial (Inspection) Pit Records

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,700.34 E 739,477.88 N
		DATE STARTED	26/05/2021
		DATE COMPLETED	26/05/2021
CLIENT		**GROUND LEVEL (m)**	61.13
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	61.08						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	60.78						
Firm to stiff, brown, slightly sandy gravelly SILT/CLAY with some flat angular cobbles		0.65	60.48		AA138472	Env	0.50-0.85		
Very dense, brown/grey mottled, silty angular GRAVEL with angular cobbles (possible weathered rock)		0.85	60.28						
TP terminated due to possible boulders End of Trial Pit at 0.85m									

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP01 dug for check of any underground services in WS01/RC01 the location

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,734.91 E 739,445.10 N
		DATE STARTED	27/05/2021
		DATE COMPLETED	27/05/2021
CLIENT		**GROUND LEVEL (m)**	61.25
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.04	61.21						
	MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)									
	Firm to stiff, greyish brown, slightly sandy gravelly SILT/CLAY with some angular to subangular cobbles		0.45	60.80		AA138475	Env	0.50-1.00		
1.0	Very dense, grey, slightly silty angular GRAVEL with angular cobbles (possible weathered rock)		0.90	60.35						
	End of Trial Pit at 1.20m		1.20	60.05						
2.0										
3.0										
4.0										

Groundwater Conditions
Slightly seepage at 0.45m

Stability
TP stable

General Remarks
TP02 dug for check of any underground services in WS02/RC02 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,771.10 E 739,409.42 N
		DATE STARTED	27/05/2021
		DATE COMPLETED	27/05/2021
CLIENT		**GROUND LEVEL (m)**	61.51
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	61.46						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.16						
Firm to stiff, brown, slightly sandy gravelly silty CLAY with some flat angular cobbles					AA138476	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	60.31						

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP03 dug for check of any underground services in WS03/RC03 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP04**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,805.40 E 739,377.29 N
		DATE STARTED	27/05/2021
		DATE COMPLETED	27/05/2021
CLIENT		**GROUND LEVEL (m)**	62.16
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.07	62.09						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.81						
Firm to stiff, brown to greyish brown, slightly sandy gravelly SILT/CLAY with some angular cobbles					AA138577	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	60.96						

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP04 dug for check of any underground services in WS04/RC04 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP05**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,839.82 E 739,345.44 N
		DATE STARTED	28/05/2021
		DATE COMPLETED	28/05/2021
CLIENT		**GROUND LEVEL (m)**	62.67
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.08	62.59						
MADE GROUND (comprised of brown/grey angular gravel and cobbles - C.L.804)		0.35	62.32						
Firm to stiff, brown, slightly sandy slightly gravelly CLAY with some roots, occasional small pieces of red brick, and single pieces of old plastic pipe (FILL)		0.60	62.07		AA138484	Env	0.50-1.00		
Stiff to very stiff, light brown/brown, slightly sandy slightly gravelly SILT/CLAY with some angular cobbles		1.10	61.57						
End of Trial Pit at 1.10m									

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP13 dug for check of any underground services in WS13/RC13 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,660.14 E 739,436.05 N
		DATE STARTED	26/05/2021
		DATE COMPLETED	26/05/2021
CLIENT		**GROUND LEVEL (m)**	61.65
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	61.60						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.30						
Firm to stiff, greyish brown, slightly sandy gravelly SILT/CLAY with some angular to subangular cobbles					AA138471	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	60.45						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP06 dug for check of any underground services in WS06/RC06 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP07**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,702.56 E 739,411.01 N
		DATE STARTED	26/05/2021
		DATE COMPLETED	26/05/2021
CLIENT		**GROUND LEVEL (m)**	61.49
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	61.44						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.30	61.19						
Firm, light brown/brown, slightly sandy gravelly SILT/CLAY with occasional cobbles		0.55	60.94		AA138473	Env	0.50-1.00		
Firm to stiff, brown/grey mottled, very gravelly SILT/CLAY with many angular cobbles (possible very silty/clayey gravel)									
End of Trial Pit at 1.20m		1.20	60.29						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP07 dug for check of any underground services in WS07/RC07 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP08**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,741.29 E 739,379.86 N
		DATE STARTED	27/05/2021
		DATE COMPLETED	27/05/2021
CLIENT		**GROUND LEVEL (m)**	61.50
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.05	61.45						
	MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.30	61.20						
	Firm to stiff, greyish brown, slightly sandy gravelly SILT/CLAY with some angular to subangular cobbles					AA138479	Env	0.50-0.90		
1.0	TP terminated due to possible boulders End of Trial Pit at 0.95m		0.95	60.55						
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP08 dug for check of any underground services in WS08/RC08 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,776.26 E 739,346.97 N
		DATE STARTED	27/05/2021
		DATE COMPLETED	27/05/2021
CLIENT		**GROUND LEVEL (m)**	62.09
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	62.04						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.74						
Soft to firm, brown, very sandy slightly gravelly SILT/CLAY with occasional cobbles					AA138478	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	60.89						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP09 dug for check of any underground services in WS09/RC09 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP10**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,626.36 E 739,401.60 N
		DATE STARTED	26/05/2021
		DATE COMPLETED	26/05/2021
CLIENT		**GROUND LEVEL (m)**	61.81
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.08	61.73						
	MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)									
	Firm, brown/grey mottled, sandy slightly gravelly SILT/CLAY		0.55	61.26		AA138470	Env	0.60-1.00		
1.0	End of Trial Pit at 1.20m		1.20	60.61						
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP10 dug for check of any underground services in WS01/RC10 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP11**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,670.39 E 739,359.93 N
		DATE STARTED	26/05/2021
		DATE COMPLETED	26/05/2021
CLIENT		**GROUND LEVEL (m)**	61.77
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.05	61.72						
MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.42						
Firm to stiff, brown to greysih brown, slightly sandy gravelly SILT/CLAY with many angular cobbles					AA138473	Env	0.50-1.00		
TP terminated due to possible boulders End of Trial Pit at 1.00m		1.00	60.77						

