IGSL Ltd

NDFA Social Housing Bundles 4/5
Lot 3 – Croke Villas

Ground Investigation Report

Project No. 25000-3

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M7 Business Park
Naas
Co. Kildare
Ireland

T: +353 (45) 846176
E: info@igsl.ie
W: www.igsl.ie

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MORCE	Draft PDF by email	0	29-02-2024	J. Lawler BSc MSc PGeo EurGeol FGS	P. Quigley BEng CEng MICE MIEI FGS RoGEP Adviser

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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 (**NDFA Social Housing Bundles 4/5 - Lot 3 – Croke Villas**) 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 Engineers Ireland Specification for Ground Investigation (2nd Ed, 2016), BS 5930 (2015+A1:2020) and BS 1377 (Parts 1 to 9) and the following European Norms:

- EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- EN ISO 14688-1:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- EN ISO 14688-2:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Principles for a classification
- EN ISO 14689-1:2017 Geotechnical Investigation and Testing – Identification, description & classification of rock

The Eurocode 7, Part 2 – Ground Investigation and Testing GI specification shall be read in conjunction with the Specification and Related Documents for Ground Investigation in Ireland, 2nd Edition, published by Engineers Ireland in 2016.

Reporting
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. Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction, mining works or karstification below or close to the site.

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Boring Procedures
Where required, 'shell and auger' or cable percussive boring technique is employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing meet with the recommendations set out in 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 variation 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.

In-Situ Testing
Where required, Standard Penetration Tests (SPT's) are 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).

Soil Sampling

Three categories of sampling methods are outlined in EN ISO 22475-1:2006. The categories are referenced A, B and C for any given ground conditions and are shown in Tables 1 and 2 of EN ISO 22475-1:2006. Reference should be made to EN 1997-2:2002 for guidelines on sample class and quality for strength and compressibility testing. Samples of quality classes 1 or 2 can only be obtained by using Category A sampling methods.

Class 1 thin wall undisturbed tube samples (UT100) were obtained in fine grained soils and strictly meet the requirements of EN 1997-2:2002 and EN ISO 22475-1:2006. Soil samples for laboratory tests are divided into five classes with respect to the soil properties that are assumed to remain unchanged during sampling, handling transport and storage. The minimum sample quality required for testing purposes to Eurocode 7 compatibility (EN 1997-2:2002) is shown in Table A.

Table A – Details of Sample Quality Requirements

EN 1997 Clause	Test	Minimum Sample Quality Class
5.5.3	Water Content	3
5.5.4	Bulk Density	2
5.5.5	Particle Density	N/S
5.5.6	Particle Size Analysis	N/S
5.5.7	Consistency Limits	4
5.5.8	Density Index	N/S
5.5.9	Soil Dispersivity	N/S
5.5.10	Frost Susceptibility	N/S
5.6.2	Organic Content	4
5.6.3	Carbonate Content	3
5.6.4	Sulphate Content	3
5.6.5	pH	3
5.6.6	Chloride Content	3
5.7	Strength Index	1
5.8	Strength Tests	1
5.9	Compressibility Tests	1
5.10	Compaction Tests	N/S
5.11	Permeability	2

N/S – not stated. Presume a representative sample of appropriate size.

Samples recovered from trial pits or trenches meet the requirements of IS EN ISO 22475-1. It is highlighted that unforeseen circumstances such as variations in geological strata may lead to lower quality sample classes being obtained.

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 14688-1:2017 and IS EN ISO 14688-2:2017. Rock weathering classification conforms to IS EN ISO 14689-1:2017 along with discontinuities (bedding planes, joints, cleavages, faults etc) as classified in Section 6.4 of IS EN ISO 14689-1:2017 and Annex C of same. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Where peat has been encountered, samples have been logged in accordance with the Von Post Classification (ref. Von Post, L. 1992. Sveriges Gologiska Undersoknings torvinventering och nogra av dess hittils vunna resultat (SGU peat inventory and some preliminary results) Svenska Mosskulturforeningens Tidskrift, Jonkoping, Swedden, 36, 1-37 and Hobbs N. B. Mire morphology and the properties of some British and foreign peats. QJEG, Vol. 19, 1986.

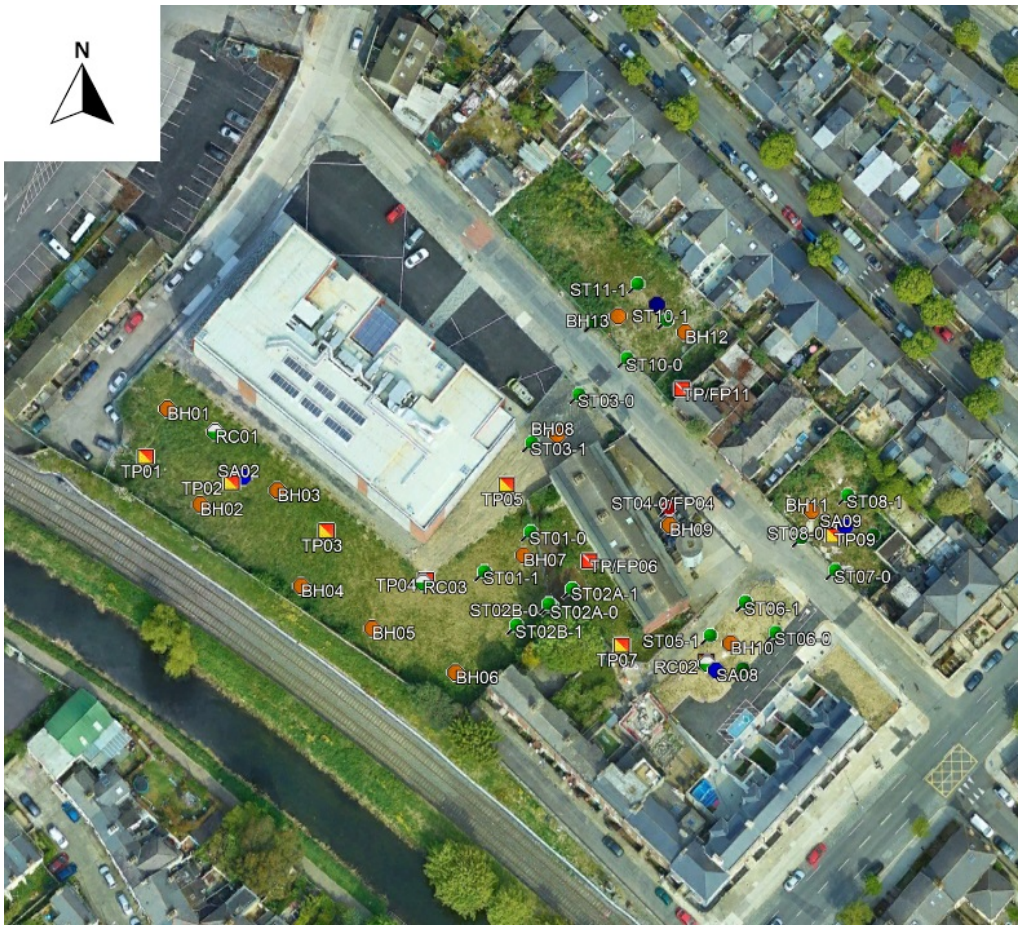
Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material will be discarded. Unless a period of retention of samples is agreed, it is our normal practice to discard all soil samples one month after submission of our final report.

1. INTRODUCTION

An investigation of subsoil conditions was undertaken by IGSL Limited at the site of a proposed social housing development at Croke Villas, Sackville Avenue, off the Ballybough Road, Dublin 3. The works were undertaken for Malone O'Regan Consulting Engineers [MORCE] on behalf of the National Development Finance Agency (the "NDFA"). The site formerly comprised four 5-storey local authority flat blocks (Figure 1). Croke Villas is one of the Strategic Development and Regeneration Areas identified in the Dublin City Development Plan 2016-2022. The intention is to provide new high quality residential / office development combined with enhancing the access to Sackville Avenue from Ballybough Road and re-develop Sackville Avenue as a high-quality public domain space (Dublin City Council, n.d.).

Figure 1 - Location Plan (Site Investigation Points overlain)



Retrieved from Google Earth Professional (Dated 07/2022)

The investigations comprised cable percussion boreholes, rotary drilling, machine-dug trial pits, foundation inspection pits, slit trenching and soakaway tests (to BRE365). The investigations were executed in accordance with BS 5930, Code of Practice for Site Investigations (2015+A1:2020) and EN 1997-2 Eurocode 7 Part 2 Ground Investigation & Testing and supervised by an IGSL geotechnical engineer.

Geotechnical, chemical and environmental laboratory testing was scheduled on a range of soil samples. The geotechnical soil testing included moisture contents, Atterberg Limits and particle size distribution [PSD] testing in addition to hydrometer testing. Suites of both chemical testing and environmental testing were undertaken on soils. This report presents an interpretation of the data

and an assessment of the key geotechnical issues. The exploratory hole locations are plotted on the site plans in Appendix 10.

2. FIELDWORK

2.1 General

The fieldworks were undertaken during November and December 2023 and January and February 2024 and comprised the following:

- Trial Pit (11 No.) of which 2 no. are Foundation Inspection Pits
- Cable Percussion Boring (13 No.)
- Rotary Drilling (3 No.)
- Slit Trenching (11 No.[1]) of which 1 no. incorporated a Foundation Inspection Pit
- Soakaway Tests (to BRE 365) (4 No.)
- Surveying of Exploratory Hole Locations

[1] No ST09 was undertaken. ST02 was subdivided into an 'A' section and a 'B' section given the presence of a separating palisade fence

2.2 Trial Pits & Foundation Inspection Pits

Trial pitting was performed at eleven locations across the site. Two of the trial pits were undertaken adjacent to existing structures to examine the depth of wall footings on site (TP/FP06 & TP/FP11). All eleven trial pits were excavated, logged and sampled under the direction of an IGSL geotechnical engineer in accordance with BS 5930 (2015+A1:2020). Bulk disturbed samples (typically 20 to 30kg) were taken as the pits progressed.

The bulk samples were placed in heavy-duty polyethylene bags. 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 and photos are presented in Appendix 1 and include descriptions of the soils encountered, groundwater conditions and stability of the pit sidewalls.

As mentioned, the excavation of two trial pits, TP/FP06 and TP/FP11, attempted to establish the depth and projection of existing buried foundations. The pits were sited at the last remaining multistorey flat complex (Croke Villas No.s 43-63) and at the now derelict two-storey former residence of No.30, Sackville Avenue. As with pits, the foundation inspection pits were excavated and logged under the direction of an IGSL geotechnical engineer in accordance with BS 5930 (2015+A1:2020). The pit logs and photos are presented in Appendix 2 and include descriptions of the soils encountered, the foundations exposed and any groundwater conditions noted during the excavation, if observed.

2.3 Cable Percussion Boreholes

Cable percussive boring (200mm diameter) was conducted at thirteen locations [BH_] using a Dando 2000 rig. The boreholes extended to depths of between 4.0m and 7.60m. At each location, boring commenced through hand-dug service inspection pits. Disturbed bulk samples were recovered at 1m intervals or change of strata during boring and these are denoted 'B' on the engineering logs. A water 'W' sample was bailed from BH11.

Standard Penetration Tests (SPT's) were performed in the boreholes and given the nature of the soils, a solid cone was used. It is noted that the SPT N-Values reported are the number of blows for 300mm increment penetration (e.g. BH01 at 2.0m where N=26). These exclude the seating blow values, which represent the initial 150mm depth of penetration. Where partial penetration was achieved during testing, the number of blows is shown for the actual penetration depth achieved (e.g. BH05 at 5.0m where N=50/150mm). It is highlighted that the SPT N-Values reported on the engineering logs are uncorrected for energy ratio. The SPT hammer energy ratio calibration certificate features in Appendix 3.

Descriptions of the soils encountered, in-situ tests undertaken and samples recovered are presented on the borehole records in Appendix 3. Details of groundwater strikes and hard strata boring (i.e. chiselling) are also presented on the aforementioned records.

2.4 Rotary Drilling

Rotary drilling was carried out (holes denoted RC_) at three locations using a tracked Beretta T44. Symmetrex drilling was utilised within the overlying superficial deposits (accompanied by SPT testing) with coring techniques used in the underlying bedrock when encountered. In both RC01 and RC03, open hole drilling was used solely given rock was not encountered to their respective end depth of 25.0m bgl. The rotary drilling in bedrock at RC02 produced 78mm diameter cores. Bedrock was described generally as fresh to slightly weathered weak to strong, medium to thinly bedded, light to dark grey/black, fine-grained LIMESTONE. The limestone comprised interbedded argillaceous/muddy layers with calci-siltite / sandy layers with local pyrite formation.

The cores were placed in 3m capacity timber boxes and logged by an IGSL engineering geologist. This included photography of the cores with a digital camera. Where rock core was recovered, a graphic fracture log is also presented alongside the mechanical indices. This illustrates the fracture state of the rock cores and allows easy identification of highly fractured / non-intact zones and discontinuity spacings. It should be noted that no correction for dip of the joints has been made and that the spacings shown are successive joint / core intersections within the core.

Groundwater monitoring standpipes were installed in two of the RC_ drillholes on site (RC01 & RC02). The standpipes consisted of 50mm diameter HDPE pipework with proprietary 1mm slots and incorporated a pea gravel filter pack and cement / bentonite grout seal. Headwork covers were concreted in place.

The core log records are presented in Appendix 4 and this includes engineering geological descriptions, details of the bedding / discontinuities and mechanical indices (TCR, SCR and RQD's) for each core run. Core photographs are also presented in Appendix 4 and these illustrate the structure and fracture state of the bedrock. The SPT hammer energy ratio calibration certificate also features in Appendix 4.

2.5 Slit Trenching

Slit trenching was undertaken at eleven locations on the site (ST01 – ST11). No slit trench was conducted at ST09 as it was inaccessible, being sited in the yardspace of No. 30 Sackville Avenue. Two trenches were excavated at ST02 (A & B) as a palisade fence split the linear excavation. In all cases, the machine-assisted hand-dug trenches were opened to reveal the track of potential existing buried services.

Detailed records of the pit findings including depth, diameter and type of service (where found) are presented in Appendix 5. The soil profile provided on the slit trench logs describes the majority of the soils across the transverse trench. The location of trench extremities (X and Y) were surveyed to ITM using GPS techniques. Photographs taken during excavation are also presented on the logs in Appendix 5.

At the end of slit trench ST04 (ST04-1), an attempt was made to establish the depth and projection of the existing buried foundation at the last remaining multistorey flat complex (Croke Villas No.s 43-63) on Sackville Avenue. The foundation inspection pit was excavated and logged under the direction of an IGSL geotechnical engineer in accordance with BS 5930 (2015+A1:2020). The foundation pit log and photos for FP04 is presented in Appendix 2 and include descriptions of the soils encountered, the foundations exposed and any groundwater conditions noted during the excavation, if observed.

2.6 Soakaway Tests (to BRE 365)

Four number infiltration tests were performed to assess the suitability of the sub-soils for dispersion of storm water through a soakaway system. The infiltration tests were each performed in accordance with BRE Digest 365 'Soakaway Design'. To obtain a measure of the infiltration rate of the sub-soils, water was poured into each test pit, with records taken of the fall in water level against time. Following the first soak cycle, the procedure was repeated to ensure saturation of the sub-soils. The infiltration rate is the volume of water dispersed per unit of exposed area per unit of time, and is generally expressed as metres / minute or metres / second. Designs are based on the slowest infiltration rate, which is generally calculated from the final soak cycle. The soakaway design logs are presented in Appendix 6.

2.7 Surveying of Exploratory Hole Locations

Following completion of the exploratory works, surveying was carried out using GPS techniques. Co-ordinates (x, y) were measured to Irish Transverse Mercator and ground levels (z) established to Malin Head. The co-ordinates and ground levels are incorporated on the exploratory hole logs with locations shown on the exploratory hole plans in Appendix 10.

3. LABORATORY TESTING

Geotechnical laboratory testing was carried out at IGSL's INAB-accredited laboratory in accordance with the methods set out in BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute:1990. The laboratory applies best practice management systems as per International Standard IS EN ISO/IEC 17025. The geotechnical testing included moisture contents, Atterberg Limits, particle size distribution [PSD] and hydrometer testing. The results from geotechnical testing on selected trial pit and cable percussive borehole soil samples are presented in Appendix 7.

Chemical analysis incorporating BRE SD1 Suite B (Brownfield – Pyrite Present) was scheduled on recovered soils. The soil chemical results are presented in Appendix 8. A total of thirty soil samples were selected for Waste Acceptance Criteria (WAC) analysis as per the *Rilta* Suite of testing. The results can be used to classify the material with regard to its potential for disposal to landfill. The results are enclosed in the report in Appendix 8.

Rock strength testing on selected core specimens comprised Point Load Strength Index [PLSI] testing. The tests were performed in accordance ISRM Suggested Methods for Rock characterization, Testing and Monitoring. The results are presented in Appendix 9.

4. DESK STUDY

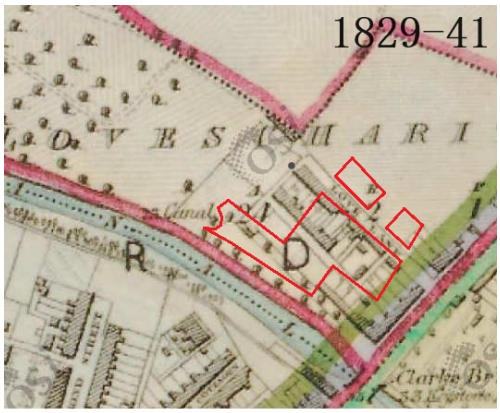
4.1 GSI / OSI Database Information

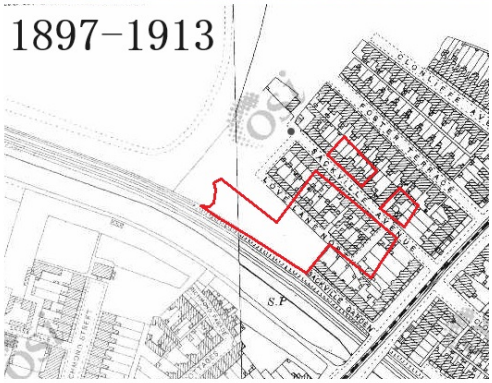
Reference to the OSI drawings shows buildings occupying the site as early as the mid-19th century ahead of the development of the railway which in later drawings, is seen to track parallel the Royal Canal.

No.s 1-6 Sackville Gardens, are clearly present in the earliest of featured maps. They are also noted in a Directory dated 1862 (Thom's Almanac, 1862). 'Love Lane' listed in the 1830's drawing is later re-named 'Sackville Avenue'.

It is known that Croke Villas were built in 1959 to a 'modular' design by the then Dublin City Architect, Dáithi Hanley. During his tenure in the office, he designed many four- and five-storey blocks of flats (styled corporation 'maisonettes') throughout the city; characteristically recurring features included a stairwell situated within a free-standing cylindrical tower from which footbridges extended to the upper storeys; and exterior access to the individual units (on upper storeys via roofed galleries); the design maximised the amount of interior space allocated to living quarters. (White, 2012)

The 2013-2018 orthophotograph shows the four blocks in place, three of which were demolished by Tinnelly Group in late 2017 / early 2018. (See Fig 3A & 3B - Tinnelly Group, 2018). The Google Earth Professional image dated 05/2018 shows the footings for the new GAA Hand Ball Centre.





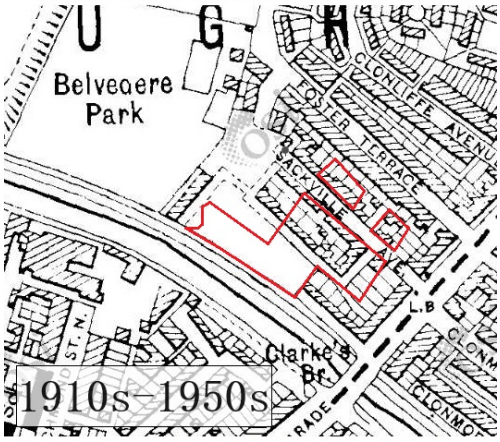


Figure 2 – Tailte Éireann historic OSI and Cassini drawings with OSI 2013-2018 and Google Earth imagery from 2018 showing the evolution of the site.

Google Earth Professional image dated 05/2018

Images taken from Tailte Éireann 'Townland and Historical Map Viewer'

Figures 3A & 3B – Demolition underway at the Croke Villas Site (Tinnelly Group, 2018). **Fig 3A** 'Back Block' removed (foreground) with work underway on two other blocks (No.s 1-21 & No.s 22-42). **Fig 3B** Aerial view of works with Sackville Avenue to the top of the photo and Ardilaun Square to the left. The Ballybough Railline and Royal Canal run to the bottom of the photo.

The Quaternary Soils plot for the area (Figure 4 - retrieved from GSI website) reaffirms the findings of the investigation and highlights the underlying mixed clay and gravel tills derived from the ubiquitous Carboniferous Limestone of the area.

Figure 4 – Quaternary Soils Plot for the Croke Villas Site (Site investigation area outlined)

Map Key	**Urban**	- Unclassified – Urban Cover
	A	- Alluvium
	TLs	- Till derived from Limestones
	GLs	- Gravels derived from Limestones

Reference to the GSI map for the area (Figure 5, 1:100,000 Solid Geology series) shows that the site is underlain by Lower Carboniferous, Lucan Formation. The Lucan Formation (Nolan 1986, 1989) forms the bulk of the basinal rocks throughout the geologically termed 'Dublin Basin', and is characterised by graded, intraclastic skeletal packstone/grainstone interbedded with anoxic calcareous mudstone / black shale, laminated calcisiltite and argillaceous micrite (i.e. impure limestone with clay minerals).