0.0 1.0 2.0 3.0 4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP11 dug for check of any underground services in WS11/RC11 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP12**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,692.68 E 739,338.09 N
		DATE STARTED	28/05/2021
		DATE COMPLETED	28/05/2021
CLIENT		**GROUND LEVEL (m)**	61.83
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.06	61.77						
	MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	61.48						
	Firm to stiff, brown, slightly sandy gravelly SILT/CLAY with some angular cobbles					AA138482	Env	0.50-1.00		
1.0	End of Trial Pit at 1.20m		1.20	60.63						
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP10 dug for check of any underground services in WS10/RC10 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP13**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	706,756.55 E 739,321.20 N
		DATE STARTED	28/05/2021
		DATE COMPLETED	28/05/2021
CLIENT		**GROUND LEVEL (m)**	62.41
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.06	62.35						
	MADE GROUND (comprised of grey angular gravel and cobbles - C.L.804)		0.35	62.06						
	Stiff, light brown/brown, slightly sandy gravelly SILT/CLAY with some angular cobbles					AA138483	Env	0.50-0.80		
	TP terminated due to possible boulders End of Trial Pit at 0.85m		0.85	61.56						
1.0										
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP13 dug for check of any underground services in WS13/RC13 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP14**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,055.04 E 739,043.48 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.38
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.09	62.29						
	MADE GROUND (comprised of dark grey angular gravel - C.L.804)									
	Soft to firm, brown, slightly sandy slightly gravelly CLAY with very occasional cobbles		0.50	61.88		AA156051	Env	0.50-1.00		
1.0										
	End of Trial Pit at 1.20m		1.20	61.18						
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP14 dug for check of any underground services in WS14/RC14 the location

IGSL_TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP15**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,090.74 E 739,008.76 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.13
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.07	62.06						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)		0.50	61.63						
Firm, brownish grey, sandy slightly gravelly SILT/CLAY		0.65	61.48		AA156052	Env	0.50-1.00		
Firm, light brown/brown, sandy slightly gravelly SILT/CLAY		0.90	61.23						
Firm, light brown/brown, sandy gravelly SILT/CLAY with occasional cobbles		1.20	60.93						
End of Trial Pit at 1.20m									

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP15 dug for check of any underground services in WS15/RC15 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP16**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,111.87 E 738,969.93 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.02
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TARMAC		0.10	61.92						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)									
Firm, brown, sandy slightly gravelly slightly silty CLAY		0.60	61.42		AA156051	Env	0.60-1.00		
Firm, brown, sandy slightly gravelly slightly silty CLAY with some subangular cobbles		0.90	61.12						
1.0 TP terminated due to possible boulders End of Trial Pit at 1.10m		1.10	60.92						
2.0									
3.0									
4.0									

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP16 dug for check of any underground services in WS16/RC16 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP17**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,019.77 E 739,003.28 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.68
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.09	62.59						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)		0.45	62.23						
Firm, brown, slightly sandy slightly gravelly CLAY with some cobbles		0.70	61.98		AA156053	Env	0.50-1.00		
Firm to stiff, brown, slightly sandy gravelly CLAY with some subangular to subrounded cobbles		1.20	61.48						
End of Trial Pit at 1.20m									

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP17 dug for check of any underground services in WS17/RC17 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP18**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,054.08 E 738,968.38 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.41
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.09	62.32						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)		0.40	62.01						
Firm to stiff, brown, slightly sandy gravelly CLAY with some subangular to subrounded cobbles					AA156054	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	61.21						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP18 dug for check of any underground services in WS18/RC18 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP19**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,084.58 E 738,942.44 N
		DATE STARTED	08/06/2021
		DATE COMPLETED	08/06/2021
CLIENT		**GROUND LEVEL (m)**	62.22
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.07	62.15						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)		0.33	61.89						
Soft to firm, brown, sandy gravelly CLAY with occasional cobbles					AA156055	Env	0.50-1.00		
End of Trial Pit at 1.20m		1.20	61.02						

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP19 dug for check of any underground services in WS19/RC19 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP20**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,096.13 E 739,064.60 N
		DATE STARTED	17/06/2021
		DATE COMPLETED	17/06/2021
CLIENT		**GROUND LEVEL (m)**	61.88
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.11	61.77						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)		0.40	61.48						
MADE GROUND (comprised of brown/grey mottled sandy gravelly clay, many angular cobbles, lean-mix/concrete, very occasional plastic rubbish)					AA156090	Env	0.50-1.00		
Firm, brown, slightly sandy gravelly CLAY with cobbles (possible original ground)		1.10	60.78						
End of Trial Pit at 1.20m		1.20	60.68						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP20 dug for check of any underground services in WS20/RC20 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP21**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,136.08 E 739,030.57 N
		DATE STARTED	17/06/2021
		DATE COMPLETED	17/06/2021
CLIENT		**GROUND LEVEL (m)**	61.28
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TARMAC		0.08	61.20						
MADE GROUND (comprised of dark grey angular gravel - C.L.804)									
Firm to stiff, greyish brown, slightly sandy gravelly silty CLAY with many angular to subangular cobbles		0.55	60.73		AA156089	Env	0.60-1.00		
End of Trial Pit at 1.20m		1.20	60.08						

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP21 dug for check of any underground services in WS21/RC21 the location

IGSL TP LOG 23311.GPJ IGSL.GDT 30/9/21

TRIAL PIT RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**TRIAL PIT NO.**	**TP22**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Reder	**CO-ORDINATES**	707,172.92 E 739,068.23 N
		DATE STARTED	17/06/2021
		DATE COMPLETED	17/06/2021
CLIENT		**GROUND LEVEL (m)**	61.12
ENGINEER	DBFL	**EXCAVATION METHOD**	3T Mini Digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TARMAC		0.07	61.05						
	MADE GROUND (comprised of dark grey angular gravel - C.L.804)									
	Soft to firm, very sandy gravelly silty CLAY with occasional cobbles		0.55	60.57		AA156088	Env	0.60-1.00		
1.0	End of Trial Pit at 1.20m		1.20	59.92						
2.0										
3.0										
4.0										

Groundwater Conditions
TP dry

Stability
TP stable

General Remarks
TP22 dug for check of any underground services in WS22/RC22 the location

IGSL_TP LOG 23311.GPJ IGSL.GDT 30/9/21

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 01 (Inspection Pit)

TP 01 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 02 (Inspection Pit)

TP 02 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 03 (Inspection Pit)

TP 03 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 04 (Inspection Pit)

TP 04 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 05 (Inspection Pit)