Its base is defined by the first appearance of thick graded beds of limestone, and a marked decrease in the proportion of interbedded shale, compared with the underlying Tober Colleen Formation. The Lucan Formation is widely known as the Calp Limestone (Marchant and Sevastopulo, 1980) but is also referred to as the Upper Dark Limestone and has long been a source of building materials and aggregate for Dublin. The Calp is largely undifferentiated geologically.

Figure 5 - Bedrock Geological Map for the Croke Villas Site (Site investigation area outlined)

Key: **LU** = Lucan Formation

5. GROUND CONDITIONS & GROUNDWATER

5.1 Ground Profile – Superficial Deposits

The following is a summary of the ground conditions encountered across the site.

MADE GROUND

- As shown in Section 4.1, there were a number of houses occupying the site before the construction of the four blocks of Croke Villas in 1959. However, in the area of what was termed locally as the "Back Block", the 4-storey block of flats closest to the railway and furthest west, there was little in the way of development prior to its construction in 1959. For this reason, this should lend to the ground in the immediate area being possibly less disturbed. However, there was little to suggest this as Made Ground did extend to depths similar to other areas on the site, to approx. 2.0m bgl. There did appear in both TP01 and TP03 to be less in the way of building rubble however.

- In each of TP01-TP04, the Made Ground was encountered beneath an initial cover of placed Topsoil measuring 200mm thick. It is likely this was placed directly on the hardcore gravel which was draped across the area during demolition (See Figures 3A & 3B). This layer forms part of the initial Made Ground consisting largely of dark brown and grey sandy slightly gravelly CLAY with red bricks and plastic. At TP01, the Made Ground extended to a mere 1.30m bgl (2.56m OD). However, in the case of TP02, a base was not found to the Made Ground with a concrete slab exposed at 2.0m depth (2.12m OD). This may be a relict feature of the 'Back Block' foundations. Figure 6 suggests TP02 was positioned close to if not on the 'Back Block' footings. This would imply the Made Ground from 0.20-2.0m comprised trench backfill.

Figure 6 – Trial Pit locations TP01-TP04

Google Earth Professional Image dated 07/2013

- Trial Pit TP03 was located in a shed area to the east of the former 'Back Block'. As with TP01, Made Ground was only logged to 1.30m (2.83m OD). The Made Ground was described as a dark grey clayey sandy Gravel with a low cobble content and boulder content and with red brick fragments. Similarly, at TP04, the Made Ground cover extended to 1.30m (2.62m OD). It was logged as a dark brown / black slightly clayey gravelly Sand with red brick fragments, plastic and concrete fragments.

Figure 7 – Trial Pit locations TP05-TP07

Google Earth Professional Image dated 07/2013

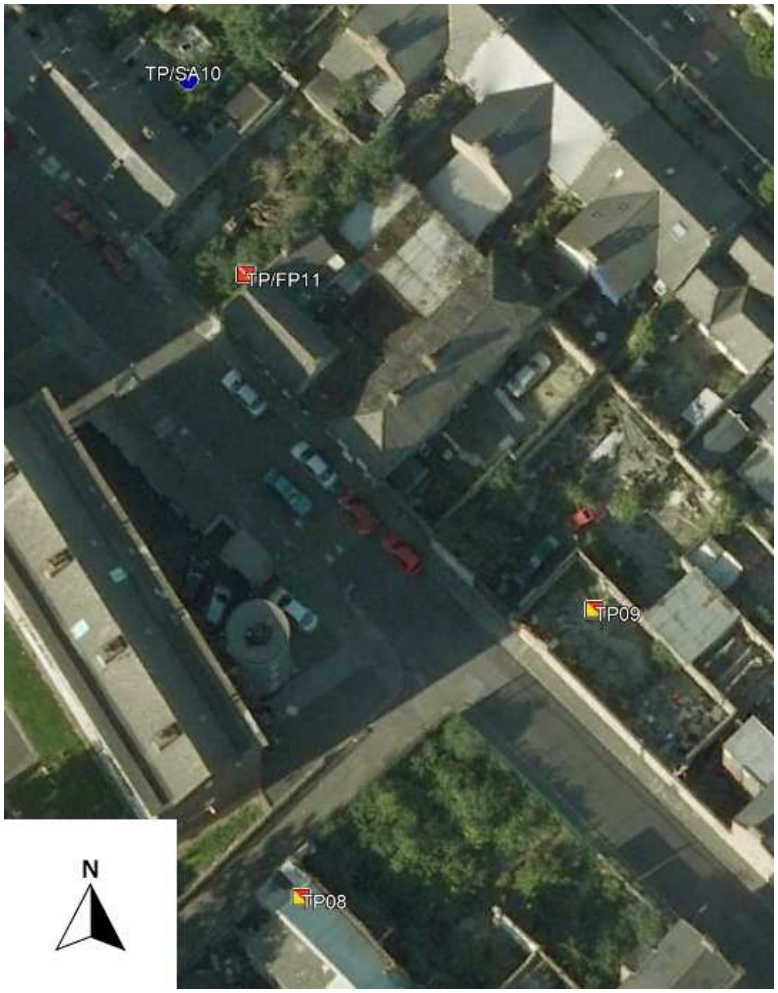
- As with TP02, TP05 was sited apparently directly on an external wall of one of the blocks. It unearthed a thick accumulation of Made Ground to 3.0m depth (1.08m OD) underlying the uppermost thin cover of placed Topsoil (100mm thick). The Made Ground was described as a dark brown gravelly Sand with a low cobble content, red brick fragments, plastic and cobble -sized concrete fragments. In addition to it being on the foundation of one of the blocks, the location of TP05 places it in the area of the former Love Lane North

and its line of terraced houses which made way for the Corke Villas development of the later 1950's (See Figure 2).

- Similar to TP05, TP06 was excavated near the foundation of one of the blocks. However, the block in this case still stands on the site, as yet not demolished. Pit TP06 served a dual purpose in that it was used to both determine the stratigraphy and to identify a possible shallow footing (See FP06). From a distance of 1.50m from the outer wall, the ground appeared more natural in composition. The Made Ground was thought to extend to 1.60m depth (2.51m OD) with red brick fragments found in the dark brown / black sandy slightly gravelly CLAY stratum.

- Trial pit TP07 was positioned in an area of grass cover in the shadow of the last remaining block of flats. The location places it close to the corner of the former Love Lane North roadway and its adjoining terraced houses (See Figure 2). The Made Ground content appeared compositionally finer with only cobble-sized fragments noted. It was determined through visual pitside examination, that the Made Ground extended to a depth of 1.60m (2.46m OD).

Figure 8 – Trial Pit locations TP08-TP11



Google Earth Professional Image dated 09/2008

- The remaining trial pits were undertaken in relatively outlying areas of the site, in the back yard of No.4, Ballybough Road (TP08), to the rear of No.7, Ballybough Road (TP09), in the yard adjoining the derelict No.30, Sackville Avenue (TP/FP11) and in the area to the rear of the former single-storey terrace comprising No.s 20-27, Sackville Avenue (demolished contemporaneous to the two flat complexes, ca. 2018). With the exception of TP11, which intercepted a buried sewer at 1.60m (2.63m OD), the other three pits revealed a Made Ground depth of 1.10m to 1.30m bgl (2.26 – 2.78m OD). The Made Ground in both TP08 and TP09, both in yard spaces to the rear of houses fronting onto Ballybough Road contained sea shells as well as red brick fragments, plastic and concrete.

- Across all pits, the shallowest thickness of Made Ground was identified in TP10 where it was logged to 1.10m bgl (2.78m OD). The Clay Made Ground was described as dark brown sandy gravelly CLAY with red brick fragments, plastic and concrete.

- The sewage main found in TP11 at 1.60m bgl (2.63m OD) prevented further excavation.

Figures 9A & 9B – Sidewall profiles photographed during trial pitting. Fig 9A TP03 Gravelly Made Ground to 1.30m (2.83m OD) meeting natural stiff black sandy gravelly CLAY with a low cobble content underlain by stiff grey mottled light brown sandy slightly gravelly CLAY from 2.0m to 2.90m bgl. Pit ended in stiff brown sandy gravelly CLAY at 3.10m (1.03m OD). Moderate water ingress at 2.80m. **Fig 9B** In TP05, Made Ground extended to the base of the pit at 3.0m (1.08m OD). It was described as a dark brown gravelly Sand with a low cobble content, red brick fragments, plastic and cobble-sized concrete fragments.

Fig 9A

Fig 9B

Figure 10 – Cable Percussion and Trial Pit locations at Croke Villas

Google Earth Professional Image dated 09/2008

- Boreholes conducted across the site encountered a similar profile to that of th shallow machine-excavated trial pits. The Made Ground, described predominantly as 'CLAY with rubble', extended to depths ranging 1.0m to 2.40m, the shallowest cover of Made Gorund being recorded in BH12 in a borehole off Sackvill Street. This corroborate the findings made in the trial pits where the shallowest mantle of Made Ground was made in the nearby TP10 (1.10m thick).

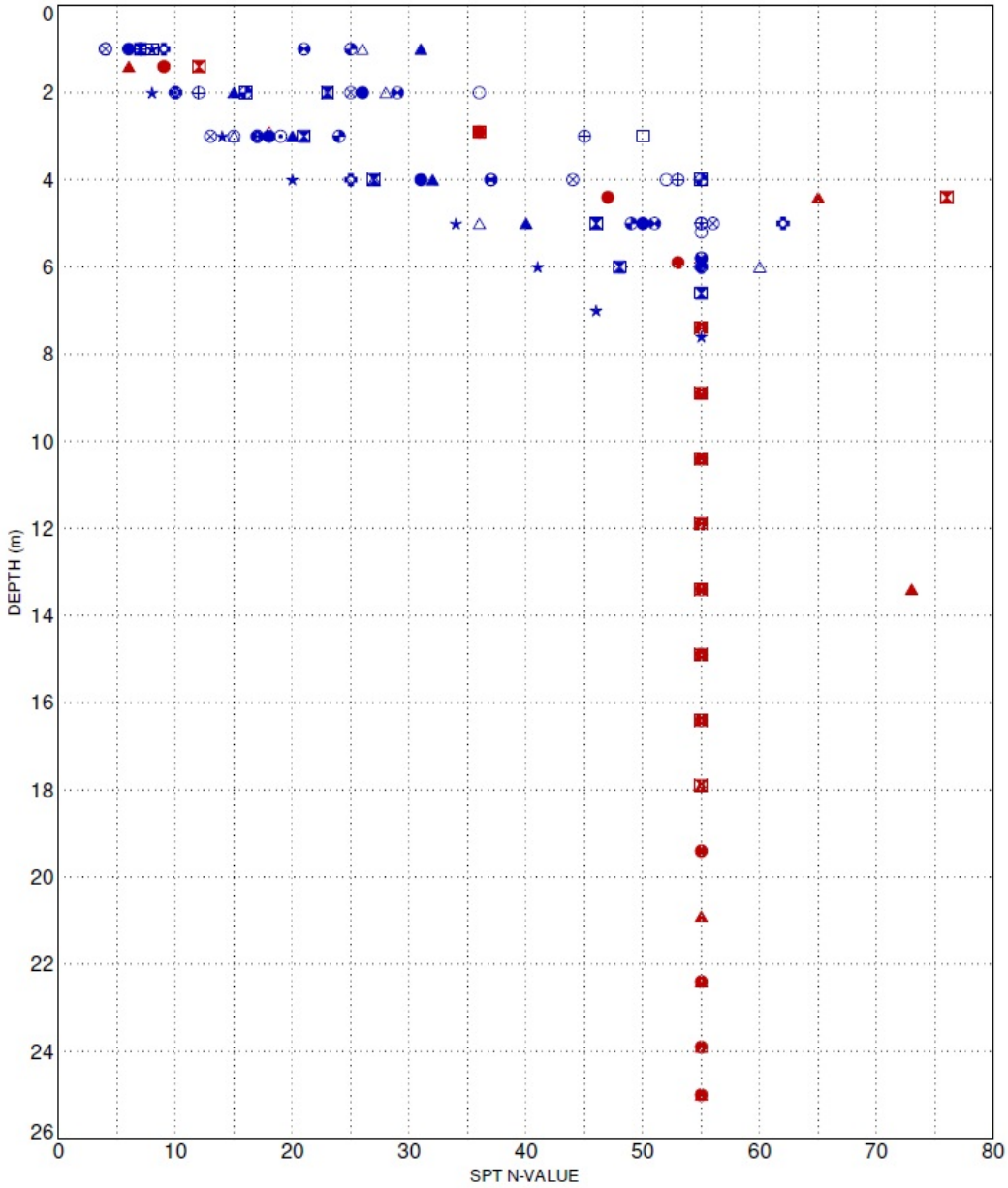
Possible Glaciolacustrine / Weathered Till Sediments

- Shy of an underlying stratum of over-consolidated very stiff black sandy gravelly CLAY, there are variable sequences in the upper 3.0m to 4.50m comprising mixed grey brown very clayey GRAVEL and firm, occasionally initially soft (BH04) brown and grey brown CLAY. A very sandy GRAVEL was noted to be blowing back in a layer from 3.80m to 4.50m (BH08) such was the confined peizometric pressures on the deposits at depth.

- The natural GRAVEL deposit in BH11 from 2.0m to 3.20m, ahead of encountering the very stiff underlying till, was noted to bear a strong hydrocarbon odour.

- The gradational increase in strength of the upper soils is illustrated by the SPT plot in Figure 11 where SPT's from both cable percussion boreholes and rotary drillholes are depicted. The standard penetration test [SPT] allows for an appraisal of the ground stiffness. The first set of SPT tests were undertaken at 1.0m bgl in cable percussion boreholes and at 1.50m in rotary drillholes. The increase in soil strength as profiled in the plot can be seen to be approximately linear from 1.0m, through 1.50m and on to 4.0m depth before they flat-line somewhat in the very stiff basal till. Based on SPT results, the soft consistency deposits are seen to occur to a maximum depth of 2.0m depth. Therefore, it could be surmised that the occurrence of soft and soft to firm soil deposits (inclusive of Made Ground) is restricted to the upper 2.0m. 'Low strength' deposits are those where N values of <10 blows are present.

Figure 11 – SPT Plot versus Depth for Cable Percussion Boreholes and Rotary Drillholes



Cable Percussion SPT = **Blue**
Rotary Drillhole SPT = **Red**

GLACIAL DEPOSITS (Glacial Lodgement Till)

- There is a clear colour change from the stiff brown CLAY to that of the underlying very stiff black sandy gravelly CLAY with cobbles. As mentioned, it occurs at depths ranging from approximately 3.0m to 4.50m bgl. It is notable that the black 'boulder CLAY' or over-consolidated till is shallower in depth progressing northeast and east. Here, in boreholes BH10-BH13, it was logged at depths ranging 3.10m to 3.60m corresponding to remarkably consistent elevations of between 0.23m OD to 0.42m OD.

- Further west, boreholes BH01-BH09 show the till at depths ranging 3.30m to 4.50m, the deepest in BH08 where a lower very sandy Gravel (800mm thick) likely scours the tills upper surface. The entry levels of the very stiff till ranged from 0.67m OD (BH09) to -0.38m (BH08).

- Rotary open hole drilling was deployed at three locations on the site. Very stiff CLAY was found to persist to significant depths, occasionally with intervening clayey sandy GRAVEL horizons (RC03 from 13.90-14.60m).

- In the case of RC01, a grey brown clayey sandy GRAVEL was found underlying the CLAY from 16.40m bgl (-12.36m OD). This continued to a drillhole termination depth of 25.0m bgl (-20.96m OD). No rock was intercepted to this depth.

- At RC02, to the east of the site, a similar underlying grey brown clayey sandy GRAVEL layer was intercepted below the fine grained till from 15.0m bgl (-11.42m OD). It extended to bedrock at 19.30m bgl (-15.72m OD). Coring of limestone bedrock commenced from 20.40m bgl (-16.82m OD) to an end depth of 23.60m bgl (-20.02m OD).

- Finally, at RC03, positioned in a central area of the site between RC01 to the west and RC02 to the east, the fine till passed to a clayey sandy GRAVEL at a depth of 17.80m bgl (-13.98m OD). Blowing sands and gravels were encountered to the eventual base of the hole at 25.0m bgl (-21.18m OD) without intercepting rockhead.

5.2 Bedrock

As referenced earlier in Section 4.1, the GSI rock map for the area (Figure 5, 1:100,000 Solid Geology series) shows that the Lucan Formation underlies the site. The formation is comprised of argillaceous bioclastic limestones and interbedded shales.

Rotary drilling was conducted at three locations on site. At one location, furthest east, drilling successfully penetrated the thick mantle of glacial till deposits and cored the underlying bedrock commencing at 20.40m (RC02). This corresponded to an elevation -16.82m OD. Figure 12 shows the core recovery in RC02. The rock was reported in the same corehole from 19.30m (-15.72m OD).

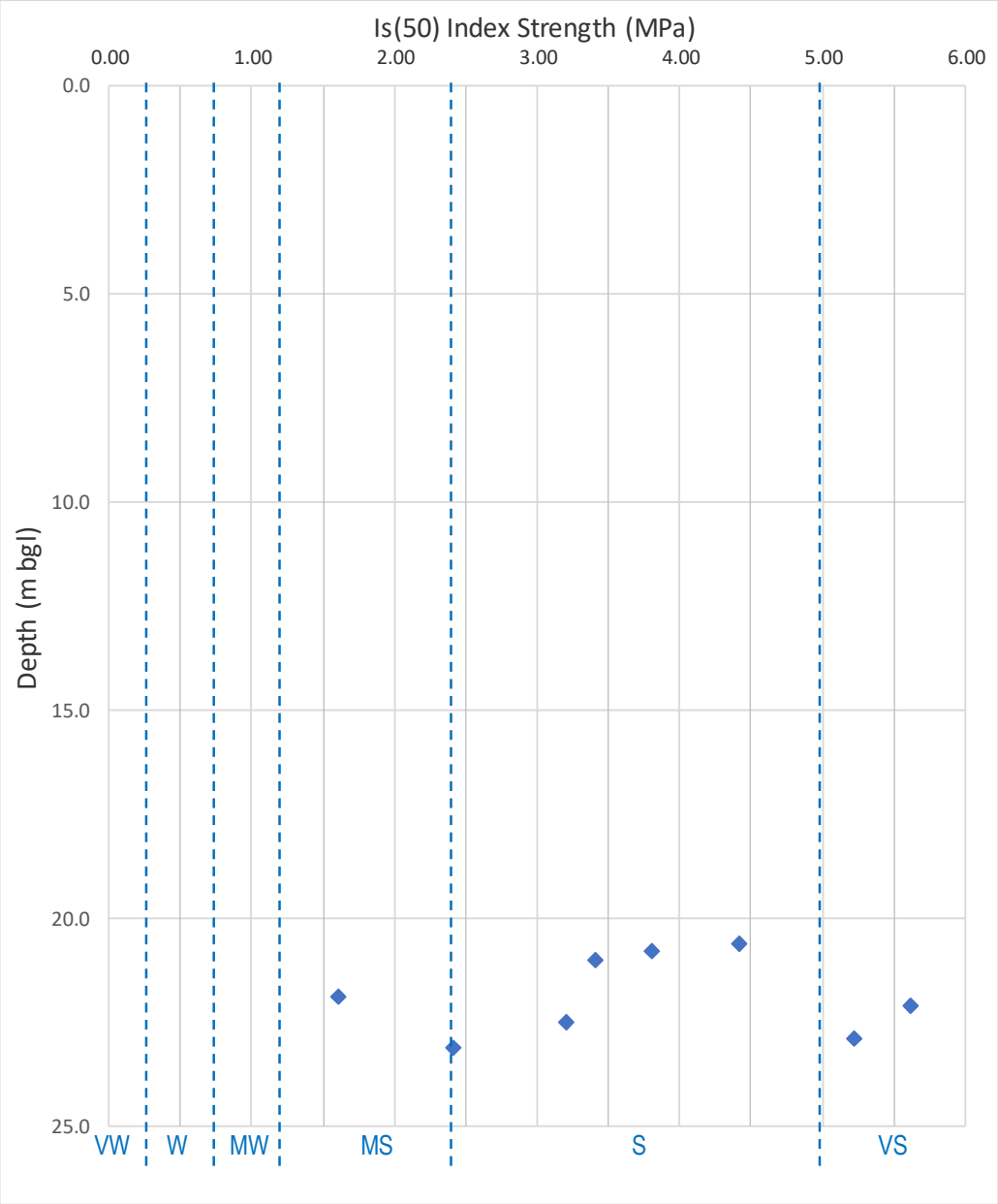
Recovered cores were logged as fresh to slightly weathered weak to strong, medium to thinly bedded, light to dark grey/black, fine-grained LIMESTONE. The limestone comprised interbedded argillaceous/muddy layers with calci-siltite / sandy layers with local pyrite formation.

Figure 12 – Bedrock cores in RC02 from 20.40m bgl to 23.60m (-20.02m OD).

Discontinuity spacings in the rotary cores generally ranged from medium (200 to 600mm) to closely spaced (60 to 200mm). The discontinuity surfaces are typically smooth to locally rough, planar to locally curviplanar. Apertures are tight to partly open, locally exhibiting clay smearing. Dips are subhorizontal and locally subvertical.

The point load strength index (PLSI) test data produced $I_s(50)$ values ranging from 1.61 to 5.62 MPa with a mean value of 3.71 MPa. The PLSI strengths form a scatter indicative of predominantly strong rock. The points plot towards the centre and right of Figure 13 implying a dearth of interbedded, generally weaker shale / mudrock.