TP 05 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 06 (Inspection Pit)

TP 06 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 07 (Inspection Pit)

TP 07 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 08 (Inspection Pit)

TP 08 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 09 (Inspection Pit)

TP 09 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 10 (Inspection Pit)

TP 10 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 11 (Inspection Pit)

TP 11 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 12 (Inspection Pit)

TP 12 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 13 (Inspection Pit)

TP 13 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 14 (Inspection Pit)

TP 14 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 15 (Inspection Pit)

TP 15 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 16 (Inspection Pit)

TP 16 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 17 (Inspection Pit)

TP 17 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 18 (Inspection Pit)

TP 18 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 19 (Inspection Pit)

TP 19 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 20 (Inspection Pit)

TP 20 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 21 (Inspection Pit)

TP 21 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

TP 22 (Inspection Pit)

TP 22 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

SA 01

SA 01 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

SA 02

TP 02 – spoil

Project Number: 23311
Site: Blanchardstown T.C.
Project Engineer: DBFL

TRIAL PIT PHOTOGRAPHY RECORD

SA 03

SA 03 – spoil

Appendix 2

Window Sample Records

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	706,700 E 739,478 N
GROUND LEVEL (mOD)	61.13
CLIENT	
ENGINEER	DBFL
BH NO.	**WS01**
SHEET	Sheet 1 of 1
DATE DRILLED	27/05/2021
DATE LOGGED	27/05/2021
DRILLED BY	C.Kavanagh
LOGGED BY	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP01 log							Inspection Pit blows			
	Firm, grey mottled brown, sandy gravelly SILT/CLAY		0.85	60.28		0.85-1.00	100	81 blows			
1.0						1.00-2.00	100	356 blows	RA144818	ENV	1.00-2.00
	Firm to stiff, grey, sandy gravelly SILT/CLAY with angular cobbles		1.10	60.03							
2.0	Final Depth 2.00m		2.00	59.13							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS02**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,735 E 739,445 N	GROUND LEVEL (mOD) 61.25	**DATE DRILLED** 27/05/2021
			DATE LOGGED 27/05/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP02 log							Inspection Pit blows			
1.0									AA144816	ENV	1.00-2.00
	Dense to very dense, grey, slighlty silty angular GRAVEL with angular cobbles		1.20	60.05		1.20-2.00	100	269 blows			
2.0	Final Depth 2.00m		2.00	59.25							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT Blanchardstown T.C.		**BH NO.**	**WS03**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_) 706,771 E 739,409 N	GROUND LEVEL (mOD) 61.51	**DATE DRILLED**	08/06/2021
		DATE LOGGED	08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER DBFL		**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP03 log							Inspection Pit blows			
1.0									AA144803	ENV	1.00-1.50
	Firm, grey/brown, sandy gravelly silty CLAY		1.20	60.31		1.20-1.50	100	210 blows			
	Obstruction - possible rock or boulder Final Depth 1.50m		1.50	60.01							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS04**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,805 E 739,377 N	GROUND LEVEL (mOD) 62.16	
		DATE DRILLED	08/06/2021
		DATE LOGGED	08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP04 log							Inspection Pit blows			
1.0	Firm to stiff, brown to greyish brown, slightly sandy gravelly SILT/CLAY with some angular cobbles		1.20	60.96		1.20-1.40	0	133 blows			
	Obstruction - possible rock or boulder Final Depth 1.40m		1.40	60.76							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS05**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,840 E 739,345 N	GROUND LEVEL (mOD) 62.67	**DATE DRILLED** 08/06/2021
			DATE LOGGED 08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP05 log							Inspection Pit blows			
1.0	Stiff, green/grey, slightly sandy very gravelly SILT/CLAY with many angular cobbles		1.10	61.57		1.10-1.80	100	280 blows	AA149802	ENV	1.00-1.80
2.0	Obstruction - possible rock or boulder Final Depth 1.80m		1.80	60.87							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS06**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,660 E 739,436 N	GROUND LEVEL (mOD) 61.65	
		DATE DRILLED	27/05/2021
		DATE LOGGED	27/05/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP06 log							Inspection Pit blows			
1.0									AA149800	ENV	1.00-2.00
	Firm to stiff, dark grey/grey sandy gravelly SILT/CLAY		1.20	60.45		1.20-2.00	100	302 blows			
	Dense, dark grey, sandy angular GRAVEL with angular cobbles (possible weathered rock)		1.50	60.15							
2.0	Final Depth 2.00m		2.00	59.65							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS07**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,703 E 739,411 N	GROUND LEVEL (mOD) 61.49	
		DATE DRILLED	27/05/2021
		DATE LOGGED	27/05/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP07 log							Inspection Pit blows			
1.0									AA144821	ENV	1.00-2.00
	Firm to stiff, brown/grey mottled, very gravelly SILT/CLAY with many angular cobbles		1.20	60.29		1.20-2.00	90	322 blows			
2.0	Final Depth 2.00m		2.00	59.49							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS08**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,741 E 739,380 N	GROUND LEVEL (mOD) 61.50	**DATE DRILLED** 08/06/2021
			DATE LOGGED 08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP08 log							Inspection Pit blows			
1.0	Stiff, greyish brown, slightly sandy gravelly SILT/CLAY with some angular to subangular cobbles		0.95	60.55		0.95-1.10	100	147 blows	AA144809	ENV	1.00-1.10
	Obstruction - possible rock or boulder Final Depth 1.10m		1.10	60.40							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS09**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	706,776 E 739,347 N	GROUND LEVEL (mOD) 62.09	
		DATE DRILLED	08/06/2021
		DATE LOGGED	08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples		
									Ref. Number	Sample Type	Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP09 log							Inspection Pit blows			
1.0									AA144812	ENV	1.00-2.00
	Soft to firm, brown, very sandy gravelly CLAY with some subangular cobbles		1.20	60.89		1.20-2.00	60	126 blows			
2.0	Final Depth 2.10m		2.00	60.09							
3.0											