Figure 13 – $I_s(50)$ strengths obtained from diametrial Point Load Strength Index testing



VW = Very Weak, W = Weak, MW = Moderately Weak, MS = Medium Strong, S = Strong, VS = Very Strong (ISO 14689:2017 (E))

Using a correlation factor (K) of 20 to assess compressive strength, this suggests a characteristic strength envelope in the order of 32.2 to 112.4 MPa and categorizes the bedrock as medium strong (25 to 50MPa) to lower bound very strong (100 to 250MPa). The visual strength descriptors determined during engineering geological logging marry well with the overall plot scatter in Figure 13.

ISO 14689:2017 (E) rock strength parameters are drawn on Figure 13 to allow correlation between UCS and Point Load Strength tests. A correlation factor (K) of 20 was used to plot the ISO 14689:2017 (E) MPa strength divisions on the Point Load strength ($I_s(50)$) plot.

5.3 Groundwater

Water ingress was noted frequently in boreholes, marked absent in only four of the thirteen boreholes constructed on site. Isolated seepages were generally restricted to the upper mantle of Made Ground at ca. 1.50m bgl. More charged water ingress was apparent at greater depth, generally from 2.50m bgl. At this depth, slow water entry was reported in a number of boreholes with a modest rise in water levels registered once the strike was encountered (approx. 400mm). Borehole BH08 saw the greatest ingress with blowing sands observed up the casing string. The confined granular layer was met between 3.80m and 4.50m bgl being logged as a 'Medium dense grey very sandy GRAVEL'.

The observations in trial pits mirrored the findings in the cable percussion boreholes with a number of strikes recorded at ca. 2.50m bgl. In many cases, the water sitting at this depth prevented further excavation in the respective trial pit. Stability in the pit sidewalls remained good despite the water ingress at depth.

Water stirkes in rotary drillholes was generally reserved for the deep-seated strata, commonly at the interface between the thick accumulation of over-consolidated till and the underlying GRAVEL. Although deep-seated water strikes, the water in the drillholes post-works was observed in the region 4.0m (-0.18m OD) to 5.80m bgl (-1.76m OD).

Table 1 outlines where water was met in each of the exploratory holes. The potential does exist for there to be seasonal changes in groundwater level. The works were carried out during winter / spring 2023/24. Ongoing monitoring of standpipes at both RC01 and RC02 would permit a fuller understanding of the long term water re-equilibration on site.

Table 1 – Water measurements in on-site exploratory holes

	Exploratory Hole No.	Water Struck **m bgl** (m OD)	Stratum Description	Rate of Flow	Remarks / Stratum of water ingress (m OD)
Cable Percussion Boreholes	BH04	**1.50** (2.73)	MADE GROUND comprising brown/black sandy gravelly Clay with rubble	Seepage	No reported rise in water during a 20minute observation period
	BH05	**1.50** (2.65)	MADE GROUND comprising brown gravelly Clay with frequent rubble	Seepage	No reported rise in water during a 20minute observation period
	BH06	**5.20** (-1.03)	Very stiff black sandy gravelly CLAY with occasional cobbles	Slow – water rose to **4.70m** in 20min	Water rose to **4.70m** during a 20minute observation period
	BH07	**2.30** (1.57)	Medium dense grey/brown clayey GRAVEL	Seepage	No reported rise in water during a 20minute observation period
	BH08	**3.90** (0.22)	Medium dense grey very sandy GRAVEL (Blowing noted)	Moderate - water rose to 2.80m in 20min	Water rose to 2.80m during a 20minute observation period. Sealed strike at 4.10m.

Cont.

Cable Percussion Boreholes	BH08	**4.20** (-0.08)	Medium dense grey very sandy GRAVEL (Blowing noted)	Rapid - water rose to 1.20m in 20min	Water rose to 1.20m during a 20minute observation period. Strike not sealed.
	BH09	**3.40** (1.37)	Firm grey/brown slightlly sandy slightly gravelly SILT/CLAY	Slow - water rose to 3.0m in 20min	Water rose to 3.0m during a 20minute observation period. Sealed strike at 4.10m.
	BH10	**2.90** (0.62)	Medium dense grey/brown silty sandy GRAVEL	Slow – water rose to 2.50m in 20min	Water rose to 2.50m during a 20minute observation period. Sealed strike at 3.10m.
	BH11	**2.50** (1.0)	Medium dense grey/brown very clayey GRAVEL - Strong hydrocarbon odour noted	Slow - water rose to 2.0m in 20min	Water rose to 2.0m during a 20minute observation period. Strike not sealed.
	BH12	**2.50** (1.33)	Medium dense grey/brown very clayey GRAVEL	Slow - water rose to 2.30m in 20min	Water rose to 2.30m during a 20minute observation period. Strike sealed at 3.0m.
Rotary Drillholes	RC01	**2.90** (1.14)	Interface of upper CLAY and lower brown sandy GRAVEL	Seepage – sealed strike at 3.30m	Water was noted at **5.80m** bgl (-1.76m OD) in the drillhole upon removal of the drill casing. RC ended at 25.0m. (08-02-24)
		16.40 (-12.36)	Interface of upper grey black gravelly CLAY and lower grey brown clayey sandy GRAVEL	Slow – not sealed	
	RC02	**15.0** (-11.42)	Interface of upper grey black sandy gravelly cobbly CLAY and lower grey brown clayey sandy GRAVEL	Seepage – sealed strike at 16.0m	Water was noted at **4.60m** bgl (-1.02m OD) in the drillhole upon removal of the drill casing. RC ended at 23.60m. (12-02-24)
		17.90 (-14.32)	Lower grey brown clayey sandy GRAVEL	Slow – not sealed	
	RC03	**17.80** -13.98	Interface of upper grey brown gravelly CLAY and lower grey brown clayey sandy GRAVEL	-	Water was noted at **4.0m** bgl (-0.18m OD) in the drillhole upon removal of the drill casing. RC ended at 25.0m. (15-02-24)

Cont.

Trial Pits	TP01	**2.0** (1.86)	(Medium dense) Grey slightly clayey sandy GRAVEL with a low cobble content	Moderate	Trial Pit ended due to water ingress. Stability remarked as good.
	TP03	**2.80** (1.33)	Stiff grey mottled light brown sandy slightly gravelly CLAY	Moderate	Stability remarked as good.
	TP06	**2.80** (1.31)	(Dense) Light brown clayey sandy GRAVEL with a low cobble content	Seepage	Stability remarked as good.
	TP07	**2.50** (1.56)	Stiff light brown/grey very sandy gravelly CLAY	Moderate	Trial Pit ended due to water ingress. Stability remarked as good.
	TP08	**2.10** (1.46)	Firm to stiff brown mottled grey sandy gravelly CLAY with a low cobble content	Moderate	Trial Pit ended due to water ingress. Stability remarked as good.
	TP09	**2.0** (1.50)	Firm to stiff brown sandy gravelly CLAY with a medium cobble content	Moderate	Trial Pit ended due to water ingress. Stability remarked as good.
	TP10	**2.30** (1.58)	(Medium dense to dense) Brown slightly clayey sandy GRAVEL with a medium cobble content	Moderate	Trial Pit ended due to water ingress. Stability remarked as good.

6. GROUND ASSESSMENT & ENGINEERING RECOMMENDATIONS

6.1 General

In light of the ground investigation findings, the following geotechnical issues are developed and discussed:

- Foundations
- Groundwater / Infiltration
- Slopes / Batters
- Buried Concrete
- Waste Acceptance Criteria [WAC] & Environmental Testing
  - Soils destined for Landfill

6.2 Foundations

The ground investigation findings demonstrate a variable sequence of soils mantling the site. The findings from the boreholes suggest a very stiff over-consolidated CLAY underlies a cover of initial MADE GROUND overlying natural firm and firm to stiff, rarely soft CLAY and medium dense water-bearing GRAVEL. The depth to the basal very stiff and stiff till is quite consistent in that it ranges from 3 to 4.50m below ground level. There is potential to intercept Made Ground to appreciable depths (up to 3.0m / 1.08m OD in TP05) suggesting there is a significant variability in soil composition on the site, most likely attributable to the construction history on site, with the development in 1959 of Croke Villas. Based on SPT N values, there are areas with soft deposits to depths of ca. 2.0m.

Given the prominence of Made Ground (varying from 1.0m to 3.0m) and presence of generally firm and firm to stiff, rarely soft / low strength soils, the selected foundation solution for heavy builds will have to be founded within deeper competent strata in order to support structural loads.

Piles are recommended to support the structural loads and negate the risk of unacceptable settlement in the Made Ground and underlying generally medium strength soils. The use of piles would also eliminate the need to form excavations in potentially water-bearing near-surface soils (refer to Section 6.3). The use of a bored displacement pile system would curb the volume of arisings which would otherwise be generated using bored / CFA piles. However, advice should be sought from the piling contractor (or their designer) with regard to the most suitable pile type for the ground conditions.

Given the depth of rockhead (ca. 20m bgl), it is expected that adequate embedment in the lower CLAY layer will mobilise skin friction and end bearing. Ahead of coring, pile safe working load capacity (compression) should not be dependent on achieving end-bearing on the bedrock given its deep-seated profile. Trial piling in advance of production piling is advised to confirm embedment or penetration depths and more importantly validate that settlements would be acceptable at design or safe working loads (SWL).

The pile designer should consider negative skin friction from the Made Ground and soft to firm CLAY (potentially the upper 2-3m) on the selected piling technique. Floor slab loadings for the building unit are unknown but a suspended floor slab is recommended in view of the presence of unconsolidated and therefore compressible Made Ground across the site. It may be possible, if the existing fill is rolled and capped with a layer of SR21 Annex E compliant granular material, an adequate support for floor slabs could be generated, unless unusually high pressures are envisaged. Given the concentrations of total organic carbon detected in shallow soils (See Appendix 8), ground gas may be present on site. Measures should be incorporated in the ground slab design for the inclusion of a barrier to any such subterranean gases should the cover of Made Ground remain on site.

An engineered fill platform or piling mat to support the piling plant should be designed in accordance with BRE 470. The thickness and granular fill type (most likely T0 to SR21) should be selected for the ground conditions and specific rig loadings. It is assumed that imported granular fill used will remain

in situ under the footprint of the building after piling works are completed, therefore it should meet the chemical and durability / soundness parameters listed in Annex E of SR21:2014+A1:2016. Drainage and maintenance are key factors or considerations in pile platform design and to ensure successful piling operations. It is noted that T0 will not permit free draining conditions, hence surface water management and maintenance of the piling is advised as set out in BRE 470.

Plate bearing tests could be undertaken across the site to assess the performance of the existing Made Ground layer and the results used design platform thickness. Assuming the Made Ground is to be left in place, compaction using a smooth drum roller without vibration with a mass per metre of roll of not less than 5400 kg should be used and achieve an improvement in the performance (stiffness) of the Made Ground before constructing a piling platform.

6.3 Groundwater / Infiltration

As noted in Section 5.3, shallow groundwater strikes were present in open excavations ranging from rare seepages at depths of ca. 1.50m, increasing in intensity with depth, becoming slow to moderate from 2.0m and 2.50m bgl. These shallow groundwater strikes were generally hosted in indigenous gravel-dominant strata.

It is anticipated that if shallow temporary excavation intercepts these natural gravel layers, at depths ranging 1.60m to 2.10m in a number of pits, then water ingress will occur. It is likely that groundwater will remain in the base of these excavations as it did in five of the seven pits on site. It should be noted that groundwater can also exist as perched waterbodies often hosted in mixed Made Ground.

Deep-seated water entry was observed in borehole BH08 between 3.80m and 4.50m bgl during its construction, the most intense reading at 4.20m bgl when rapid ingress was noted rising to a level of 1.20m bgl in 20minutes. Blowing sands were also a feature of this strike. Its occurrence in one of the thirteen boreholes suggests it is localised in nature however. The lack of permeability in the underlying cemented till implies where minor sand or gravel layers do exist, water will be encountered within these porous lenses, under a considerable piezometric head. This is likely to be the case with the aforementioned multiple strikes in BH08 at both 3.90m and 4.20m bgl, both of which were found confined between an upper firm CLAY and the lower cemented black till.

Should water be encountered during deeper digs / excavations it is likely that de-watering will be required through a combination of strategic sump pumping and / or perimeter drains. The lateral connectivity of the uppermost water-bearing Gravel layer will dictate how successfully the local groundwater level can be drawn down, should this be required. As mentioned in Section 5.3, the potential does exist for there to be seasonal changes in groundwater level. The works were carried out during winter 2023/24. It may be the case that the various waterbodies at depth are subject to seasonal variations.

Four soakaway tests were conducted on the site. The tests were carried out in the upper Made Ground clayey soils in addition to the uppermost natural cohesive overburden soils. The highly impermeable nature of the natural soils may account for the low infiltration rates obtained.

It is likely that such soils would not be suitable for conventional soakaways being classified as offering only low natural infiltration (Table 2).

Table 2 – Measured infiltration rates (f) expressed as exposed area (metre) per unit time (minute)

Soakaway Test No.	Depth of Test (m bgl)	*f* (m/min)	*f* (m/sec)
SA02 (Cycle 1)*	1.50	0.00103 m/min	1.71E -05 m/sec
SA02 (Cycle 2)*		0.00067 m/min	1.121E -05 m/sec
SA08 (Cycle 1)**	1.50	0.00275 m/min	4.58E -05 m/sec
SA08 (Cycle 2)**		0.00206 m/min	3.439E -05 m/sec
SA09 (Cycle 1)**	1.50	0.00169 m/min	2.811 -05 m/sec
SA09 (Cycle 2)**		0.00143 m/min	2.387 -05 m/sec
SA10 (Cycle 1)**	1.60	0.00141 m/min	2.343 -05 m/sec
SA10 (Cycle 2)**		0.00117 m/min	1.95E -05 m/sec

*Conducted in MADE GROUND
** Conducted partly in MADE GROUND

6.4 Slopes / Batters
A maximum temporary slope angle of 1V to 1.5H (33º) is anticipated for batters constructed within the upper medium strength fine grained soils. A slope angle of 1V to 2H (26°) should be appropriate for long term batters in the same soils. Instability was generally absent during pitting with minor sidewall collapse reserved for lower water-saturated gravel layers. Where deep excavation works are required in the superficial deposits, the use of trench box support is advised. In addition, the uppermost fine subsoils will be susceptible to softening and degradation and surface water or groundwater ingress can lead to a significant reduction in shear strength. Perched water can exist locally and this should be considered in risk assessments for excavations. Presence of ground gas should also be a consideration given the drape of Made Ground on the site.

Site operatives or personnel should not enter unsupported excavations and should be informed of potential risks. Where site operatives or engineering staff work in close proximity to temporary slopes or batters, these should be inspected and approved by a suitably experienced civil engineer, preferably with geotechnical experience. Where there is a risk of spalling of battered slopes, the use of a geogrid is recommended. The geogrid should be anchored at the top and bottom of the ridge face to contain particles such as gravel, cobbles and / or boulders, anthropogenic materials that may become dislodged.

6.5 Buried Concrete
The chemical analysis tests on natural soil samples (BRE SD1 analysis suite) show pH (2.5:1) values ranging from 7.7 to 9.3. The sulphate aqueous extract (SO_4) results from borehole and trial pit samples determined values of <10 and 880mg/l. This would suggest the 'as-received' soil samples tested could be categorised as BRE Class DS-2.

Table C2 ACEC for brownfield sites in BRE SD 1 (2005) can be used in the selection and design of concrete. If mobile groundwater conditions prevail at the site and given the pH values obtained from the testing, then ACEC class AC-2 would be expected to be appropriate for buried concrete in the soils. In line with I.S. EN 206-1:2013, given the elevated acid soluble sulphate contents reported, concrete could be manufactured to Class XA2 where founded or positioned in the upper soils (Class XA2 being >3000 and ≤ 12000 SO_4^{2-} mg/kg).

6.6 Waste Acceptance Criteria [WAC] & Environmental Testing – *Soils destined for Landfill*
Thirty soil samples from boreholes and trial pits were analysed for their compliance to the criteria set out in the 2002 European Landfill Directive (2003/33/EC). The results from testing feature in Appendix 8.

It would be prudent, given the volume of analysis, that a waste characterisation assessment of the results would be carried out in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015). We would recommend that a specialist environmental consultant (e.g. O'Callaghan Moran Consultants) be engaged to undertake this assessment.

Trace asbestos (<0.001%) levels in the form of Chrysotile were found in a sample from TP05 at 0.80m. Given trial pit TP05 contained the most significant thickness of Made Ground of all the trial pits opened on site, two further samples from the same pit were also screened for asbestos. Neither reported ACM. However, given the abundance of rubble noted in the Made Ground cover on site, the potential to intercept similar "fibres/clumps" cannot be discounted.

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Appendix 1

Trial Pit Logs & Photographs

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,563.80 E 735,767.43 N
		DATE STARTED	28/11/2023
		DATE COMPLETED	28/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	3.86
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	3.66						
MADE GROUND: Dark brown sandy slightly gravelly CLAY with red brick fragments and plastic. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded.		0.60	3.26						
MADE GROUND: Brown sandy gravelly CLAY with red brick fragments and cobble-sized concrete fragments. Sand is fine to medium. Gravel is fine to medium, subangular to subrounded					AA198501	B	0.70-0.80		
1.0 Stiff light brown mottled dark brown slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded.		1.30	2.56		AA198502	B	1.30-1.40		
(Medium dense) Grey slightly clayey sandy GRAVEL with a low cobble content. Sand is fine to medium. Gravel is subrounded fine to coarse. Cobbles are subangular to subrounded.		1.90	1.96	1 (Moderate)					
2.0					AA198503	B	2.20-2.30		
3.0 End of Trial Pit at 3.00m		3.00	0.86						

Groundwater Conditions
Water strike at 2.0m

Stability
Good

General Remarks
Pit ended due to water ingress

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,580.00 E 735,762.96 N
		DATE STARTED	28/11/2023
		DATE COMPLETED	28/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.12
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	3.92						
MADE GROUND: Dark brown/grey very sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subangular to subrounded.		0.50	3.62						
MADE GROUND: Dark brown/grey very sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete fragments. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subangular to subrounded.					AA198504	B	0.70-0.80		
1.0									
					AA198505	B	1.40-1.50		
2.0 End of Trial Pit at 2.00m		2.00	2.12						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Slow progress from 1.0m bgl. Pit ended due to concrete slab obstruction.

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,597.94 E 735,754.43 N
		DATE STARTED	28/11/2023
		DATE COMPLETED	28/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.13
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
MADE GROUND: Dark grey clayey sandy GRAVEL with a low cobble and boulder content and red brick fragments. Sand is fine to medium. Gravel is subangular fine to medium. Cobbles are subangular. Boulders are subangular (up to 300mm).		0.20	3.93						
					AA198506	B	0.80-0.90		
1.0									
Stiff black sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is subangular fine to medium. Cobbles are subangular.		1.30	2.83						
					AA198507	B	1.50-1.60		
2.0 Stiff grey mottled light brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.		2.00	2.13						
					AA198508	B	2.40-2.50		
				1 (Moderate)					
Stiff brown sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subangular.		2.90	1.23						
3.0									
End of Trial Pit at 3.10m		3.10	1.03						

Groundwater Conditions
Water strike at 2.80m

Stability
Good

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP04**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,616.81 E 735,745.78 N
		DATE STARTED	28/11/2023
		DATE COMPLETED	28/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	3.92
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	3.72						
MADE GROUND: Dark brown/black slightly clayey gravelly SAND with red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.					AA198509	B	0.80-0.90		
1.0 Stiff dark brown mottled light brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to meidum.		1.30	2.62		AA198510	B	1.50-1.60		
2.0 (Dense) Light brown/grey slightly clayey sandy GRAVEL with a medium cobble content. Sand is fine to medium. Gravel is subangular fine to medium. Cobbles are subangular.		1.90	2.02		AA198511	B	2.30-2.40		
(Dense) Grey clayey sandy GRAVEL with a medium cobble content. Sand is fine to medium. Gravel is subangular fine to coarse. Cobbles are subangular.		2.50	1.42		AA198512	B	2.70-2.80		
End of Trial Pit at 2.90m		2.90	1.02						
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP05**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,631.44 E 735,763.85 N
		DATE STARTED	28/11/2023
		DATE COMPLETED	28/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.08
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	3.98						
MADE GROUND: Dark brown gravelly SAND with a low cobble content and red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.					AA198513	B	0.80-0.90		
1.0					AA198514	B	1.60-1.70		
2.0					AA198515	B	2.70-2.80		
3.0 End of Trial Pit at 3.00m		3.00	1.08						

Groundwater Conditions
Dry

Stability
Good

General Remarks

IGSL TP LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,647.26 E 735,750.03 N
		DATE STARTED	29/11/2023
		DATE COMPLETED	29/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.11
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	4.01						
MADE GROUND: Dark brown/black sandy slightly gravelly CLAY with red brick fragments. Sand is fine to medium. Gravel is subrounded fine to medium.		0.50	3.61						
MADE GROUND: Brown sandy gravelly CLAY with red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subrounded fine to medium.		0.90	3.21		AA198516	B	0.70-0.80		
1.0 MADE GROUND: Dark brown/black sandy slightly gravelly CLAY with red brick fragments. Sand is fine to medium. Gravel is subrounded fine to medium. 1.0m Pipe (measures 1.20m from wall)									
(Dense) Light brown clayey sandy GRAVEL with a low cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.		1.60	2.51		AA198517	B	1.70-1.80		
2.0					AA198518	B	2.50-2.60		
End of Trial Pit at 2.80m		2.80	1.31	1 (Seepage)					
3.0									

Groundwater Conditions
Water strike at 2.80m

Stability
Good

General Remarks
Foundation Inspection Pit FP06 conducted in pit - no foundation exposed.

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP07**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,653.69 E 735,734.44 N
		DATE STARTED	29/11/2023
		DATE COMPLETED	19/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.06
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	3.96						
MADE GROUND: Dark brown to brown sandy very gravelly CLAY with a low cobble content and red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subangular to subrounded.		0.60	3.46						
MADE GROUND: Light brown sandy very gravelly CLAY with a low cobble content and red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subangular to subrounded.					AA198520	B	0.70-0.80		
1.0									
Firm to stiff light brown sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is subangular fine to medium. Cobbles are subangular to subrounded.		1.60	2.46		AA198521	B	1.70-1.80		
2.0									
Stiff light brown/grey very sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.		2.40	1.66	(Moderate)	AA198522	B	2.50-2.60		
End of Trial Pit at 2.80m		2.80	1.26						
3.0									

Groundwater Conditions
Water strike at 2.50m

Stability
Good

General Remarks
Dig ended due to water ingress

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP08**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,669.56 E 735,731.84 N
		DATE STARTED	30/11/2023
		DATE COMPLETED	30/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	3.56
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	3.36						
MADE GROUND: Dark brown/black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic, concrete, sea shells. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.					AA198524	B	0.60-0.70		
1.0 Firm to stiff brown sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.		1.30	2.26		AA198525	B	1.50-1.60		
Firm to stiff brown mottled grey sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.		1.70	1.86	1 (Moderate)	AA198526	B	2.20-2.30		
2.0 Stiff grey sandy gravelly CLAY/SILT with a medium cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.		2.50	1.06		AA198527	B	2.70-2.80		
3.0 End of Trial Pit at 3.00m		3.00	0.56						

Groundwater Conditions
Water strike at 2.10m

Stability
Good

General Remarks
Dig ended due to water ingress

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,692.90 E 735,755.88 N
		DATE STARTED	30/11/2023
		DATE COMPLETED	30/11/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	3.50
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	3.40						
MADE GROUND: Dark brown sandy gravelly CLAY with a low cobble content and red brick fragments, plastic, concrete, sea shells. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.					AA198530	B	0.70-0.80		
1.0 Firm to stiff brown sandy gravelly CLAY with a medium cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subangular to subrounded.		1.10	2.40		AA198531	B	1.50-1.60		
2.0 Firm to stiff brown sandy very gravelly CLAY with a medium cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subangular to subrounded.		2.10	1.40	1 (Moderate)	AA198532	B	2.10-2.20		
End of Trial Pit at 2.30m		2.30	1.20						
3.0									

Groundwater Conditions
Water strike at 2.0m

Stability
Good

General Remarks
Dig ended due to water ingress

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP10**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,658.73 E 735,798.26 N
		DATE STARTED	04/12/2023
		DATE COMPLETED	04/12/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	3.88
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.20	3.68						
MADE GROUND: Dark brown sandy gravelly CLAY with red brick fragments, plastic, concrete. Sand is fine to medium. Gravel is subrounded fine to medium.					AA198537	B	0.70-0.80		
1.0 Firm brown sandy gravelly CLAY with a medium cobble content. Sand is fine to medium. Gravel is subrounded fine to medium. Cobbles are subrounded.		1.10	2.78		AA198538	B	1.30-1.40		
2.0 (Medium dense to dense) Brown slightly clayey sandy GRAVEL with a medium cobble content. Sand is fine to medium. Gravel is subrounded fine to coarse. Cobbles are subrounded.		2.10	1.78	1 (Moderate)	AA198539	B	2.30-2.40		
End of Trial Pit at 2.40m		2.40	1.48						
3.0									

Groundwater Conditions
Water strike at 2.30m

Stability
Good

General Remarks
Dig ended due to water ingress

IGSL TP LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

TRIAL PIT RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**TRIAL PIT NO.**	**TP11**
		SHEET	Sheet 1 of 1
LOGGED BY	DM	**CO-ORDINATES**	716,663.82 E 735,782.51 N
		DATE STARTED	04/12/2023
		DATE COMPLETED	04/12/2023
CLIENT	NDFA	**GROUND LEVEL (m)**	4.23
ENGINEER	MORCE	**EXCAVATION METHOD**	Tracked Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 MADE GROUND: Brown to grey sandy gravelly CLAY with red brick fragments, plastic and cobble-sized concrete fragments. Sand is fine to medium. Gravel is subrounded fine to medium.					AA198540	B	0.80-0.90		
1.0									
1.60m Pipe (possible sewage) (measures 0.80m from wall) End of Trial Pit at 1.60m		1.60	2.63						
2.0									
3.0									

Groundwater Conditions
Dry

Stability
Good

General Remarks
Dig ended upon intercepting buried clay pipe

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP01 – 1 of 4

TP01 – 2 of 4

TP01 – 3 of 4

TP01 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP02 – 1 of 4

TP02 – 2 of 4

TP02 – 3 of 4

TP02 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP03 – 1 of 4

TP03 – 2 of 4

TP03 – 3 of 4

TP03 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP04 – 1 of 4

TP04 – 2 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP04 – 3 of 4

TP04 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP05 – 1 of 4

TP05 – 2 of 4

TP05 – 3 of 4

TP05 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP06 – 1 of 6

TP06 – 2 of 6

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP06 – 3 of 6

TP06 – 4 of 6

TP06 – 5 of 6

TP06 – 6 of 6

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP07 – 1 of 4

TP07 – 2 of 4

TP07 – 3 of 4

TP07 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP08 – 1 of 4

TP08 – 2 of 4

TP08 – 3 of 4

TP08 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP09 – 1 of 4

TP09 – 2 of 4

TP09 – 3 of 4

TP09 – 4 of 4

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP10 – 1 of 3

TP10 – 2 of 3

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP10 – 3 of 3

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

TP11 – 1 of 1

Appendix 2

Foundation Pit Logs

FOUNDATION INSPECTION PIT RECORD

REPORT NUMBER

25000-3

CONTRACT: NDFA Social Housing Bundles 4/5 - Lot 3 – Croke Villas

LOCATION: FP04 (at ST04-1)

LOGGED BY: D.M.

Date of survey: 30/11/2023

TRIAL PIT NO. **FP04**

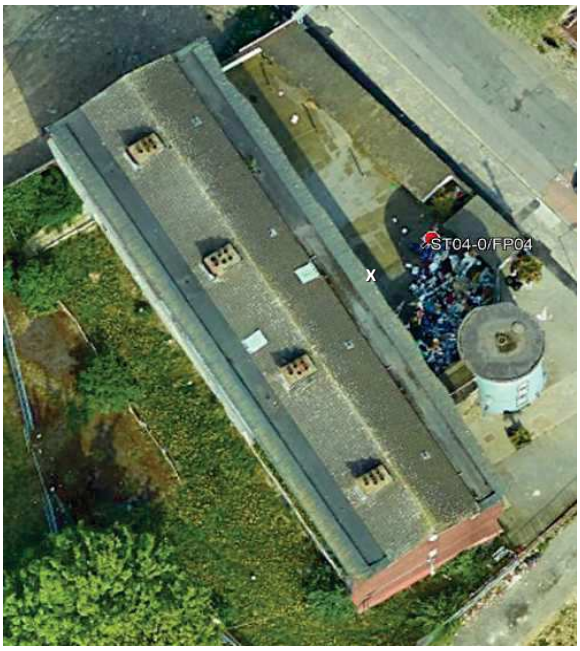
SHEET Sheet 1 of 1

Summary of ground conditions

from	to	Description	Ground water
0.00	0.06	Concrete slabs	
0.06	2.00	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content, red brick fragments, plastic and concrete.	DRY

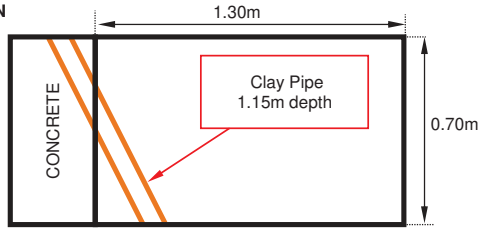
See also ST04 log

LOCATION **ST/FP04**

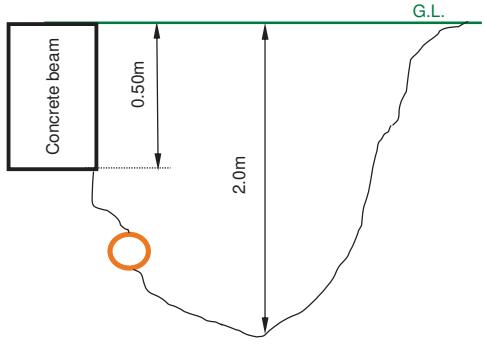


DETAIL

PLAN



ELEVATION



FOUNDATION INSPECTION PIT RECORD

REPORT NUMBER

25000-3

CONTRACT: NDFA Social Housing Bundles 4/5 - Lot 3 – Croke Villas

LOCATION: FP06 (at TP06)

LOGGED BY: D.M.

Date of survey: 29/11/2023

TRIAL PIT NO. **FP06**

SHEET Sheet 1 of 1

Summary of ground conditions

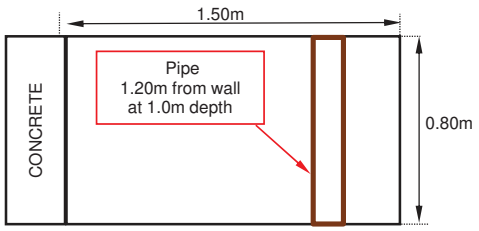
from	to	Description	Ground water
0.00	0.10	TOPSOIL	DRY
0.10	0.50	MADE GROUND: Dark brown/black sandy slightly gravelly CLAY with red brick fragments	
0.50	0.90	MADE GROUND: Brown sandy gravelly CLAY with red brick fragments, plastic and cobble-sized concrete fragments	
0.90	1.60	MADE GROUND: Dark brown/black sandy slightly gravelly CLAY with red brick fragments	
1.60	1.90	(Dense) Light brown clayey sandy GRAVEL with a low cobble content	

See also TP06 log

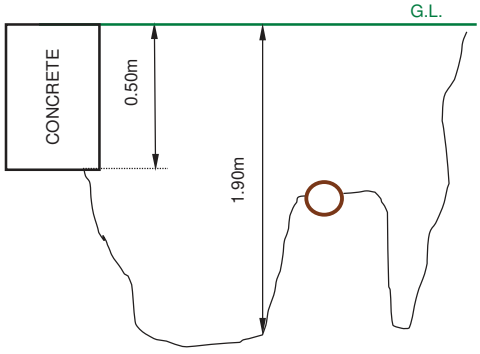
LOCATION **FP06**

DETAIL

PLAN



ELEVATION



FOUNDATION INSPECTION PIT RECORD

REPORT NUMBER

25000-3

CONTRACT: NDFA Social Housing Bundles 4/5 - Lot 3 – Croke Villas

LOCATION: FP11 (at TP11)

LOGGED BY: D.M.

Date of survey: 04/12/2023

TRIAL PIT NO. **FP11**

SHEET Sheet 1 of 1

Summary of ground conditions

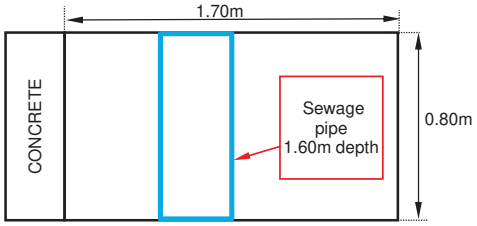
from	to	Description	Ground water
0.00	1.60	MADE GROUND: Brown to grey sandy gravelly CLAY with red brick fragments, plastic and cobble-sized concrete fragments	DRY

See also TP11 log

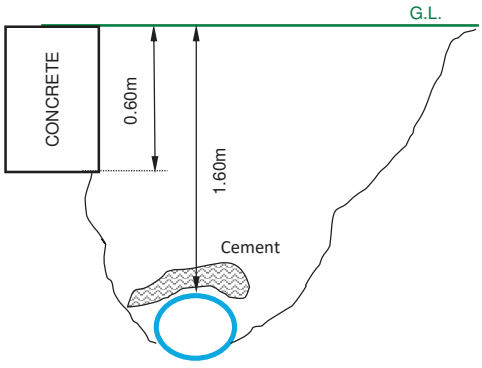
LOCATION **FP11**

DETAIL

PLAN



ELEVATION



Appendix 3

Cable Percussion Borehole Logs

SPT Calibration Sheet (Er)

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH01**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,567.59 E 735,776.60 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.86	**BOREHOLE DEPTH (m)**	5.50
		DATE COMMENCED	09/01/2024
		DATE COMPLETED	10/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising black sandy gravelly Clay with rubble)									
1					AA210240	B	1.00		N = 6 (1, 1, 1, 1, 1, 3)	
			2.26	1.60						
	Stiff grey/brown sandy slightly gravelly SILT/CLAY		1.86	2.00						
2	Dense grey/brown very clayey GRAVEL (Possible very gravelly Clay)				AA210241	B	2.00		N = 26 (3, 5, 5, 7, 5, 9)	
3					AA210242	B	3.00		N = 18 (6, 6, 5, 4, 4, 5)	
			0.66	3.20						
	Stiff brown sandy gravelly CLAY		0.26	3.60						
4	Very stiff black sandy gravelly CLAY with occasional cobbles				AA210243	B	4.00		N = 31 (4, 5, 5, 7, 8, 11)	
5					AA210244	B	5.00		N = 50 (6, 9, 14, 12, 14, 10)	
			-1.64	5.50						
	Obstruction End of Borehole at 5.50 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.40	3.10	1.5	
5.10	5.20	0.5	
5.40	5.50	1.5	

WATER STRIKE DETAILS

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

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH02**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,574.21 E 735,758.92 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.07	**BOREHOLE DEPTH (m)**	6.80
		DATE COMMENCED	09/01/2024
		DATE COMPLETED	09/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown sandy gravelly Clay with rubble)									
1					AA210233	B	1.00		N = 7 (2, 2, 2, 1, 2, 2)	
2			1.87	2.20	AA210234	B	2.00		N = 23 (3, 4, 4, 7, 6, 6)	
	Medium dense grey/brown very clayey GRAVEL (Possible very gravelly Clay)		1.37	2.70						
3	Stiff brown sandy gravelly CLAY				AA210235	B	3.00		N = 21 (3, 3, 4, 4, 5, 8)	
4			-0.23	4.30	AA210236	B	4.00		N = 27 (4, 4, 5, 7, 7, 8)	
5	Very stiff black sandy gravelly CLAY with occasional cobbles				AA210237	B	5.00		N = 46 (4, 5, 7, 9, 14, 16)	
6					AA210238	B	6.00		N = 48 (5, 9, 10, 12, 12, 14)	
					AA210239	B	6.50		N = 50/225 mm (9, 16, 20, 22, 8)	
7	Obstruction End of Borehole at 6.80 m		-2.73	6.80						
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
1.90	2.20	1	
6.60	6.80	2	

WATER STRIKE DETAILS

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

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH03**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,588.57 E 735,761.87 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.17	**BOREHOLE DEPTH (m)**	5.90
		DATE COMMENCED	08/01/2024
		DATE COMPLETED	08/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising black very gravelly Clay with frequent brick and concrete fragments									
1					AA210228	B	1.00		N = 31 (3, 3, 6, 7, 8, 10)	
2			2.07	2.10	AA210229	B	2.00		N = 15 (2, 3, 3, 5, 3, 4)	
	Firm brown very gravelly SILT/CLAY		1.47	2.70						
3	Stiff brown sandy gravelly SILT/CLAY with occasional cobbles				AA210230	B	3.00		N = 20 (3, 3, 4, 5, 5, 6)	
			0.27	3.90						
4	Very stiff black sandy gravelly CLAY with occasional cobbles				AA210231	B	4.00		N = 32 (5, 6, 6, 8, 9, 9)	
5					AA210232	B	5.00		N = 40 (7, 9, 9, 10, 4, 17)	
			-1.73	5.90						
6	Obstruction End of Borehole at 5.90 m								N = 50/150 mm (25, 25, 25)	
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
1.30	1.50	1	
5.70	5.90	1.5	

WATER STRIKE DETAILS

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

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH04**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,593.45 E 735,744.14 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.23	**BOREHOLE DEPTH (m)**	7.60
		DATE COMMENCED	05/01/2024
		DATE COMPLETED	05/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown/black sandy gravelly Clay with rubble									
1					AA210221	B	1.00		N = 8 (2, 3, 2, 3, 2, 1)	
2			2.13	2.10	AA210222	B	2.00		N = 8 (1, 0, 1, 1, 3, 3)	
	Soft grey/brown very sandy gravelly SILT/CLAY		1.53	2.70						
3	Firm to stiff brown sandy gravelly SILT/CLAY with occasional cobbles				AA210223	B	3.00		N = 14 (2, 3, 3, 3, 4, 4)	
4					AA210224	B	4.00		N = 20 (3, 4, 4, 5, 5, 6)	
			-0.17	4.40						
5	Very stiff black sandy gravelly CLAY with some cobbles				AA210225	B	5.00		N = 34 (4, 6, 6, 8, 9, 11)	
6					AA210226	B	6.00		N = 41 (4, 7, 9, 10, 10, 12)	
7					AA210227	B	7.00		N = 46 (3, 4, 8, 14, 12, 12)	
			-3.37	7.60						
	Obstruction								N = 50/75 mm (25, 50)	
8	End of Borehole at 7.60 m									
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
7.40	7.60	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.50	1.50	No	No	20	Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH05**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,606.93 E 735,736.60 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.15	**BOREHOLE DEPTH (m)**	5.20
		DATE COMMENCED	04/01/2024
		DATE COMPLETED	04/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown gravelly Clay with frequent rubble									
1					AA210215	B	1.00		N = 7 (1, 1, 2, 1, 2, 2)	
2					AA210216	B	2.00		N = 10 (1, 2, 1, 2, 2, 5)	
			1.85	2.30						
	Firm to stiff grey/brown very sandy gravelly SILT/CLAY									
3					AA210217	B	3.00		N = 19 (3, 3, 4, 4, 5, 6)	
			0.05	4.10						
4	Very stiff black sandy gravelly CLAY with occasional cobbles				AA210218	B	4.00		N = 37 (4, 6, 7, 9, 9, 12)	
5					AA210219	B	5.00		N = 50/150 mm (11, 14, 27, 23)	
			-1.05	5.20						
	Obstruction End of Borehole at 5.20 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4.60	4.70	0.5	
5.00	5.20	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.50	1.50	No	No	20	Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

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GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH06**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,622.74 E 735,728.70 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.17	**BOREHOLE DEPTH (m)**	6.10
		DATE COMMENCED	03/01/2024
		DATE COMPLETED	04/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown Clay with frequent rubble									
1					AA210210	B	1.00		N = 9 (1, 2, 2, 2, 3, 2)	
2					AA210211	B	2.00		N = 10 (2, 2, 2, 3, 2, 3)	
			1.77	2.40						
	Medium dense grey/brown very clayey GRAVEL (Possible very gravelly Clay)		1.17	3.00						
3	Firm to stiff brown sandy gravelly CLAY				AA210212	B	3.00		N = 17 (2, 3, 3, 4, 4, 6)	
4					AA210213	B	4.00		N = 25 (2, 4, 4, 6, 7, 8)	
			-0.13	4.30						
	Very stiff black sandy gravelly CLAY with occasional cobbles									
5					AA210214	B	5.00		N = 62 (8, 15, 15, 17, 18, 12)	
6			-1.93	6.10	AA210215	B	6.00		N = 50/225 mm (11, 14, 15, 16, 19)	
	Obstruction End of Borehole at 6.10 m									
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
5.50	5.70	1	
6.00	6.10	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.20	5.20	No	4.70	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH07**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,634.89 E 735,750.89 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.87	**BOREHOLE DEPTH (m)**	5.30
		DATE COMMENCED	03/01/2024
		DATE COMPLETED	03/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown Clay with rubble									
1					AA210206	B	1.00		N = 4 (1, 0, 1, 1, 1, 1)	
			2.07	1.80						
2	Medium dense grey/brown clayey GRAVEL (Possible very gravelly Clay)				AA210207	B	2.00		N = 36 (6, 8, 8, 9, 8, 11)	
			1.17	2.70						
3	Firm brown sandy very gravelly CLAY				AA210208	B	3.00		N = 15 (1, 2, 3, 4, 4, 4)	
			0.57	3.30						
4	Very stiff black sandy gravelly CLAY with occasional cobbles				AA210209	B	4.00		N = 52 (5, 4, 10, 12, 12, 18)	
5			-1.43	5.30					N = 50/75 mm (25, 50)	
	Obstruction End of Borehole at 5.30 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.20	2.40	0.75	
5.10	5.30	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.30	2.30	2.70	No	20	Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH08**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,640.65 E 735,773.51 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.12	**BOREHOLE DEPTH (m)**	6.50
		DATE COMMENCED	10/01/2024
		DATE COMPLETED	11/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown gravelly Clay with frequent rubble									
1					AA210245	B	1.00		N = 26 (4, 4, 4, 5, 8, 9)	
2			1.82	2.30	AA210246	B	2.00		N = 28 (3, 4, 6, 6, 7, 9)	
	Medium dense grey/brown very clayey GRAVEL (Possible very gravelly Clay)									
3			0.72	3.40	AA210247	B	3.00		N = 15 (3, 3, 3, 4, 4, 4)	
	Firm dark brown very sandy SILT/CLAY		0.32	3.80						
4	Medium dense grey very sandy GRAVEL (Blowing noted)		-0.38	4.50	AA210248	B	4.00		N = 27 (3, 5, 7, 8, 7, 5)	
	Very stiff black very sandy gravelly CLAY with some cobbles									
5					AA210249	B	5.00		N = 36 (4, 6, 7, 9, 9, 11)	
6					AA210250	B	6.00		N = 60 (8, 12, 12, 15, 16, 17)	
			-2.38	6.50						
7	Obstruction End of Borehole at 6.50 m									
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
1.50	1.70	1	
6.30	6.50	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.90	3.90	4.10	2.80	20	Moderate
4.20	4.20	No	1.20	20	Rapid