General Remarks

Installations

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	706,626 E 739,402 N
GROUND LEVEL (mOD)	61.81
CLIENT	
ENGINEER	DBFL
BH NO.	**WS10**
SHEET	Sheet 1 of 1
DATE DRILLED	27/05/2021
DATE LOGGED	27/05/2021
DRILLED BY	C.Kavanagh
LOGGED BY	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP10 log							Inspection Pit blows			
1.0									AA144814	ENV	1.00-2.00
	Firm, brown/grey mottled, sandy slightly gravelly SILT/CLAY with occasional cobbles		1.20	60.61		1.20-2.00	80	233 blows			
2.0	Final Depth 2.00m		2.00	59.81							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	706,670 E 739,360 N
GROUND LEVEL (mOD)	61.77
CLIENT	
ENGINEER	DBFL
BH NO.	**WS11**
SHEET	Sheet 1 of 1
DATE DRILLED	27/05/2021
DATE LOGGED	27/05/2021
DRILLED BY	C.Kavanagh
LOGGED BY	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP11 log							Inspection Pit blows			
1.0	Firm to stiff, brown to greysih brown, slightly sandy gravelly SILT/CLAY with many angular cobbles		1.00	60.77		1.00-2.00	90	251 blows	AA144823	ENV	1.00-2.00
2.0	Final Depth 2.00m		2.00	59.77							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	706,693 E 739,338 N
GROUND LEVEL (mOD)	61.83
CLIENT	
ENGINEER	DBFL
BH NO.	**WS12**
SHEET	Sheet 1 of 1
DATE DRILLED	08/06/2021
DATE LOGGED	08/06/2021
DRILLED BY	C.Kavanagh
LOGGED BY	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP12 log							Inspection Pit blows			
1.0									AA144828	ENV	1.00-1.40
	Firm to stiff, brown, slightly sandy gravelly SILT/CLAY with some angular cobbles		1.20	60.63		1.20-1.40	100	161 blows			
	Obstruction - possible rock or boulder Final Depth 1.40m		1.40	60.43							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT Blanchardstown T.C.		**BH NO.**	**WS13**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_) 706,757 E 739,321 N	GROUND LEVEL (mOD) 62.41	**DATE DRILLED**	08/06/2021
		DATE LOGGED	08/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER DBFL		**LOGGED BY**	C.H.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP13 log							Inspection Pit blows			
	Stiff, light brown/brown, slightly sandy gravelly SILT/CLAY with angular cobbles		0.85	61.56		0.85-1.10	20	210 blows			
1.0	Obstruction - possible rock or boulder Final Depth 1.10m		1.10	61.31							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS14**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,055 E 739,043 N	GROUND LEVEL (mOD) 62.38	
		DATE DRILLED	29/06/2021
		DATE LOGGED	29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J.C.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples		
									Ref. Number	Sample Type	Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP14 log							Inspection Pit blows			
1.0									AA169724	ENV B	1.00-1.60 1.00-1.60
	Firm, light brown mottled grey and black sandy very gravelly silty CLAY with occasional cobbles		1.20	61.18		1.20-1.60	100	149 blows			
	Obstruction - possible rock or boulder Final Depth 1.60m		1.60	60.78							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS15**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,091 E 739,009 N	GROUND LEVEL (mOD) 62.13	**DATE DRILLED** 29/06/2021
			DATE LOGGED 29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J.C.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP15 log							Inspection Pit blows			
1.0									AA169726	ENV B	1.00-2.00 1.00-1.60
	Firm, greyish brown, sandy gravelly CLAY		1.20	60.93		1.20-2.00	100	168 blows			
	Medium dense, grey slightly clayey sandy GRAVEL		1.60	60.53					AA169727	B	1.60-2.00
2.0	Final Depth 2.00m		2.00	60.13							
3.0											

General Remarks

Installations

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS16**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,112 E 738,970 N	GROUND LEVEL (mOD) 62.02	
		DATE DRILLED	29/06/2021
		DATE LOGGED	29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J.C.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP16 log							Inspection Pit blows			
1.0	Firm to stiff, grey brown mottled, sandy very gravelly silty CLAY with some cobbles		1.10	60.92		1.10-1.50	50	177 blows	AA169729	ENV B	1.00-1.50 1.00-1.50
	Obstruction - possible rock or boulder Final Depth 1.50m		1.50	60.52							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS17**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,020 E 739,003 N	GROUND LEVEL (mOD) 62.68	**DATE DRILLED** 29/06/2021 **DATE LOGGED** 29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J.C.

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP17 log							Inspection Pit blows			
1.0										ENV	1.00-1.40
	Firm to stiff, brown, slightly sandy gravelly CLAY with some subangular to subrounded cobbles		1.20	61.48		1.20-1.40	100	183 blows			
	Obstruction - possible rock or boulder Final Depth 1.40m		1.40	61.28							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS18**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,054 E 738,968 N	GROUND LEVEL (mOD) 62.41	**DATE DRILLED** 29/06/2021
			DATE LOGGED 29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J. Condon

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	MADE GROUND - Tar Machine / hand dug inspection pit for services - for all details see TP18 log		0.10	62.31				Inspection Pit blows			
	MADE GROUND comprised of firm brownish grey sandy very gravelly CLAY.										
1.0										ENV	1.00-2.00
	Firm to stiff brown sandy gravelly CLAY		1.20	61.21		1.20-2.00	100	190 blows			
	Firm to stiff brown sandy gravelly CLAY		1.40	61.01					AA153522	B	1.40-2.00
2.0	Final Depth 2.00m		2.00	60.41							
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
BH NO.	**WS19**
SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,085 E 738,942 N
GROUND LEVEL (mOD)	62.22
DATE DRILLED	29/06/2021
DATE LOGGED	29/06/2021
CLIENT	
ENGINEER	DBFL
DRILLED BY	C.Kavanagh
LOGGED BY	J. Condon

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	MADE GROUND - Tar Machine / hand dug inspection pit for services - for all details see TP19 log		0.10	62.12				Inspection Pit blows			
	MADE GROUND comprised of soft to firm brownish grey sandy very gravelly CLAY.										
	Soft to firm greyish brown sandy gravelly CLAY.		0.90	61.32						ENV	1.00-2.00
1.0	Soft to firm, greyish brown, sandy gravelly CLAY		1.20	61.02		1.20-2.00	100	85 blows	AA153524	B	1.20-1.80
	Soft to firm brownish grey sandy gravelly CLAY. (Excess water from 2.3m)		1.80	60.42					AA153525	B	1.80-3.00
2.0						2.00-3.00	90	138 blows			
	Soft to firm brownish grey vry sandy very gravelly CLAY.		2.70	59.52							
3.0	Final Depth 3.00m		3.00	59.22							