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH09**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,662.08 E 735,757.21 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	4.77	**BOREHOLE DEPTH (m)**	5.80
		DATE COMMENCED	21/12/2023
		DATE COMPLETED	21/12/2023
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising Clay with rubble									
1					AA210202	B	1.00		N = 4 (1, 1, 1, 1, 1, 1)	
2			2.67	2.10	AA210203	B	2.00		N = 25 (3, 5, 6, 6, 7, 6)	
	Firm brown very gravelly SILT/CLAY		2.17	2.60						
3	Firm grey/brown slightlly sandy slightly gravelly SILT/CLAY				AA210204	B	3.00		N = 13 (3, 4, 4, 3, 3, 3)	
			0.97	3.80						
	Stiff dark brown very sandy gravelly silty CLAY		0.67	4.10	AA210205	B	4.00		N = 44 (3, 6, 8, 10, 11, 15)	
4	Very stiff black sandy gravelly CLAY with occasional cobbles									
5					AA210206	B	5.00		N = 56 (7, 12, 12, 14, 16, 14)	
			-1.03	5.80						
6	Obstruction End of Borehole at 5.80 m								N = 50/75 mm (25, 21, 50)	
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4.40	4.60	1	
5.70	5.80	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.40	3.40	4.10	3.00	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 2.5hrs moving rig into position due to restricted access. CAT scanned location and hand dug inspection pit carried out.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH10**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,674.02 E 735,735.43 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.52	**BOREHOLE DEPTH (m)**	5.40
		DATE COMMENCED	20/12/2023
		DATE COMPLETED	20/12/2023
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown sandy gravelly Clay with brick fragments									
1					AA207646	B	1.00		N = 7 (1, 2, 2, 2, 2, 1)	
2			1.42	2.10	AA207647	B	2.00		N = 12 (1, 0, 2, 2, 3, 5)	
	Firm grey/brown sandy slightly gravelly SILT/CLAY		1.12	2.40						
	Medium dense grey/brown silty sandy GRAVEL		0.42	3.10	AA207648	B	3.00		N = 45 (8, 11, 12, 15, 10, 8)	
3	Very stiff black sandy gravelly CLAY with occasional cobbles									
4					AA207649	B	4.00		N = 53 (6, 8, 10, 13, 14, 16)	
5					AA207650	B	5.00		N = 50/150 mm (11, 14, 23, 27)	
			-1.88	5.40						
6	Obstruction End of Borehole at 5.40 m									
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4.30	4.50	1.25	
5.30	5.40	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90	2.90	3.10	2.50	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 4hrs moving rig into position due to restricted access. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH11**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,688.61 E 735,760.51 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.50	**BOREHOLE DEPTH (m)**	4.00
		DATE COMMENCED	11/01/2024
		DATE COMPLETED	12/01/2024
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown gravelly Clay with frequent rubble									
1					AA220201	B	1.00		N = 8 (1, 1, 2, 2, 2, 2)	
			1.50	2.00						
2	Medium dense grey/brown very clayey GRAVEL - Strong hydrocarbon odour noted. (Possible very gravelly Clay)				AA220202	B	2.00		N = 16 (2, 3, 3, 3, 4, 6)	
						W	2.50			
3			0.30	3.20	AA220203	B	3.00		N = 50 (9, 12, 12, 14, 14, 10)	
	Very stiff black gravelly CLAY with some cobbles				A220204	B	3.50			
4			-0.50	4.00					N = 50/225 mm (8, 12, 16, 15, 19)	
	Obstruction End of Borehole at 4.00 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.70	2.80	1	
3.80	4.00	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.50	2.50	No	2.00	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out. Strong hydrocarbon odour noted from 2.20m.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 25000 - SITE3.GPJ IGSL.GDT 28/2/24

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH12**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,664.09 E 735,793.26 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.83	**BOREHOLE DEPTH (m)**	5.80
		DATE COMMENCED	19/12/2023
		DATE COMPLETED	19/12/2023
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising brown sandy gravelly Clay with rubble		2.83	1.00						
1	Firm brown sandy slightly gravelly SILT/CLAY		2.53	1.30	AA207642	B	1.00		N = 21 (3, 3, 4, 4, 5, 8)	
	Medium dense grey/brown very clayey GRAVEL (Possible very gravelly Clay)									
2			1.03	2.80	AA207643	B	2.00		N = 29 (4, 6, 8, 6, 7, 8)	
3	Stiff brown sandy slightly gravelly CLAY		0.23	3.60	AA207644	B	3.00		N = 17 (3, 3, 4, 4, 4, 5)	
	Very stiff black very sandy gravelly silty CLAY									
4					AA207645	B	4.00		N = 37 (5, 8, 9, 1, 11, 16)	
5					AA207646	B	5.00		N = 51 (7, 10, 12, 15, 13, 11)	
			-1.97	5.80						
6	Obstruction End of Borehole at 5.80 m								N = 50/75 mm (18, 25, 50)	
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
5.60	5.80	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.50	2.50	3.00	2.30	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**BOREHOLE NO.**	**BH13**
		SHEET	Sheet 1 of 1
CO-ORDINATES	716,651.54 E 735,795.92 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	3.87	**BOREHOLE DEPTH (m)**	6.00
		DATE COMMENCED	18/12/2023
		DATE COMPLETED	19/12/2023
CLIENT	NDFA	**SPT HAMMER REF. NO.**	PT1
ENGINEER	MORCE	**ENERGY RATIO (%)**	78.21
		BORED BY	PT
		PROCESSED BY	FC

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprising gravelly Clay									
1			2.57	1.30	AA207635	B	1.00		N = 25 (2, 3, 5, 5, 7, 8)	
	Medium dense grey/brown clayey GRAVEL (Possible very gravelly Clay)		1.77	2.10	AA207636	B	2.00		N = 16 (2, 2, 3, 3, 5, 5)	
2	Stiff bown very gravelly CLAY									
3					AA207637	B	3.00		N = 24 (3, 5, 5, 5, 7, 7)	
			0.37	3.50						
	Very stiff black sandy gravelly CLAY with occasional cobbles									
4					AA207638	B	4.00		N = 55 (5, 8, 9, 14, 16, 16)	
5					AA207639	B	5.00		N = 49 (6, 18, 10, 17, 12, 10)	
			-2.13	6.00						
6	Obstruction End of Borehole at 6.00 m				AA207640	B	6.00		N = 50/75 mm (18, 28, 50)	
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.20	3.40	0.75	
5.80	6.00	1.5	

WATER STRIKE DETAILS

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

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Safety fencing erected. CAT scanned location and hand dug inspection pit carried out.

Sample Legend

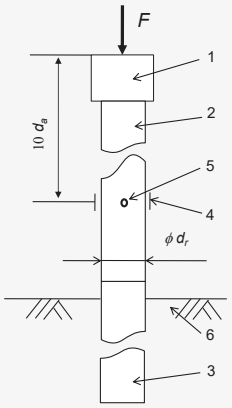
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT Hammer
Test No		EQU2023_58
Client		IGSL
Test Depth (m)		9.70
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

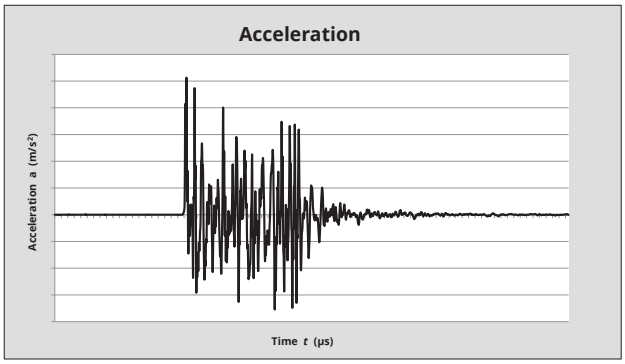
Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa

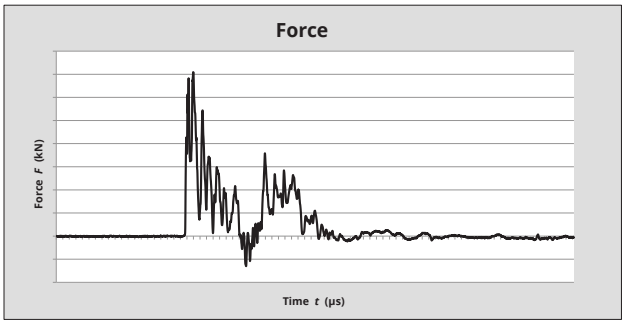
DATE OF TEST	VALID UNTIL	HAMMER ID
06/03/2023	05/03/2024	PT1

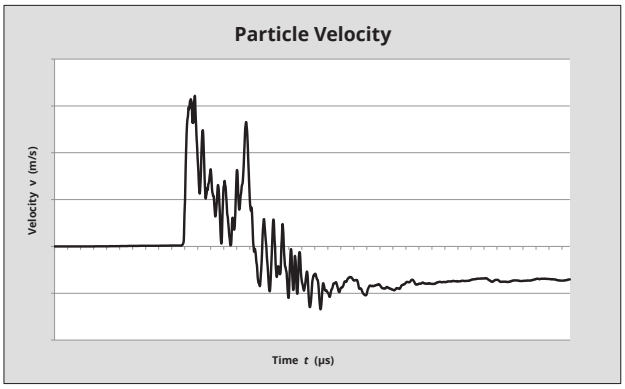
E_{meas} = **0.370** kN-m

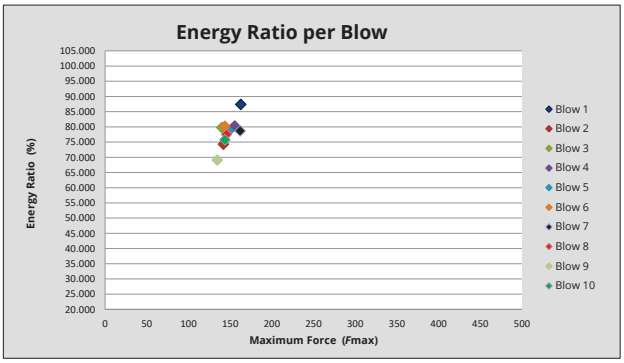
E_{theor} = **0.473** kN-m

Comments









Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **78.21%**

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			10/03/2023

 Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Appendix 4

Rotary Drillhole Logs & Core Photographs

SPT Calibration Sheet (Er)

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC01
SHEET Sheet 1 of 3

CO-ORDINATES 716,576.67 E
735,772.52 N
GROUND LEVEL (mOD) 4.04

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE COMMENCED 01/02/2024
DATE COMPLETED 08/02/2024

CLIENT NDFA
ENGINEER MORCE

DRILLED BY IGSL - DH
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 MADE GROUND comprising grey brown black sandy gravelly clay with fragments of brick and timber.				
1									1.60	2.44		N = 9 (1, 1, 2, 1, 2, 4)
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown black clayey sandy gravelly SILT	2.50	1.54		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY	2.90	1.14		
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy GRAVEL	3.30	0.74		N = 36 (2, 3, 6, 7, 11, 12)
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY				
4												
5												N = 47 (3, 3, 6, 10, 15, 16)
6												N = 53 (5, 8, 14, 4, 17, 18)
									6.80	-2.76		
7								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black sandy GRAVEL	7.20	-3.16		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY				N = 50/190 mm (4, 12, 16, 24, 10)
8												
9												N = 62/165 mm (6, 14, 24, 30, 8)

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90 16.40	2.90 16.40	3.30 N/S			Seepage Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
08-02-24	25.00	1.00	25.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 2 of 3
CO-ORDINATES	716,576.67 E 735,772.52 N	**RIG TYPE**	Beretta T44
GROUND LEVEL (mOD)	4.04	**FLUSH**	Air/Mist
		INCLINATION (deg)	-90
CLIENT	NDFA	**CORE DIAMETER (mm)**	78
ENGINEER	MORCE	**DATE COMMENCED**	01/02/2024
		DATE COMPLETED	08/02/2024
		DRILLED BY	IGSL - DH
		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)
10								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY *(continued)*				N = 31/80 mm (11, 19, 24, 7)
11												
12												N = 37/90 mm (8, 16, 27, 10)
13												
14												N = 51/115 mm (5, 10, 19, 32)
15												
16												N = 6/5 mm (20, 24, 6)
									16.40	-12.36		
17								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL				N = 50/35 mm (6, 17, 50)
									17.40	-13.36		
	17.70							SYMMETRIX DRILLING: No recovery, observed by driller as returns of COBBLE	17.70	-13.66		
18		27	0	0				Returns of slightly clayey GRAVEL. Gravel is angular to subrounded fine to coarse of various lithologies.				
19	19.20								19.20	-15.16		
		0	0	0				SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL				N = 18/20 mm (32, 18)

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90 16.40	2.90 16.40	3.30 N/S			Seepage Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
08-02-24	25.00	1.00	25.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 3 of 3
CO-ORDINATES	716,576.67 E 735,772.52 N	**RIG TYPE**	Beretta T44
GROUND LEVEL (mOD)	4.04	**FLUSH**	Air/Mist
		INCLINATION (deg)	-90
CLIENT	NDFA	**CORE DIAMETER (mm)**	78
ENGINEER	MORCE	**DATE COMMENCED**	01/02/2024
		DATE COMPLETED	08/02/2024
		DRILLED BY	IGSL - DH
		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)
20	20.40								20.40	-16.36		
21	21.90	13	0	0				Returns of slightly clayey GRAVEL. Gravel is angular to subrounded fine to coarse of limestone. Driller notes blowing sand & gravel	21.90	-17.86		
22								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown black clayey sandy GRAVEL				N = 10/5 mm (40, 10)
23												
24												N = 50/40 mm (50, 50)
25									25.00	-20.96		N = 50/35 mm (50, 50)
26								End of Borehole at 21.90 m				
27												
28												
29												

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.90 16.40	2.90 16.40	3.30 N/S			Seepage Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
08-02-24	25.00	1.00	25.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-02-24	25.00	25.00	5.80	Water levels recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 1 of 3
CO-ORDINATES	716,669.74 E 735,731.52 N	**RIG TYPE**	Beretta T44
GROUND LEVEL (mOD)	3.58	**FLUSH**	Air/Mist
		INCLINATION (deg)	-90
		CORE DIAMETER (mm)	78
		DATE COMMENCED	09/02/2024
		DATE COMPLETED	12/02/2024
CLIENT	NDFA	**DRILLED BY**	IGSL - DH
ENGINEER	MORCE	**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 MADE GROUND comprising grey brown black sandy gravelly clay with fragments of brick.	1.70	1.88		N = 12 (1, 0, 1, 2, 4, 5)
1												
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown sandy gravelly CLAY	2.80	0.78		
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL				N = 36 (2, 4, 6, 7, 11, 12)
4									4.80	-1.22		N = 76 (4, 7, 10, 19, 22, 25)
5								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black sandy gravelly cobbly CLAY				
6												N = 50/115 mm (8, 14, 23, 27)
7												
8												N = 31/55 mm (10, 20, 31)
9												N = 50/135 mm (8, 16, 25, 25)

REMARKS

Hole cased from 0.0-20.40m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
15.00 17.90	15.00 17.90	16.00 N/S			Seepage Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-02-24	23.60	1.00	23.60	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC02
SHEET Sheet 2 of 3

CO-ORDINATES 716,669.74 E
735,731.52 N
GROUND LEVEL (mOD) 3.58

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE COMMENCED 09/02/2024
DATE COMPLETED 12/02/2024

CLIENT NDFA
ENGINEER MORCE

DRILLED BY IGSL - DH
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)
10								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black sandy gravelly cobbly CLAY *(continued)*				N = 17/20 mm (14, 33, 17)
11												
12												N = 21/30 mm (12, 29, 21)
13												
14												N = 31/35 mm (11, 23, 31)
15									15.00	-11.42		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL				N = 50/125 mm (8, 16, 28, 22)
16												
17												N = 72/190 mm (5, 12, 18, 26, 28)
18												N = 50/160 mm (9, 15, 17, 29, 4)
19									19.30	-15.72		
								SYMMETRIX DRILLING: No recovery, observed by driller as returns of possible weathered ROCK				
									20.00	-16.42		

REMARKS

Hole cased from 0.0-20.40m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
15.00	15.00	16.00			Seepage
17.90	17.90	N/S			Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-02-24	23.60	1.00	23.60	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC02
SHEET Sheet 3 of 3

CO-ORDINATES 716,669.74 E
735,731.52 N
GROUND LEVEL (mOD) 3.58

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE COMMENCED 09/02/2024
DATE COMPLETED 12/02/2024

CLIENT NDFA
ENGINEER MORCE

DRILLED BY IGSL - DH
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)
20	20.40							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	20.40	-16.82		
21		100	79	39				Weak to strong, medium to thinly bedded, light to dark grey/black, fine-grained LIMESTONE (interbedded argillaceous/muddy layers with calci-siltite/sandy layers, locally pyrite formation), fresh to slightly weathered. Discontinuities are medium to closely spaced, smooth to locally rough, fractures are planar to locally curviplanar. Apertures are tight to moderately open, locally clay smeared. Dips are subhorizontal & locally subvertical.				
22	22.00	100	96	62								
23	23.00	100	95	80								
	23.60							End of Borehole at 23.60 m	23.60	-20.02		
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased from 0.0-20.40m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
15.00 17.90	15.00 17.90	16.00 N/S			Seepage Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-02-24	23.60	20.40	4.60	Water levels recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-02-24	23.60	1.00	23.60	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC03
SHEET Sheet 1 of 3

CO-ORDINATES 716,616.26 E
735,745.35 N
GROUND LEVEL (mOD) 3.82

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE COMMENCED 14/02/2024
DATE COMPLETED 15/02/2024

CLIENT NDFA
ENGINEER MORCE

DRILLED BY IGSL - DH
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 MADE GROUND comprising grey brown black sandy gravelly clay with fragments of brick.	1.70	2.12		N = 6 (1, 0, 1, 1, 2, 2)
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown silty sandy gravelly CLAY	3.20	0.62		N = 18 (2, 2, 3, 4, 6, 5)
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY with cobbles				N = 65 (4, 4, 10, 14, 19, 22)
6												N = 50/205 mm (6, 8, 16, 22, 12)
8												N = 50/155 mm (5, 11, 19, 26, 5)
9												N = 50/215 mm (4, 8, 12, 16, 22)

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
17.80	17.80				

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC03
SHEET Sheet 2 of 3

CO-ORDINATES 716,616.26 E
735,745.35 N
GROUND LEVEL (mOD) 3.82

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE COMMENCED 14/02/2024
DATE COMPLETED 15/02/2024

CLIENT NDFA
ENGINEER MORCE

DRILLED BY IGSL - DH
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)
10								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey black gravelly CLAY with cobbles *(continued)*				N = 36/55 mm (11, 24, 26, 10)
11												
12									12.40	-8.58		N = 35/90 mm (8, 22, 25, 10)
13								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey dark brown silty sandy gravelly CLAY				N = 73 (5, 6, 10, 14, 22, 27)
14								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL	13.90	-10.08		
15								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown gravelly CLAY	14.60	-10.78		N = 31/50 mm (11, 29, 31)
16												
17												N = 50/90 mm (9, 14, 31, 19)
18								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL	17.80	-13.98		N = 56/210 mm (6, 8, 12, 20, 24)
19								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL Driller notes blowing sand & gravel	19.10	-15.28		

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
17.80	17.80				

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 25000-3

CONTRACT NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

DRILLHOLE NO RC03
SHEET Sheet 3 of 3

CO-ORDINATES 716,616.26 E, 735,745.35 N
GROUND LEVEL (mOD) 3.82
CLIENT NDFA
ENGINEER MORCE

RIG TYPE Beretta T44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm)

DATE COMMENCED 14/02/2024
DATE COMPLETED 15/02/2024
DRILLED BY IGSL - DH
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)
20								SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey brown clayey sandy GRAVEL Driller notes blowing sand & gravel *(continued)*				
21												N = 19/25 mm (12, 31, 19)
22												N = 8/15 mm (48, 8)
23												
24												N = 50/50 mm (50, 50)
25								End of Borehole at 25.00 m	25.00	-21.18		N = 5/5 mm (45, 5)
26												
27												
28												
29												

REMARKS

Hole cased from 0.0-25.0m. SPT Er = 82.22%

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
17.80	17.80				

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
15-02-24	25.00	25.00	4.00	Water levels recorded 5 mins after end of drilling.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 25000 - SITE3.GPJ IGSL.GDT 28/2/24

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

RC01 Box 1 of 1 – 17.70-21.90m

Project Number: **25000-3**
Project: NDFA Social Housing Bundles 4/5 – Lot 3 – Croke Villas
Engineer: MORCE

RC02 Box 1 of 2 – 20.40-23.0m

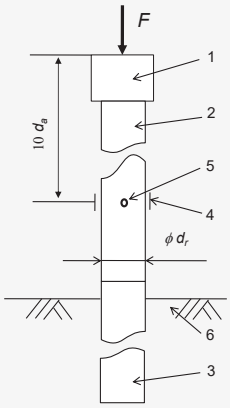
RC02 Box 2 of 2 – 23.0-23.60m

SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		Beretta
Test No		EQU2023_67
Client		IGSL
Test Depth (m)		9.70
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

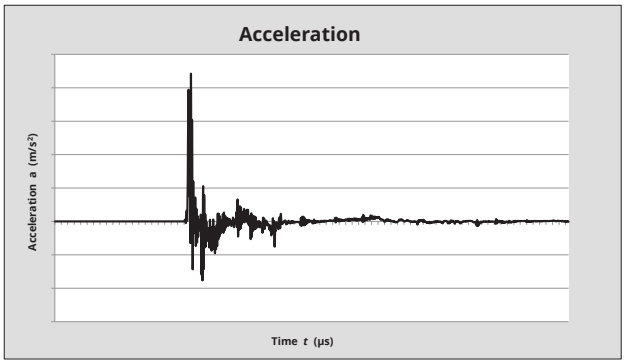
Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa

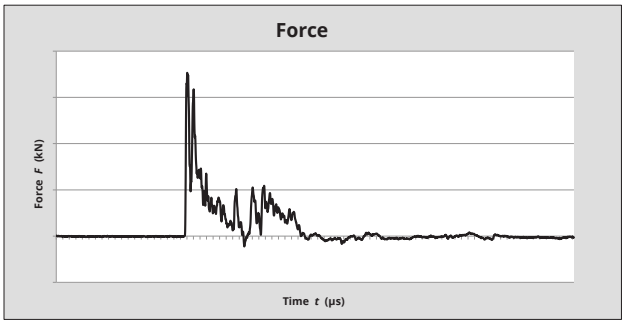
DATE OF TEST	VALID UNTIL	HAMMER ID
06/03/2023	05/03/2024	T44

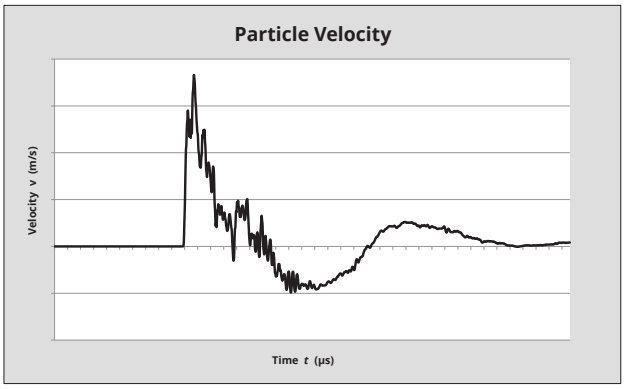
E_{meas} = **0.389** kN-m

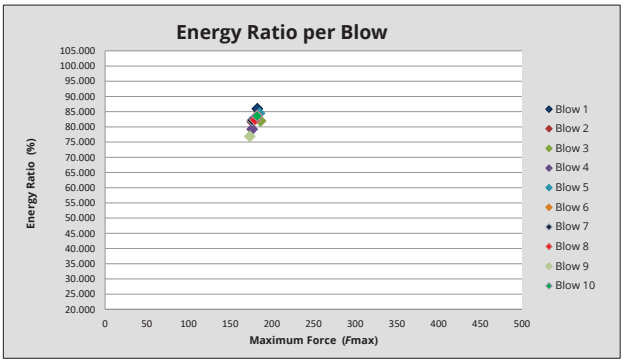
E_{theor} = **0.473** kN-m

Comments









Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **82.22%**

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JL			10/03/2023

 Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Appendix 5

Slit Trench Logs

Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No. ST01
Engineer:	MORCE	Start of Trench	716635.824	735754.978	3.882	Sheet 1 of 1
Crew:	I.R./D.M./ESK	End of Trench	716627.351	735747.4	3.921	Date Commenced 27/11/2023
						Date Completed 27/11/2023

Dig Direction 210° S-W

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.10	TOPSOIL
0.10	1.80	MADE GROUND (comprised of dark grey/black/brown sandy gravelly clay, cobbles, boulders, heavy concrete rubble, red brick, timber pieces, occasional plastic rubbish, roots, old tarmac, mortar, concrete blocks)

Photograph

Trench Dimensions	
LHS of Trench (m)	0.0
RHS of Trench (m)	10.0
Trench Depth (m)	1.8
Trench Width (m)	0.6

Location

Excavation Quantities

Surface	Length (m)	Material
Road		
Path (LHS)		
Path (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other	10	Grass
Total Length	10.0	

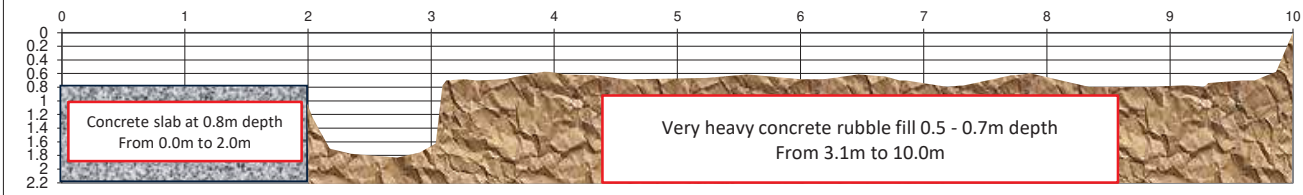
Facing Direction	SE
Facing Features	Ballybough Road
Groundwater	DRY

SAMPLES

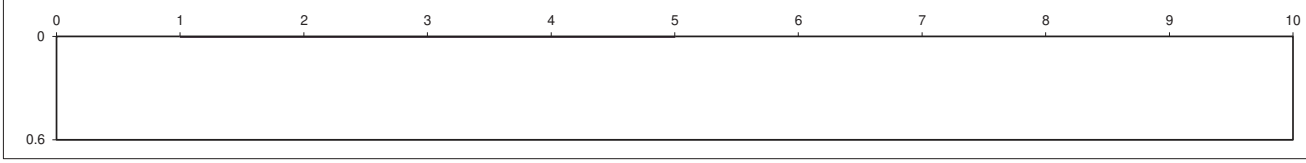
1.0m Ref.No AA209924

Zero Metres Taken As: Steel Palisade fence

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No services located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

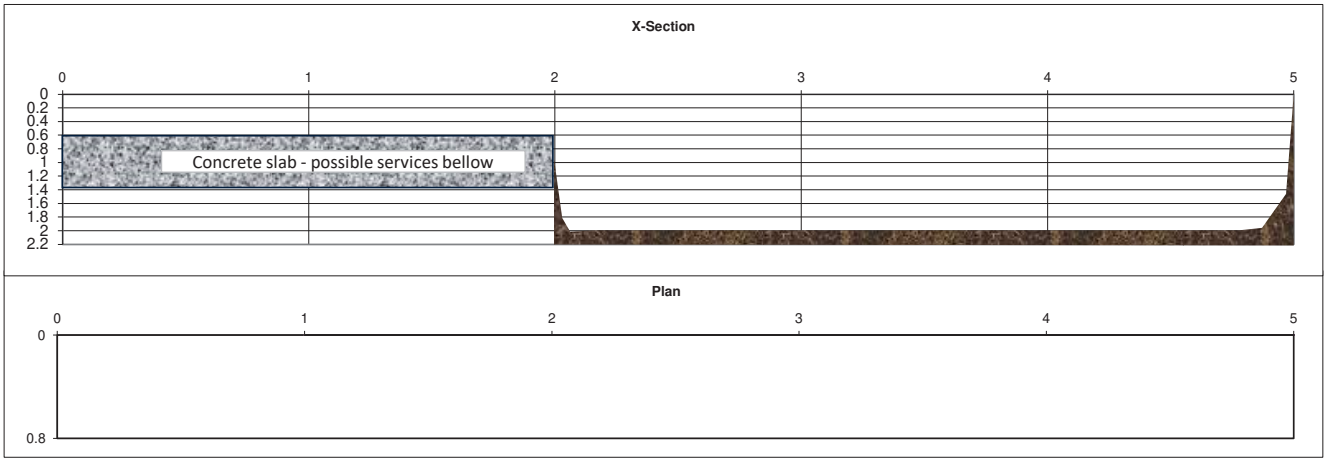
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST02A
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716640.044	735741.289	3.943	Date Commenced	29/11/2023
Crew: D.M./ESK	End of Trench	716643.859	735744.5	3.984	Date Completed	29/11/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.08	TARMAC	
0.08	2.00	MADE GROUND: Soft to firm brown sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	5.0		Road		
Trench Depth (m)	2.0		Path (LHS)		
Trench Width (m)	0.8		Path (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	NW	SAMPLES	Other	5	Tarmac
Facing Features	GAA HANDBALL CENTRE	1.0m Ref.No AA198519	Total Length	5.0	
Groundwater	DRY		Zero Metres Taken As: Steel Palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No services located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N / W / E / S	IGSL

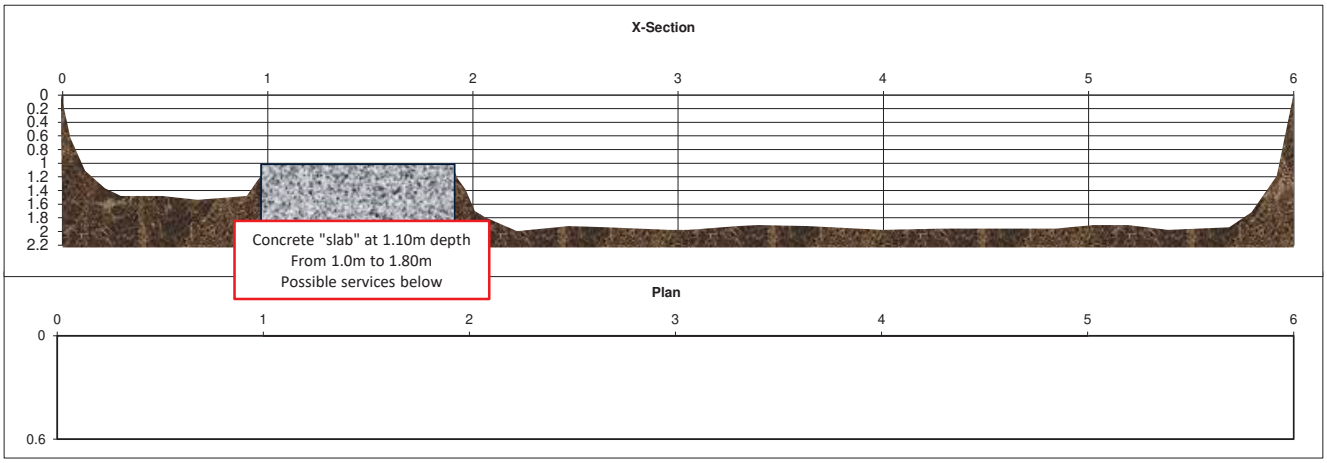
		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST02B
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716639.554	735741.619	3.931	Date Commenced	27/11/2023
Crew: I.R./D.M./ESK	End of Trench	716633.603	735737.503	4.003	Date Completed	27/11/2023

Dig Direction 230° S-W

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.10	TOPSOIL	
0.10	2.00	MADE GROUND comprising dark grey/black/brown sandy gravelly clay, cobbles, boulders, concrete rubble, red brick, timber pieces, occasional plastic rubbish, roots, old tarmac, mortar and concrete blocks	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	6.0		Road		
Trench Depth (m)	2.0		Path (LHS)		
Trench Width (m)	0.6		Path (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	SE	SAMPLES	Other	6	Grass
Facing Features	Ballybough Road	1.0m Ref.No AA209923	Total Length	6.0	
Groundwater	Seepage at 2.0m		Zero Metres Taken As: Steel Palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No services located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N / W / E / S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST03
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716644.268	735780.825	4.013	Date Commenced	29/11/2023
Crew: I.R./D.M./ESK	End of Trench	716635.658	735771.636	4.076	Date Completed	29/11/2023

Dig Direction 215° S-W

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.10	TOPSOIL	
0.10	2.00	MADE GROUND comprising dark grey/black/brown sandy gravelly clay, cobbles, boulders, concrete rubble, red brick, timber pieces, occasional plastic rubbish, roots, old tarmac, mortar, old clay pipe pieces and rebar	

Trench Dimensions

LHS of Trench (m)	0.0
RHS of Trench (m)	11.0
Trench Depth (m)	2.0
Trench Width (m)	0.8

Location

Excavation Quantities

Surface	Length (m)	Material
Road		
Path (LHS)		
Path (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other	11	Grass
Total Length	11.0	

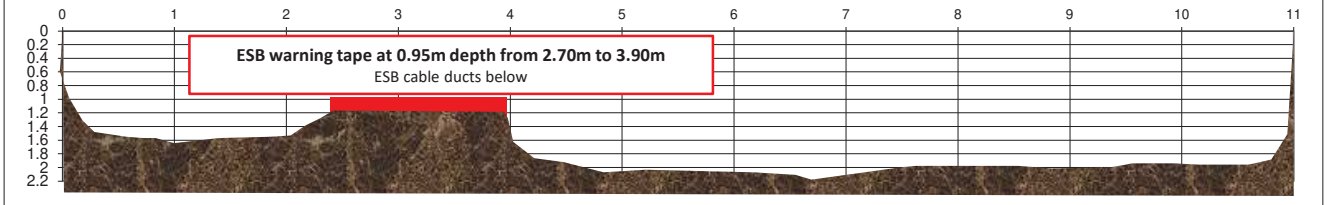
Facing Direction	SE
Facing Features	Ballybough Road
Groundwater	Seepage at 2.0m

SAMPLES

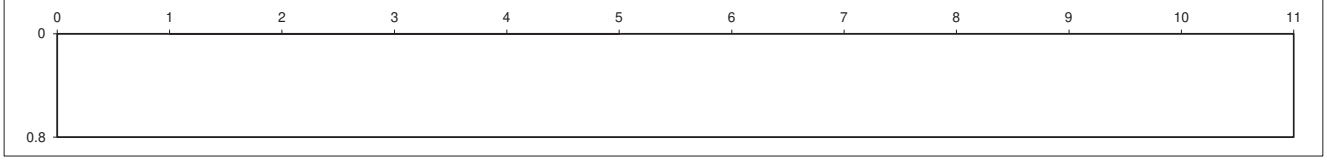
1.0m Ref.No AA198523

Zero Metres Taken As: Steel Palisade fence

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			ESB Warning Tape (from 2.70-3.90 in trench)			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N / W / E / S	IGSL

		Survey				
Project:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No. ST04
Engineer:	MORCE	Start of Trench	716661.610	735760.126	4.599	Sheet 1 of 1
Crew:	D.M./ESK	End of Trench	At Building Wall (no survey available)			Date Commenced 05/12/2023
						Date Completed 05/12/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.06	Concrete slabs	
0.06	2.00	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete.	

Trench Dimensions	
LHS of Trench (m)	0.0
RHS of Trench (m)	8.6
Trench Depth (m)	2.0
Trench Width (m)	0.7
Facing Direction	SE
Facing Features	Ballybough Road
Groundwater	DRY

Location

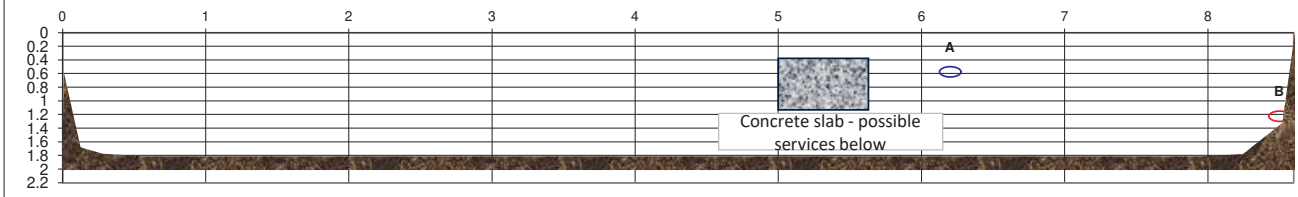
SAMPLES

1.0m Ref.No AA198542

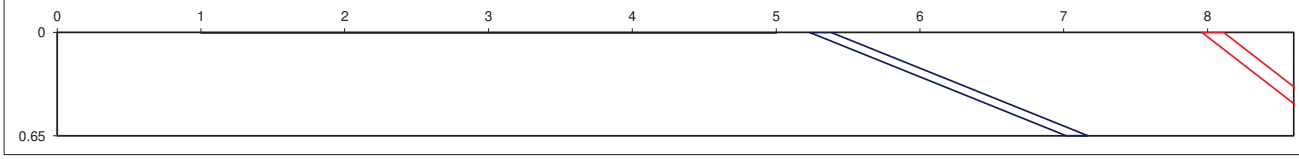
Excavation Quantities		
Surface	Length (m)	Material
Road		
Path (LHS)		
Path (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other	8.6	Made Ground / Slabs
Total Length	8.6	

Zero Metres Taken As: Fence

X-Section



Plan



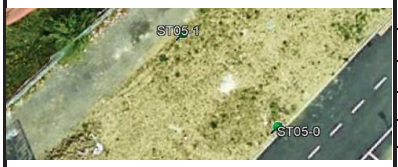
	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	150	Clay (damaged)	Pipe (cable inside)	6.2	0.5	340
Service B	150	Clay	Sewage pipe (Possible)	8.5	1.15	325
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

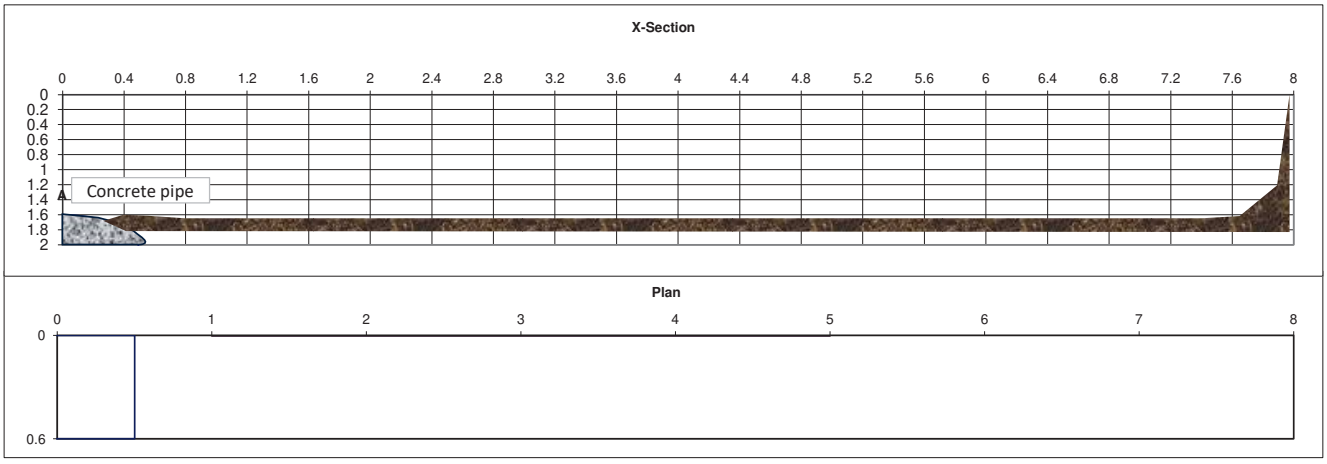
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST05
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716676.146	735730.368	3.364	Date Commenced	30/11/2023
Crew: D.M./ESK	End of Trench	716669.905	735736.493	3.593	Date Completed	30/11/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.20	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	
0.20	1.80	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	9.0		Road		
Trench Depth (m)	1.8		Path (LHS)		
Trench Width (m)	0.6		Path (RHS)		
			Grass Verge (LHS)	9.0	
			Grass Verge (RHS)		
Facing Direction	SW	SAMPLES	Other		
Facing Features	Sackville Gardens / Railway line	1.0m Ref.No AA198529	Total Length	9.0	
Groundwater	Water in base of pit		Zero Metres Taken As: Steel palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	1000	Concrete	Possible Storm drain	0	1.6	90
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

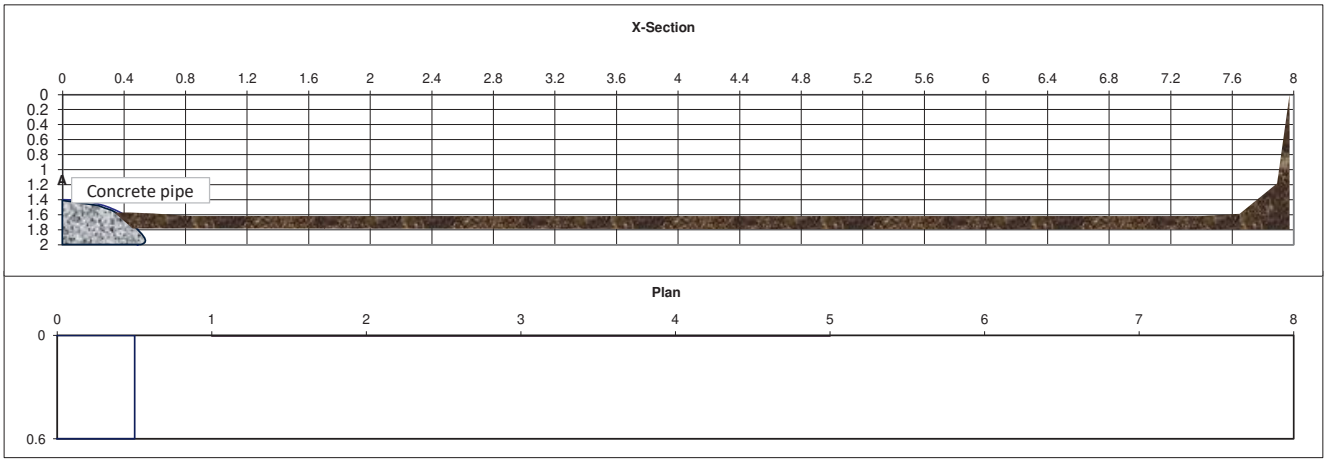
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST06
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716682.143	735737.350	3.519	Date Commenced	30/11/2023
Crew: D.M./ESK	End of Trench	716676.313	735742.847	3.678	Date Completed	30/11/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.2	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	
0.2	1.80	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	8.0		Road		
Trench Depth (m)	1.8		Path (LHS)		
Trench Width (m)	0.6		Path (RHS)		
			Grass Verge (LHS)	8.0	
			Grass Verge (RHS)		
Facing Direction	SW	SAMPLES	Other		
Facing Features	Sackville Gardens / Railway line	1.0m Ref.No AA198528	Total Length	8.0	
Groundwater	Water near pipe in gravel surround		Zero Metres Taken As: Steel palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	1000	Concrete	Possible Storm drain	0	1.4	90
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