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	707,096 E 739,065 N
GROUND LEVEL (mOD)	61.88
CLIENT	
ENGINEER	DBFL
BH NO.	**WS20**
SHEET	Sheet 1 of 1
DATE DRILLED	29/06/2021
DATE LOGGED	29/06/2021
DRILLED BY	C.Kavanagh
LOGGED BY	J. Condon

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	MADE GROUND - Tar Machine / hand dug inspection pit for services - for all details see TP20 log		0.10	61.78				Inspection Pit blows			
	MADE GROUND comprised of firm brownish grey sandy very gravelly CLAY.										
1.0										ENV	1.00-1.60
	Firm, brown, sandy gravelly CLAY with some cobbles		1.20	60.68							
	MADE GROUND comprised of firm brown sandy gravelly CLAY.		1.30	60.58		1.20-1.60	100	164 blows			
	Obstruction - possible rock or boulder Final Depth 1.60m		1.60	60.28							
2.0											
3.0											

General Remarks

Installations

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**BH NO.**	**WS21**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	707,136 E 739,031 N	GROUND LEVEL (mOD) 61.28	**DATE DRILLED** 29/06/2021
			DATE LOGGED 29/06/2021
CLIENT		**DRILLED BY**	C.Kavanagh
ENGINEER	DBFL	**LOGGED BY**	J. Condon

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	MADE GROUND - Tar Machine / hand dug inspection pit for services - for all details see TP21 log		0.10	61.18				Inspection Pit blows			
	MADE GROUND comprised of firm brownish grey sandy very gravelly CLAY.									ENV	1.00-1.60
1.0	Possible weathered rock - MUDDY LIMESTONE recovered as dark grey clayey GRAVEL.		1.10	60.18					AA153528	B	1.10-1.60
	Dense, grey, clayey angular GRAVEL with angular cobbles (possible weathered rock)		1.20	60.08		1.20-1.60	100	189 blows			
	Obstruction - possible rock or boulder Final Depth 1.60m		1.60	59.68							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

IGSL Ltd

WINDOW SAMPLE RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES(_)	707,173 E 739,068 N
GROUND LEVEL (mOD)	61.12
CLIENT	
ENGINEER	DBFL
BH NO.	**WS22**
SHEET	Sheet 1 of 1
DATE DRILLED	29/06/2021
DATE LOGGED	29/06/2021
DRILLED BY	C.Kavanagh
LOGGED BY	J. Condon

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Machine / hand dug inspection pit for services - for all details see TP22 log							Inspection Pit blows			
1.0										ENV	1.00-1.50
	Firm to stiff, sandy gravelly silty CLAY with cobbles		1.20	59.92		1.20-1.50	100	159 blows			
	Obstruction - possible rock or boulder Final Depth 1.50m		1.50	59.62							
2.0											
3.0											

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23311.GPJ IGSL.GDT 30/9/21

Appendix 3

Rotary Corehole Records

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 1 of 2
CO-ORDINATES	706,700.34 E 739,477.88 N	**DATE DRILLED**	08/06/2021
GROUND LEVEL (mOD)	61.13	**DATE LOGGED**	09/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
2									2.10	59.03		
	2.80							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	2.80	58.33		
3		100	83	53				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
4	4.30											
5		100	87	67								
	5.80											
6		100	95	78								
7	7.30											
8		100	61	55								
	8.80											
9		100	91	91								

REMARKS

Hole cased 0.00-2.80m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
09-06-21	10.00	2.00	10.20	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
09-06-21	10.20	2.80	2.10	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 2 of 2
CO-ORDINATES	706,700.34 E 739,477.88 N	**DATE DRILLED**	08/06/2021
GROUND LEVEL (mOD)	61.13	**DATE LOGGED**	09/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.20							End of Borehole at 10.20 m	10.20	50.93		

REMARKS

Hole cased 0.00-2.80m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
09-06-21	10.20	2.80	2.10	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
09-06-21	10.00	2.00	10.20	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,734.91 E 739,445.10 N	**DATE DRILLED**	09/06/2021
GROUND LEVEL (mOD)	61.25	**DATE LOGGED**	10/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
									2.30	58.95		
	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.25		
3		100	62	36				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-25mm thick). Dips are 10°-20° & locally 50°.				
4	4.30											
5		100	65	25								
	5.80											
6		100	79	65								
7	7.30											
8		100	90	86								
	8.80											
9		100	78	51								
	10.00							End of Borehole at 10.00 m	10.00	51.25		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-06-21	10.00	3.00	1.90	Water level recorded 5 mins after end of drilling

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GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC03**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,771.10 E 739,409.42 N	**DATE DRILLED**	29/06/2021
GROUND LEVEL (mOD)	61.51	**DATE LOGGED**	29/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				
1									1.50	60.01		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
2									2.90	58.61		
	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.51		
3		100	16	0				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered.				
	4.00											
4		100	97	92	680			Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-10mm thick). Dips are 10°-20° & locally 50°.				
5	5.30				570							
		100	94	63								
	6.00											
6		100	96	74								
	6.70											
7		100	95	70								
8	8.20											
	8.50	100	77	50								
9		100	59	40								
	10.00								10.00	51.51		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
29-06-21	10.00	3.00	1.90	Water level recorded 5 mins after end of drilling.