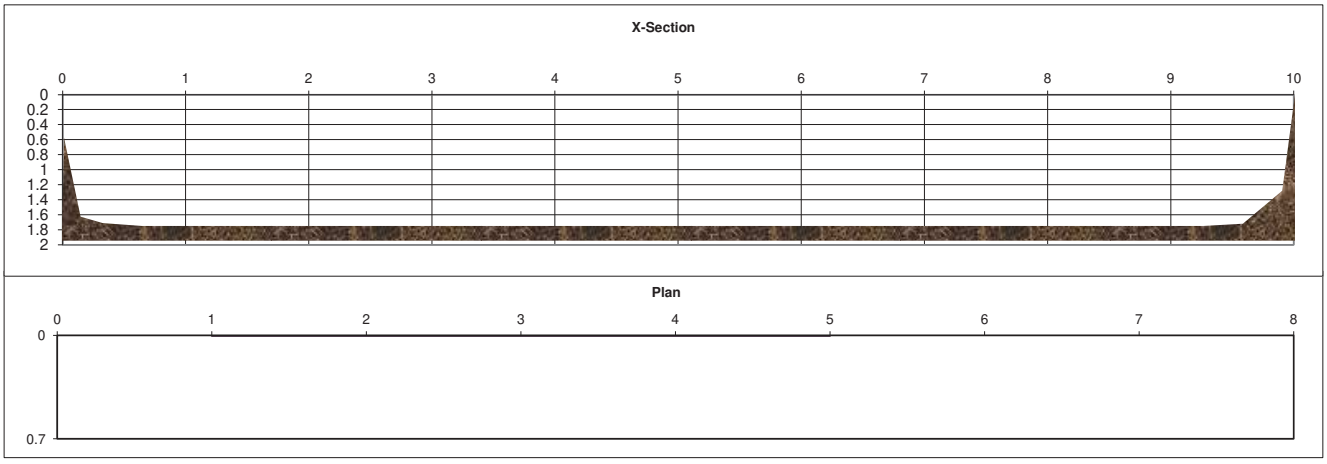
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST07
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716693.002	735749.210	3.587	Date Commenced	01/12/2023
Crew: D.M./ESK	End of Trench	716699.896	735755.928	3.447	Date Completed	01/12/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.1	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	
0.1	1.90	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	10.0		Road		
Trench Depth (m)	1.9		Path (LHS)		
Trench Width (m)	0.7		Path (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	NW	SAMPLES	Other	10	Made Ground
Facing Features	Croke Park	1.0m Ref.No AA198535	Total Length	10.0	
Groundwater	Water strike at 1.80m		Zero Metres Taken As: Steel palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No services located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST08
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716686.554	735755.157	3.572	Date Commenced	01/12/2023
Crew: D.M./ESK	End of Trench	716694.984	735763.282	3.378	Date Completed	01/12/2023

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.10	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.
0.10	2.00	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.

Photograph

Trench Dimensions	
LHS of Trench (m)	0.0
RHS of Trench (m)	10.0
Trench Depth (m)	2.0
Trench Width (m)	0.8
Facing Direction	NW
Facing Features	Croke Park
Groundwater	Water strike at 2.0m

Location

SAMPLES

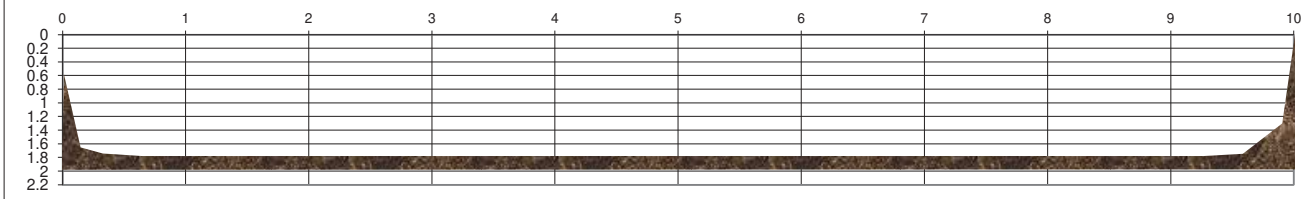
1.0m Ref.No AA198534

Excavation Quantities

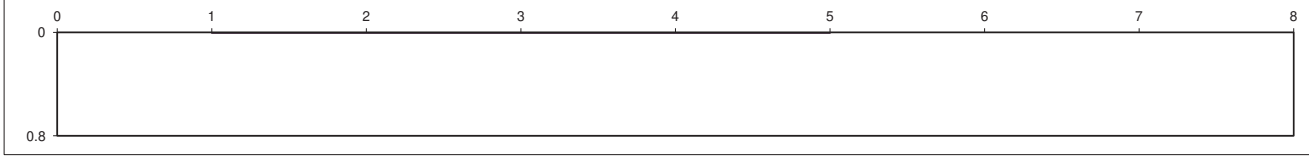
Surface	Length (m)	Material
Road		
Path (LHS)		
Path (RHS)		
Grass Verge (LHS)	10.0	
Grass Verge (RHS)		
Other		
Total Length	10.0	

Zero Metres Taken As: Steel palisade fence

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No services located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

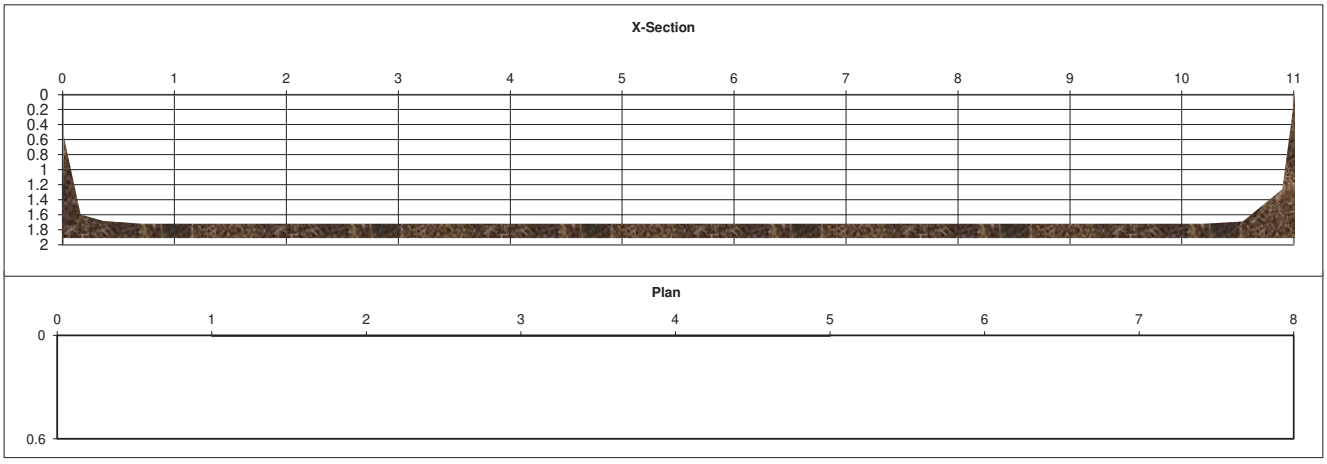
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST10
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716653.075	735787.778	4.031	Date Commenced	04/12/2023
Crew: D.M./ESK	End of Trench	716660.302	735795.095	3.947	Date Completed	04/12/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.10	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	
0.10	1.90	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	11.0		Road		
Trench Depth (m)	1.9		Path (LHS)		
Trench Width (m)	0.6		Path (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	NW	SAMPLES	Other	11	Made Ground
Facing Features	Croke Park	1.0m Ref.No AA198541	Total Length	11.0	
Groundwater	DRY		Zero Metres Taken As: Steel palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No Services Located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

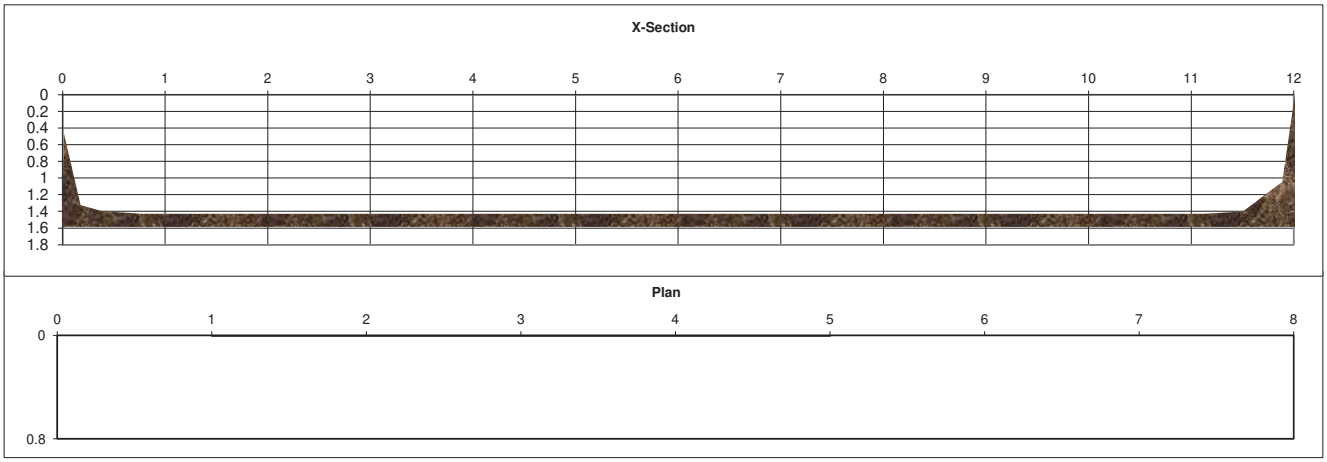
Report No. 25000-3	SLIT TRENCH RECORD	FACING DIRECTION: N W E S	IGSL

		Survey				
Project: NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST11
					Sheet	1 of 1
Engineer: MORCE	Start of Trench	716646.736	735794.370	3.973	Date Commenced	04/12/2023
Crew: D.M./ESK	End of Trench	716654.713	735801.719	3.868	Date Completed	04/12/2023

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.10	TOPSOIL: Soft brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	
0.10	1.60	MADE GROUND: Firm dark brown to black sandy gravelly CLAY with a low cobble content and red brick fragments, plastic and concrete. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subrounded.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	12.0		Road		
Trench Depth (m)	1.6		Path (LHS)		
Trench Width (m)	0.8		Path (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	NW	SAMPLES	Other	12	Made Ground
Facing Features	Croke Park	1.0m Ref.No AA198536	Total Length	12.0	
Groundwater			Zero Metres Taken As: Steel palisade fence		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A			No Services Located			
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Appendix 6

Soakaway Records

Soakaway Design f -value from field tests IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA02 (cycle 1)	Easting	716582.131
Engineer	MORCE	Northing	735764.221
Date:	28/11/2023	Elevation	4.13

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL: Soft brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular fine to medium.	DRY
0.10	1.30	MADE GROUND: (Medium dense to dense) Brown/grey clayey gravelly SAND with a low cobble content and red brick fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subangular to subrounded.	
1.30	1.50	MADE GROUND: Firm to stiff very sandy gravelly CLAY with red brick fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	

Notes: SA02 undertaken at TP02

Field Data

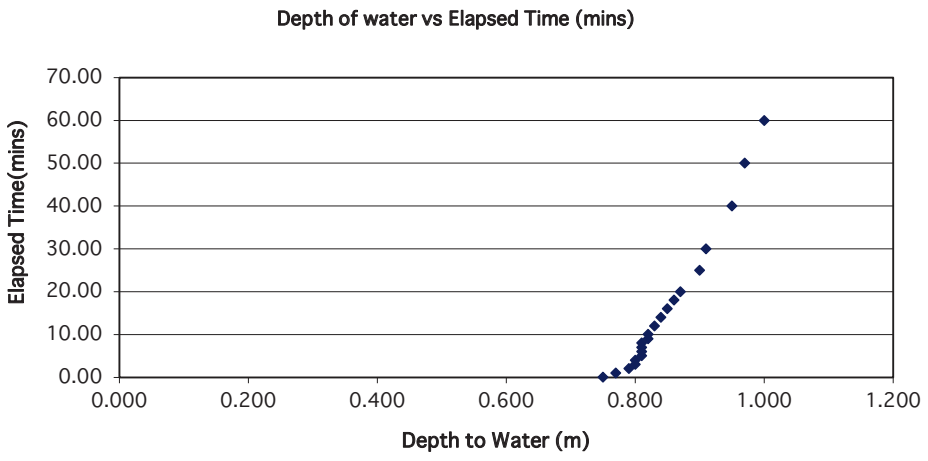
Depth to Water (m)	Elapsed Time (min)
0.750	0.00
0.770	1.00
0.790	2.00
0.800	3.00
0.800	4.00
0.810	5.00
0.810	6.00
0.810	7.00
0.810	8.00
0.820	9.00
0.820	10.00
0.830	12.00
0.840	14.00
0.850	16.00
0.860	18.00
0.870	20.00
0.900	25.00
0.910	30.00
0.950	40.00
0.970	50.00
1.000	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.75	m
Final depth to water =	1.000	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.78	m2
*Av. side area of permeable stratum over test perio	2.375	m2
Total Exposed area =	3.155	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00103 m/min or 1.71685E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA02 (cycle 2)	Easting	716582.131
Engineer	MORCE	Northing	735764.221
Date:	28/11/2023	Elevation	4.13

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL: Soft brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular fine to medium.	DRY
0.10	1.30	MADE GROUND: (Medium dense to dense) Brown/grey clayey gravelly SAND with a low cobble content and red brick fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium. Cobbles are subangular to subrounded.	
1.30	1.50	MADE GROUND: Firm to stiff very sandy gravelly CLAY with red brick fragments. Sand is fine to medium. Gravel is subangular to subrounded fine to medium.	

Notes: SA02 undertaken at TP02 location

Field Data

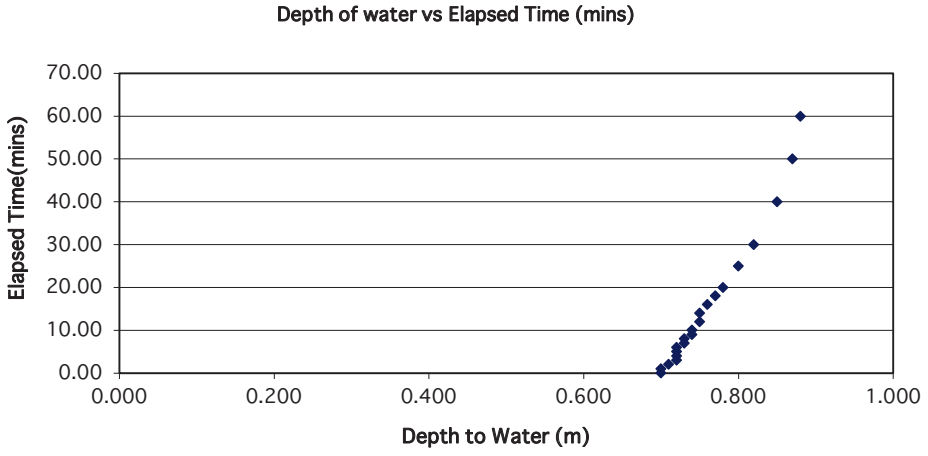
Depth to Water (m)	Elapsed Time (min)
0.700	0.00
0.700	1.00
0.710	2.00
0.720	3.00
0.720	4.00
0.720	5.00
0.720	6.00
0.730	7.00
0.730	8.00
0.740	9.00
0.740	10.00
0.750	12.00
0.750	14.00
0.760	16.00
0.770	18.00
0.780	20.00
0.800	25.00
0.820	30.00
0.850	40.00
0.870	50.00
0.880	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.70	m
Final depth to water =	0.880	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.78	m2
*Av. side area of permeable stratum over test perio	2.698	m2
Total Exposed area =	3.478	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00067 m/min or 1.12133E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA08 (cycle 1)	Easting	716671.439
Engineer	MORCE	Northing	735730.314
Date:	30/11/2022	Elevation	3.519

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	1.30	MADE GROUND: Dark brown/black sandy gravelly Clay, cobbles, red brick, plastic, concrete rubble and sea shells	DRY
1.30	1.50	Firm to stiff brown, sandy gravelly CLAY with a low cobble content	

Notes: SA08 undertaken at TP08

Field Data

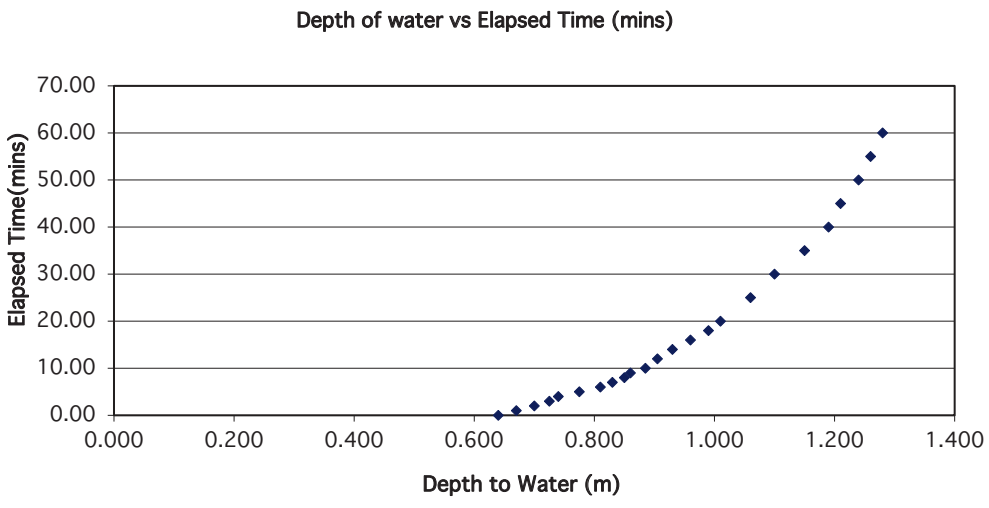
Depth to Water (m)	Elapsed Time (min)
0.640	0.00
0.670	1.00
0.700	2.00
0.725	3.00
0.740	4.00
0.775	5.00
0.810	6.00
0.830	7.00
0.850	8.00
0.860	9.00
0.885	10.00
0.905	12.00
0.930	14.00
0.960	16.00
0.990	18.00
1.010	20.00
1.060	25.00
1.100	30.00
1.150	35.00
1.190	40.00
1.210	45.00
1.240	50.00
1.260	55.00
1.280	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.64	m
Final depth to water =	1.280	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test perio	2.16	m2
Total Exposed area =	2.91	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00275 m/min or 4.5819E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA08 (cycle 2)	Easting	716671.439
Engineer	MORCE	Northing	735730.314
Date:	30/11/2022	Elevation	3.519

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	1.30	MADE GROUND: Dark brown/black sandy gravelly Clay, cobbles, red brick, plastic, concrete rubble and sea shells	DRY
1.30	1.50	Firm to stiff brown, sandy gravelly CLAY with low cobble content	

Notes: SA08 undertaken at TP08

Field Data

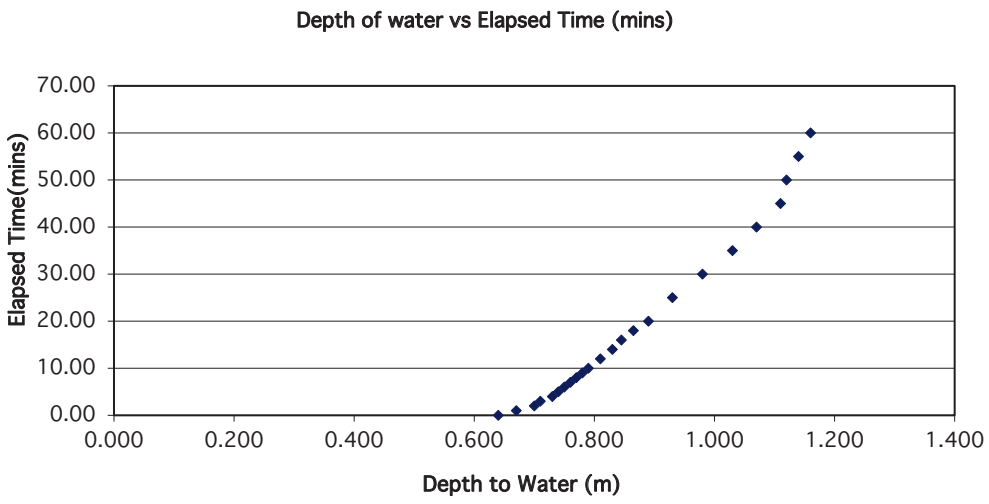
Depth to Water (m)	Elapsed Time (min)
0.640	0.00
0.670	1.00
0.700	2.00
0.710	3.00
0.730	4.00
0.740	5.00
0.750	6.00
0.760	7.00
0.770	8.00
0.780	9.00
0.790	10.00
0.810	12.00
0.830	14.00
0.845	16.00
0.865	18.00
0.890	20.00
0.930	25.00
0.980	30.00
1.030	35.00
1.070	40.00
1.110	45.00
1.120	50.00
1.140	55.00
1.160	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.64	m
Final depth to water =	1.160	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.75	m2
*Av. side area of permeable stratum over test perio	2.4	m2
Total Exposed area =	3.15	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00206 m/min or 3.43915E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA09 (cycle 1)	Easting	716694.934
Engineer	MORCE	Northing	735757.681
Date:	30/11/2022	Elevation	3.405