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GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC04**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,805.40 E 739,377.29 N	**DATE DRILLED**	30/06/2021
GROUND LEVEL (mOD)	62.16	**DATE LOGGED**	30/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY				
1.50									1.50	60.66		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
2.70									2.70	59.46		
3.00	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.16		
	4.25	100	54	28				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-10mm thick). Dips are 10°-20° & locally 50°.				
	5.65	100	79	61								
	7.00	100	78	74								
	8.50	100	90	72								
	9.00	100	58	42								
	10.00	100	92	65					10.00	52.16		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
30-06-21	10.00	3.00	4.40	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC05**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,839.82 E 739,345.44 N	**DATE DRILLED**	01/07/2021
GROUND LEVEL (mOD)	62.67	**DATE LOGGED**	01/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY	1.50	61.17		
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	2.60	60.07		
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.67		
3	3.00	100	61	7				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-8mm thick). Dips are 10°-20° & locally 50°.				
4	4.50	100	74	41								
5	6.00	100	83	66								
6	7.50	100	82	67								
7	9.00	100	92	78								
8	10.00								10.00	52.67		
9												
10												

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
01-07-21	10.00	3.00	4.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC06**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,660.14 E 739,436.05 N	**DATE DRILLED**	02/06/2021
GROUND LEVEL (mOD)	61.65	**DATE LOGGED**	04/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
									2.30	59.35		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK				
	3.00								3.00	58.65		
		100	71	25				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-20mm thick). Dips are 10°-20° & locally 50°.				
	4.50											
		100	86	42								
	6.00											
		100	84	39								
	7.50											
		100	92	71								
	9.00											
		100	97	97	1000							
	10.00								10.00	51.65		

REMARKS

End of Borehole at 10.00 m

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-06-21	10.00	3.00	3.20	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC07**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,702.56 E 739,411.01 N	**DATE DRILLED**	10/06/2021
GROUND LEVEL (mOD)	61.49	**DATE LOGGED**	11/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
									2.30	59.19		
	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.49		
3		100	79	64				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 60°.				
4	4.50											
5		100	91	74								
	6.00											
6		100	56	41								
7	7.50											
8		100	75	59								
	9.00											
9		100	92	84								
	10.00								10.00	51.49		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
11-06-21	10.00	3.00	1.95	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC F1 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC08**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,741.29 E 739,379.86 N	**DATE DRILLED**	23/06/2021
GROUND LEVEL (mOD)	61.50	**DATE LOGGED**	23/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				
									2.40	59.10		
	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.50		
3		100	81	45				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-30mm thick). Dips are 10°-20° & locally 60°.				
4	4.50											
5		100	81	55								
	6.00											
6		100	84	65								
7	7.50											
8		100	89	77								
9	9.00											
		100	83	68								
10	10.00								10.00	51.50		

End of Borehole at 10.00 m

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
23-06-21	10.00	3.00	3.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC09**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,776.26 E 739,346.97 N	**DATE DRILLED**	23/06/2021
GROUND LEVEL (mOD)	62.09	**DATE LOGGED**	25/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	1.50	60.59		
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	2.40	59.69		
3	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.09		
4	4.00	100	51	11				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-3mm thick). Dips are 10°-20° & locally 60°.				
5	5.50	100	89	74								
6		100	92	83								
7	7.00	100	55	111								
8	8.50	100	91	84								
9	10.00								10.00	52.09		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
25-06-21	10.00	3.00	3.40	Water level recorded 5 mins after end of drilling

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
25-06-21	10.00	2.00	10.00	50mm SP

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GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES	706,626.36 E 739,401.60 N
GROUND LEVEL (mOD)	61.81
CLIENT	
ENGINEER	DBFL
RIG TYPE	BT - 44
FLUSH	Air/Mist
INCLINATION (deg)	-90
CORE DIAMETER (mm)	78
DRILLHOLE NO	RC10
SHEET	Sheet 1 of 1
DATE DRILLED	01/06/2021
DATE LOGGED	02/06/2021
DRILLED BY	IGSL
LOGGED BY	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	1.50	60.31		
2					SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly cobbly CLAY	2.60	59.21		
3	3.00				SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.81		
4	4.50	100	33	14	Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-80mm thick). Dips are 10°-20° & locally 60°.				
5		100	81	63					
6	6.00								
7	7.50	100	75	58					
8		100	69	47					
9	9.00								
		100	77	39					
10	10.00				End of Borehole at 10.00 m	10.00	51.81		

Fracture Spacing Log (mm): 0 250 500

Non-intact Zone

Legend

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC11**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,670.39 E 739,359.93 N	**DATE DRILLED**	22/06/2021
GROUND LEVEL (mOD)	61.77	**DATE LOGGED**	22/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY				
1									1.50	60.27		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				
2									2.10	59.67		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK				
	3.00								3.00	58.77		
3		100	69	15				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered.				
4	4.50							Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 60°.				
5		100	77	61								
	6.00											
6		100	88	54								
7	7.50				750							
8		100	88	82								
	9.00											
9		100	84	75								
	10.00								10.00	51.77		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-06-21	10.00	3.00	2.60	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC12**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,692.68 E 739,338.09 N	**DATE DRILLED**	18/06/2021
GROUND LEVEL (mOD)	61.83	**DATE LOGGED**	21/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
									2.40	59.43		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK				
	3.00								3.00	58.83		
		100	69	37				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-15mm thick). Dips are 10°-20° & locally 50°.				
	4.50											
		100	81	66								
	6.00											
		100	92	67								
	7.50											
		100	75	55								
	9.00											
		100	82	72								
	10.00								10.00	51.83		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
21-06-21	10.00	3.00	2.30	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC13**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,756.55 E 739,321.20 N	**DATE DRILLED**	25/06/2021
GROUND LEVEL (mOD)	62.41	**DATE LOGGED**	28/06/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	1.50	60.91		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	2.40	60.01		
	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.41		
	4.00	100	85	61				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-15mm thick). Dips are 10°-20° & locally 50°.				
	5.50	100	95	77								
	7.00	100	79	58								
	8.50	100	81	45								
	10.00	100	92	81					10.00	52.41		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-06-21	10.00	3.00	2.70	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.
CO-ORDINATES	707,055.04 E 739,043.48 N
GROUND LEVEL (mOD)	62.38
CLIENT	
ENGINEER	DBFL
RIG TYPE	BT - 44
FLUSH	Air/Mist
INCLINATION (deg)	-90
CORE DIAMETER (mm)	78
DRILLHOLE NO	RC14
SHEET	Sheet 1 of 1
DATE DRILLED	26/07/2021
DATE LOGGED	27/07/2021
DRILLED BY	IGSL
LOGGED BY	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	1.50	60.88		
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	2.80	59.58		
2	3.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.38		
3		100	68	34				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered.				
4	4.20	100	92	75				Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
5	5.70	100	95	83								
6	7.20	100	47	45								
7	8.70	100	85	72								
8	10.00							End of Borehole at 10.00 m	10.00	52.38		
9												

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
26-07-21	10.00	3.00	1.90	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC15**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,090.74 E 739,008.76 N	**DATE DRILLED**	27/07/2021
GROUND LEVEL (mOD)	62.13	**DATE LOGGED**	28/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
					SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY	1.50	60.63		
					SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	2.80	59.33		
	3.00				SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	59.13		
		100	29	8	Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered Local shale layer at 5.62-5.63m				
	4.50	100	63	42	Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally strongly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
	5.50								
		100	77	58					
	7.00								
		100	57	54					
	8.50								
		100	85	69					
	10.00				End of Borehole at 10.00 m	10.00	52.13		

Fracture Spacing Log (mm): 0 / 250 / 500

Non-intact Zone: 580 / 580

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-07-21	10.00	3.00	2.10	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC16**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,111.87 E 738,969.93 N	**DATE DRILLED**	27/07/2021
GROUND LEVEL (mOD)	62.02	**DATE LOGGED**	28/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY				
									1.50	60.52		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				
	3.50								3.50	58.52		
		100	44	22				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally moderately weathered (at 3.61-4.04m) Local shale layer at 7.82-7.85m & 8.44-8.50m Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally strongly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
	4.50											
		100	71	46								
	5.50											
		100	55	14								
	6.50											
		100	47	33								
	7.50											
		100	88	76								
	8.50											
		100	89	78								
	10.00								10.00	52.02		

REMARKS

Hole cased 0.00-3.50m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-07-21	10.00	3.50	2.80	Water level recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
28-07-21	10.00	2.00	10.00	50mm SP

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC17**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,019.77 E 739,003.28 N	**DATE DRILLED**	22/07/2021
GROUND LEVEL (mOD)	62.68	**DATE LOGGED**	23/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
	3.00					3.00	59.68		
3		100	84	33	Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
4	4.00	100	84	41					
5	5.50	100	88	81					
6	7.00	100	94	91					
7	8.50	100	88	73					
8	10.00					10.00	52.68		

Fracture Spacing Log (mm): 0 – 250 – 500

Non-intact Zone / Legend

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
23-07-21	10.00	3.00	2.10	Water level recorded 5 mins after end of drilling

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC18**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,054.08 E 738,968.38 N	**DATE DRILLED**	08/07/2021
GROUND LEVEL (mOD)	62.41	**DATE LOGGED**	09/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY				
1									1.50	60.91		
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	3.00	59.41		
3	3.30							SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL	3.30	59.11		
4	4.30	100	84	46				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-8mm thick). Dips are 10°-20° & locally 50°.				
5	5.10	100	100	80								
6	6.30	100	73	44								
7	7.30	100	85	61								
8	8.30	100	90	76	510							
9	9.30	100	74	64								
10	10.00	100	100	66					10.00	52.41		

REMARKS

Hole cased 0.00-3.50m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-07-21	10.00	3.50	1.90	Water level recorded 5 mins after end of drilling

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GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC19**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,084.58 E 738,942.44 N	**DATE DRILLED**	06/07/2021
GROUND LEVEL (mOD)	62.22	**DATE LOGGED**	07/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of CLAY				
3									3.00	59.22		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				N = 46 (7, 9, 6, 12, 13, 15)
									3.90	58.32		
4								SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK				
	4.50								4.50	57.72		
5		100	54	29				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered.				N = 30/20 mm (30, 30)
	6.00							Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared, locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
6		100	69	23								
	7.50											
8		100	63	38								
	9.00											
9		100	92	92	580							
	10.00								10.00	52.22		

REMARKS

Hole cased 0.00-4.50m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
07-07-21	10.00	4.50	2.20	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC20**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,096.13 E 739,064.60 N	**DATE DRILLED**	29/07/2021
GROUND LEVEL (mOD)	61.88	**DATE LOGGED**	29/07/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0					SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY	2.50	59.38		
	3.00				SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	3.00	58.88		
	4.50	100	70	28	Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared & filled at 6.41-6.47m), locally slightly iron-oxide stained, locally calcite-veined (1-15mm thick). Dips are 10°-20° & locally 50°.				
	6.00	100	83	63					
	7.50	100	81	61					
	9.00	100	81	62					
	10.00	100	96	96		10.00	51.88		

Fracture Spacing Log (mm): 0 – 250 – 500

Non-intact Zone

Legend

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
29-07-21	10.00	3.00	2.10	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC21**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,136.08 E 739,030.57 N	**DATE DRILLED**	04/08/2021
GROUND LEVEL (mOD)	61.28	**DATE LOGGED**	04/08/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
3	3.00								3.00	58.28		
3	4.50	100	72	34				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared & filled at 6.41-6.47m), locally slightly iron-oxide stained, locally calcite-veined (1-2mm thick). Dips are 10°-20° & locally 50°.				
6	6.00	100	79	43								
6	7.50	100	84	57								
9	9.00	100	88	68								
9	10.00	100	91	69					10.00	51.28		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
04-08-21	10.00	3.00	2.25	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23311.GPJ IGSL.GDT 30/9/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23311

CONTRACT	Blanchardstown T.C.	**DRILLHOLE NO**	**RC22**
		SHEET	Sheet 1 of 1
CO-ORDINATES	707,172.92 E 739,068.23 N	**DATE DRILLED**	03/08/2021
GROUND LEVEL (mOD)	61.12	**DATE LOGGED**	03/08/2021
CLIENT		**DRILLED BY**	IGSL
ENGINEER	DBFL	**LOGGED BY**	D.O'Shea
RIG TYPE	BT - 44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey GRAVEL				
1									1.50	59.62		
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of gravelly CLAY				
3	3.00								3.00	58.12		
	4.00	100	32	11				Weak to strong, thickly to thinly bedded, black/dark grey, fine-grained, LIMESTONE (predominantely muddy with local sandy layers, localised pyrite crystallisation), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth, planar to locally curviplanar. Apertures are tight to locally moderately open, locally clay-smeared & filled at 4.14-4.16m, 7.44-7.45m & 7.75-7.76m), locally slightly iron-oxide stained, locally calcite-veined (1-8mm thick). Dips are 10°-20° & locally 50°.				
4		100	45	23								
5	5.50											
6		100	75	45								
7	7.00											
		100	71	56								
8	8.50											
9		100	83	74								
	10.00								10.00	51.12		

REMARKS

Hole cased 0.00-3.00m. Erect Covid-19 Safe Zone - 1hr

End of Borehole at 10.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
03-08-21	10.00	3.00	2.90	Water level recorded 5 mins after end of drilling.

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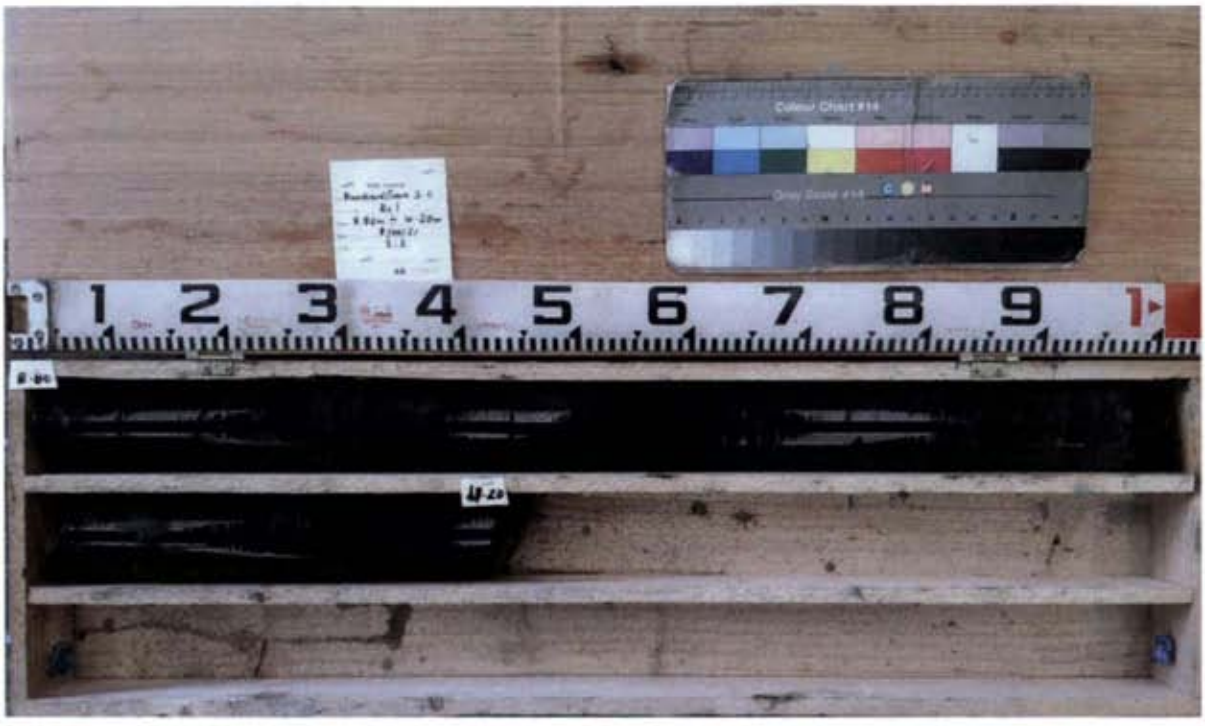
RC01 Box 1 of 3 – 2.80-5.80m

RC01 Box 2 of 3 – 5.80-8.80m

RC01 Box 3 of 3 – 8.80-10.20m

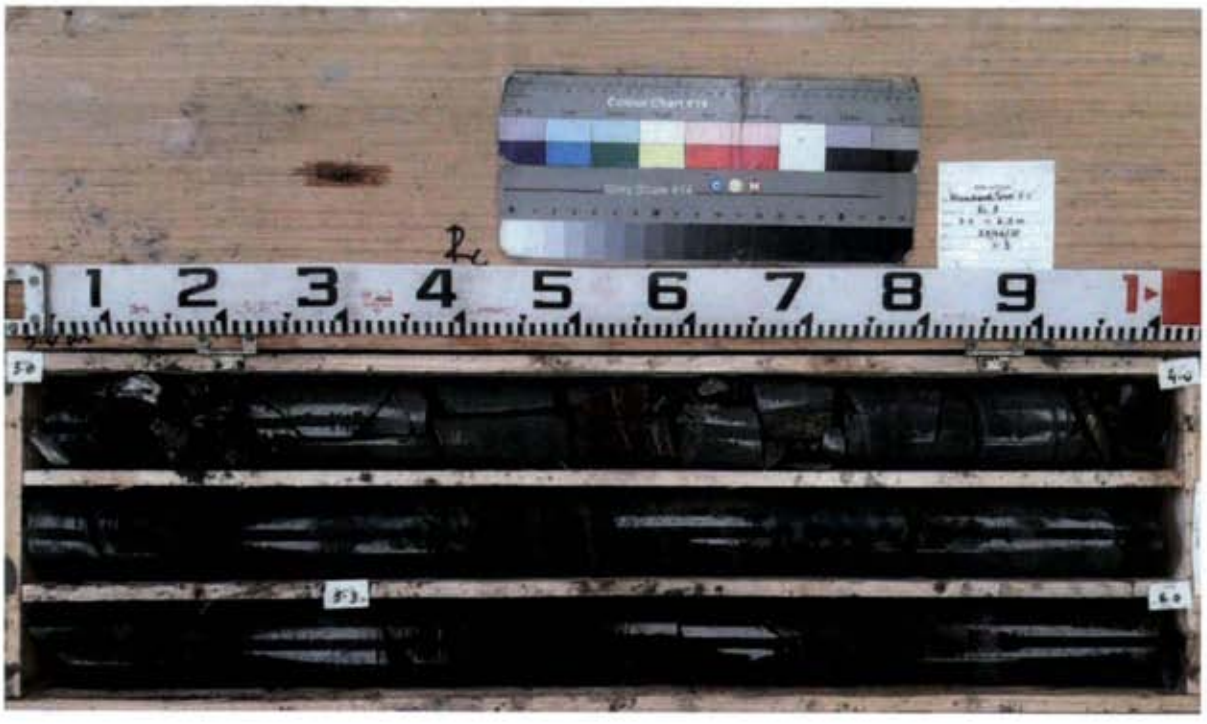


RC02 Box 1 of 3 – 3.00-5.80m

RC02 Box 2 of 3 – 5.80-8.80m

RC02 Box 3 of 3 – 8.80-10.00m

RC03 Box 1 of 3 – 3.00-6.00m



RC03 Box 2 of 3 – 6.00-9.00m