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL	
0.10	1.10	MADE GROUND: Dark brown/black sandy gravelly Clay, cobbles, red brick, plastic, concrete rubble and sea shells	DRY
1.10	1.50	Firm to stiff brown, sandy gravelly CLAY with a medium cobble content	

Notes: SA09 undertaken at TP09

Field Data

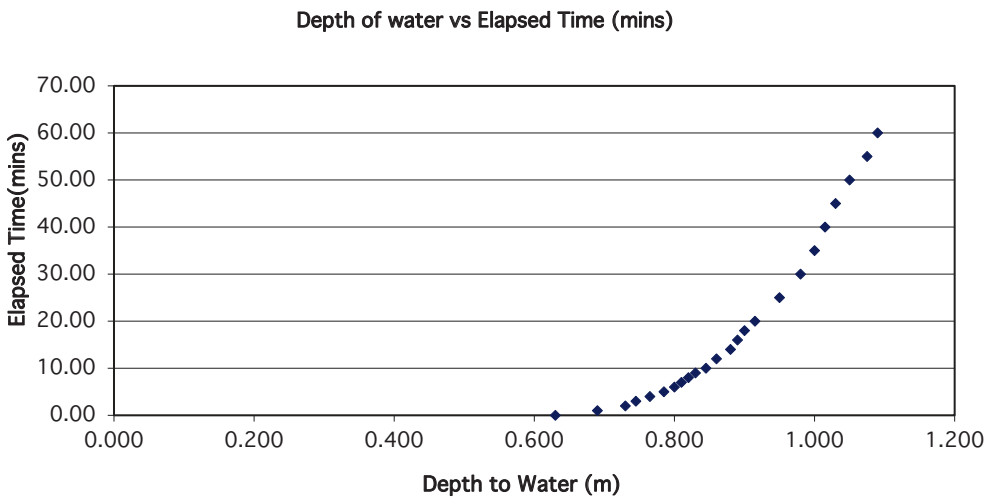
Depth to Water (m)	Elapsed Time (min)
0.630	0.00
0.690	1.00
0.730	2.00
0.745	3.00
0.765	4.00
0.785	5.00
0.800	6.00
0.810	7.00
0.820	8.00
0.830	9.00
0.845	10.00
0.860	12.00
0.880	14.00
0.890	16.00
0.900	18.00
0.915	20.00
0.950	25.00
0.980	30.00
1.000	35.00
1.015	40.00
1.030	45.00
1.050	50.00
1.075	55.00
1.090	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.63	m
Final depth to water =	1.090	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.65	m2
*Av. side area of permeable stratum over test perio	2.304	m2
Total Exposed area =	2.954	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00169 m/min or 2.81163E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA09 (cycle 2)	Easting	716694.934
Engineer	MORCE	Northing	735757.681
Date:	30/11/2022	Elevation	3.405

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL	
0.10	1.10	MADE GROUND: Dark brown/black sandy gravelly Clay, cobbles, red brick, plastic, concrete rubble and sea shells	DRY
1.10	1.50	Firm to stiff brown, sandy gravelly CLAY with a medium cobble content	

Notes: SA09 undertaken at TP09

Field Data

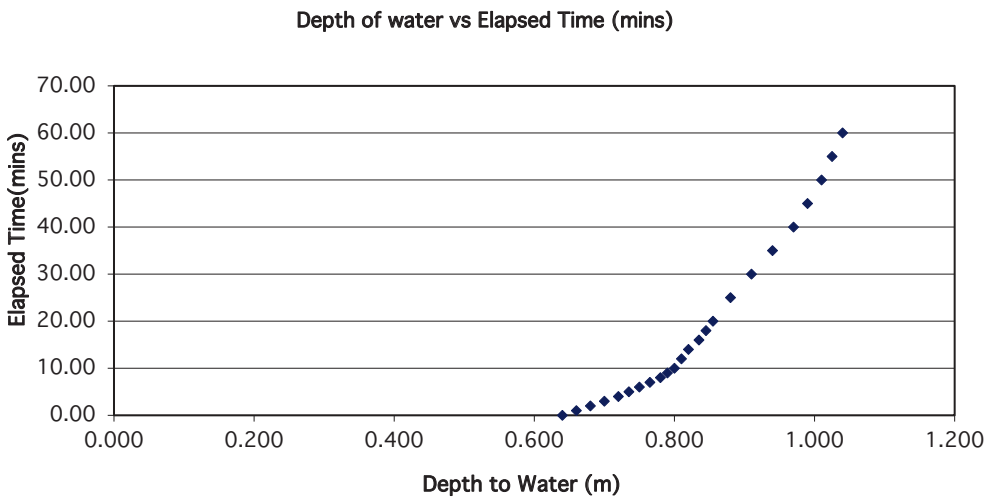
Depth to Water (m)	Elapsed Time (min)
0.640	0.00
0.660	1.00
0.680	2.00
0.700	3.00
0.720	4.00
0.735	5.00
0.750	6.00
0.765	7.00
0.780	8.00
0.790	9.00
0.800	10.00
0.810	12.00
0.820	14.00
0.835	16.00
0.845	18.00
0.855	20.00
0.880	25.00
0.910	30.00
0.940	35.00
0.970	40.00
0.990	45.00
1.010	50.00
1.025	55.00
1.040	60.00

Field Test

Depth of Pit (D)	1.50	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.30	m
Initial depth to Water =	0.64	m
Final depth to water =	1.040	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.65	m2
*Av. side area of permeable stratum over test perio	2.376	m2
Total Exposed area =	3.026	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00143 m/min or 2.38672E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA10 (cycle 1)	Easting	716658.73
Engineer	MORCE	Northing	735798.257
Date:	04/12/2022	Elevation	3.881

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	1.10	MADE GROUND: Dark brown/black sandy gravelly Clay, cobbles, red brick, plastic, concrete rubble and sea shells	DRY
1.10	1.60	Firm to stiff brown, sandy gravelly CLAY with low cobble content	

Notes: SA10 undertaken at TP10

Field Data

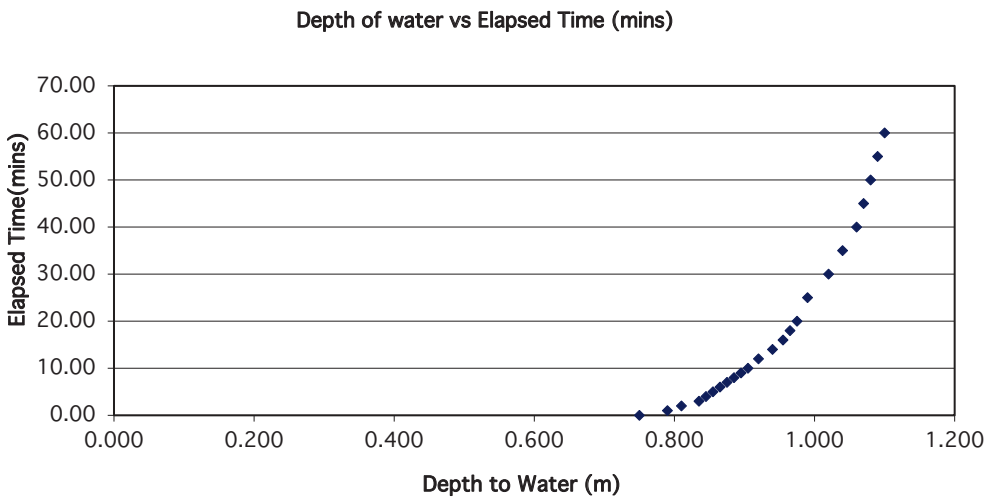
Depth to Water (m)	Elapsed Time (min)
0.750	0.00
0.790	1.00
0.810	2.00
0.835	3.00
0.845	4.00
0.855	5.00
0.865	6.00
0.875	7.00
0.885	8.00
0.895	9.00
0.905	10.00
0.920	12.00
0.940	14.00
0.955	16.00
0.965	18.00
0.975	20.00
0.990	25.00
1.020	30.00
1.040	35.00
1.060	40.00
1.070	45.00
1.080	50.00
1.090	55.00
1.100	60.00

Field Test

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.75	m
Final depth to water =	1.100	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.9	m2
*Av. side area of permeable stratum over test perio	2.835	m2
Total Exposed area =	3.735	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00141 m/min or 2.3427E-05 m/sec



Soakaway Design f -value from field tests

IGSL

Contract:	NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas	Contract No.	25000-3
Test No.	SA10 (cycle 2)	Easting	716658.73
Engineer	MORCE	Northing	735798.257
Date:	04/12/2022	Elevation	3.881

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	1.10	MADE GROUND: Dark brown/black sandy gravelly clay, cobbles, red brick, plastic, concrete rubble and sea shells)	DRY
1.10	1.60	Firm to stiff brown, sandy gravelly CLAY with low cobble content	

Notes: SA10 undertaken at TP10

Field Data

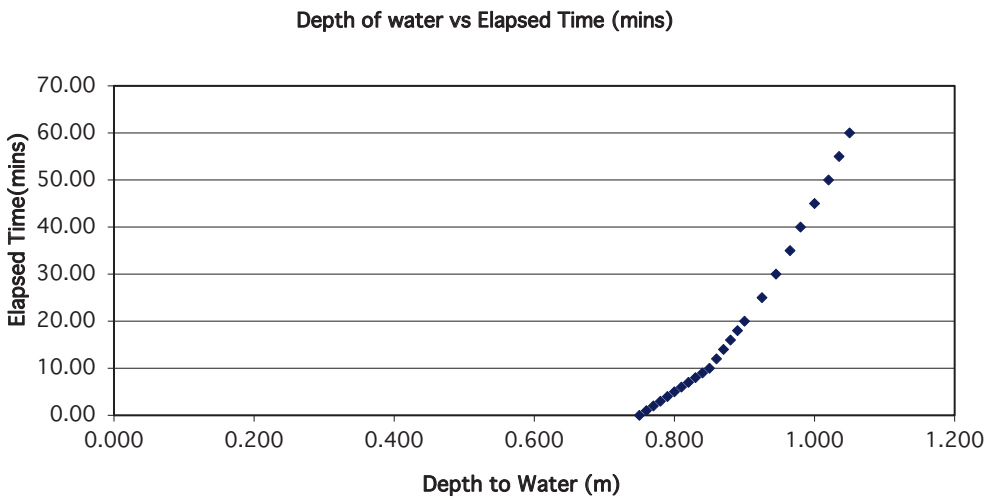
Depth to Water (m)	Elapsed Time (min)
0.750	0.00
0.760	1.00
0.770	2.00
0.780	3.00
0.790	4.00
0.800	5.00
0.810	6.00
0.820	7.00
0.830	8.00
0.840	9.00
0.850	10.00
0.860	12.00
0.870	14.00
0.880	16.00
0.890	18.00
0.900	20.00
0.925	25.00
0.945	30.00
0.965	35.00
0.980	40.00
1.000	45.00
1.020	50.00
1.035	55.00
1.050	60.00

Field Test

Depth of Pit (D)	1.60	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.50	m
Initial depth to Water =	0.75	m
Final depth to water =	1.050	m
Elapsed time (mins)=	60.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.9	m2
*Av. side area of permeable stratum over test perio	2.94	m2
Total Exposed area =	3.84	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.00117 m/min or 1.95313E-05 m/sec



Appendix 7

Geotechnical Laboratory Results (Soil)

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. **R154155** Contract No. 25000 Contract Name: NDFA Social Housing Site 3 Croke Villas

Customer MORCE

Samples Received: 15/02/24 Date Tested: 15/02/24

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH01	AA210243	4.0	A24/0525	B	11	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH02	AA210235	3.0	A24/0526	B	15	0	0	0	0	WS	4.4		Brown sandy gravelly SILT/CLAY
BH02	AA210237	5.0	A24/0527	B	13	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH02	AA210239	6.5	A24/0528	B	12	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH03	AA210230	3.0	A24/0529	B	13	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH03	AA210232	5.0	A24/0530	B	14	27	15	12	59	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
BH04	AA210230	4.0	A24/0531	B	12	27	17	10	56	WS	4.4	C L	Brown sandy gravelly CLAY
BH04	AA210226	6.0	A24/0532	B	12	30	17	13	61	WS	4.4	C L	Brown slightly sandy, gravelly, CLAY
BH05	AA210224	3.0	A24/0533	B	12	30	18	12	46	WS	4.4	C L	Brown sandy gravelly CLAY
BH05	AA210219	5.0	A24/0534	B	13	34	13	11	56	WS	4.4	C L	Grey/Brown slightly sandy, slightly gravelly, CLAY
BH06	AA210212	3.0	A24/0535	B	12	24	NP	NP	44	WS	4.4		Brown sandy gravelly SILT
BH06	AA210214	5.0	A24/0536	B	10	28	14	14	61	WS	4.4	C L	Grey/Brown sandy, gravelly, CLAY
BH07	AA210208	3.0	A24/0539	B	8	30	NP	NP	20	WS	4.4		Brown silty sandy GRAVEL
BH07	AA210250	4.0	A24/0540	B	11	29	16	13	51	WS	4.4	C L	Grey/Brown sandy, gravelly, CLAY
BH08	AA210248	4.0	A24/0542	B	10	0	0	0	0	WS	4.4		Grey silty sandy GRAVEL

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by: H Byrne

Date: 29/02/24

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. **R154157** Contract No. 25000 Contract Name: NDFA Social Housing Site 3 Croke Villas

Customer MORCE

Samples Received: 15/02/24 Date Tested: 15/02/24

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
TP07	AA210250	2.5	A24/0563	B	15	30	NP	NP	14	WS	4.4		Brown silty, very gravelly, SAND
TP08	AA210248	2.2	A24/0564	B	15	55	26	29	34	WS	4.4	C H	Brown slightly sandy, slightly gravelly, CLAY
TP08	AA210206	2.7	A24/0565	B	21	30	16	14	89	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP09	AA207648	2.1	A24/0566	B	7.7	0	0	0	0	WS	4.4		Brown silty/clayey sandy GRAVEL
TP10	AA207650	1.3	A24/0567	B	7	0	0	0	0	WS	4.4		Brown silty/clayey sandy GRAVEL

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by: H Byrne

Date: 29/02/24

Page: 1 of 1

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. **R154156** Contract No. 25000 Contract Name: NDFA Social Housing Site 3 Croke Villas

Customer MORCE

Samples Received: 15/02/24 Date Tested: 15/02/24

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH08	AA210250	6.0	A24/0543	B	14	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH09	AA210248	3.0	A24/0544	B	13	0	0	0	0	WS	4.4		Grey sandy gravelly SILT/CLAY
BH09	AA210206	5.0	A24/0545	B	18	0	0	0	0	WS	4.4		Grey/brown sandy gravelly SILT/CLAY
BH10	AA207648	3.0	A24/0546	B	23	0	0	0	0	WS	4.4		Grey/brown sandy gravelly SILT/CLAY
BH10	AA207650	5.0	A24/0547	B	13	29	16	13	49	WS	4.4	C L	Brown/grey slightly sandy, gravelly, CLAY
BH12	AA207643	2.0	A24/0549	B	10	33	NP	NP	26	WS	4.4		Brown silty, very sandy, GRAVEL
BH12	AA207644	3.0	A24/0550	B	18	31	15	16	48	WS	4.4	C L	Brown sandy gravelly CLAY
BH12	AA207646	5.0	A24/0551	B	8	23	14	9	37	WS	4.4	C L	Brown clayey, sandy, GRAVEL with some cobbles
BH13	AA207637	3.0	A24/0553	B	14	30	19	11	39	WS	4.4	C L	Brown sandy gravelly CLAY
BH13	AA2076639	5.0	A24/0554	B	11	28	15	13	53	WS	4.4	C L	Brown slightly sandy, gravelly, CLAY
TP01	AA198502	1.3	A24/0555	B	35	58	32	26	83	WS	4.4	M H	Brown sandy gravelly SILT
TP03	AA198507	1.5	A24/0557	B	40	56	NP	NP	63	WS	4.4		Brown sandy gravelly SILT
TP03	AA198508	2.4	A24/0558	B	22	51	29	22	62	WS	4.4	M H	Brown slightly sandy, gravelly, SILT with some cobbles
TP04	AA198510	1.5	A24/0559	B	31	0	0	0	0	WS	4.4		Grey/brown sandy gravelly SILT/CLAY
TP07	AA198521	1.7	A24/0562	B	17	48	30	18	36	WS	4.4	M I	Brown sandy gravelly SILT

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by: H Byrne

Date: 29/02/24

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	91	
20	89	
14	87	
10	84	
6.3	79	
5	77	
3.35	73	
2	68	
1.18	64	SAND
0.6	58	
0.425	56	
0.3	53	
0.15	48	
0.063	40	SILT/CLAY

Contract No. 25000 Report No. R154016
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH03
Sample No.* AA210232 Lab. Sample No. A24/0530
Sample Type: B
Depth* (m) 5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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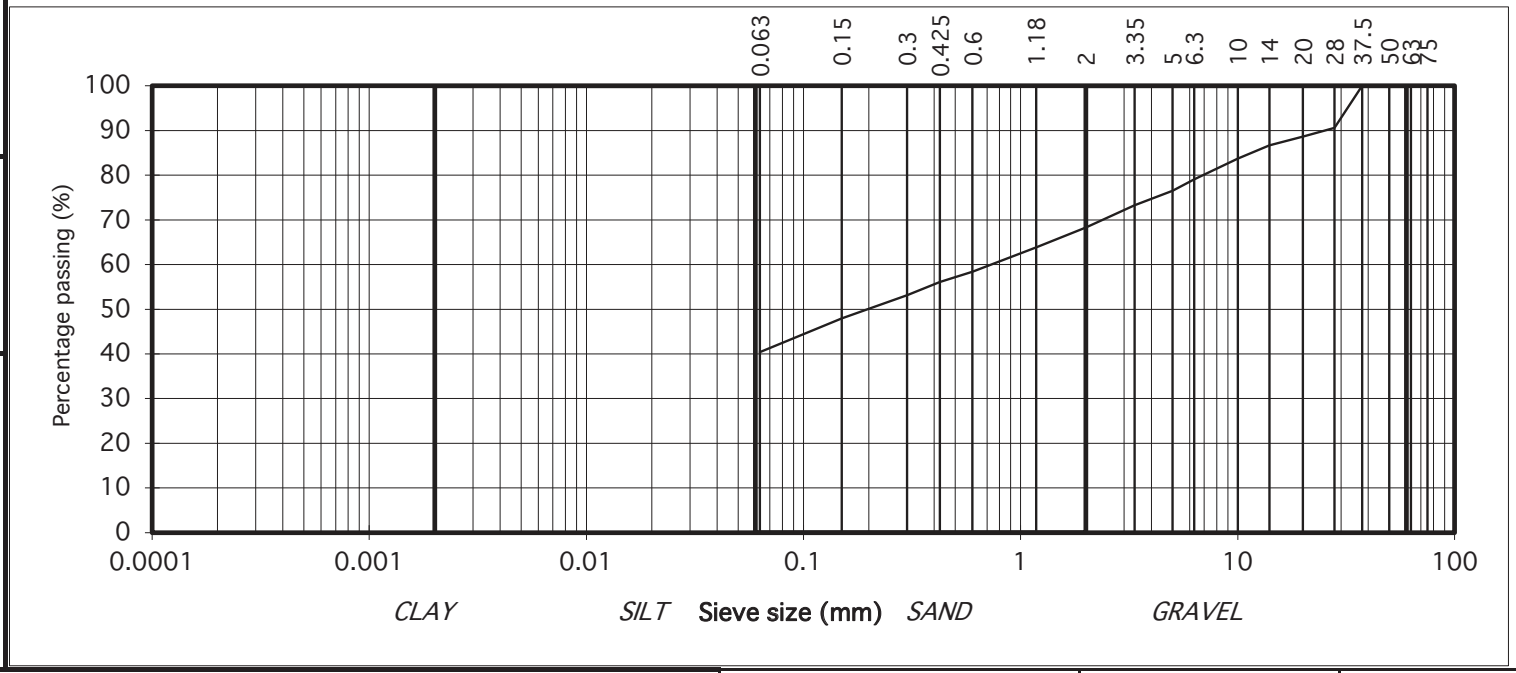

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Approved by:	Date:	Page no:
H Byrne	23/02/24	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	89	
28	86	
20	81	
14	78	
10	74	
6.3	70	
5	68	
3.35	66	
2	61	
1.18	57	SAND
0.6	52	
0.425	50	
0.3	49	
0.15	43	
0.063	37	SILT/CLAY
0.038	33	
0.027	30	
0.017	27	
0.010	23	
0.007	21	
0.005	19	
0.002	14	

Contract No. 25000 Report No. R154021
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH04
Sample No.* AA210226 Lab. Sample No. A24/0532
Sample Type: B
Depth* (m) 6m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not nmeet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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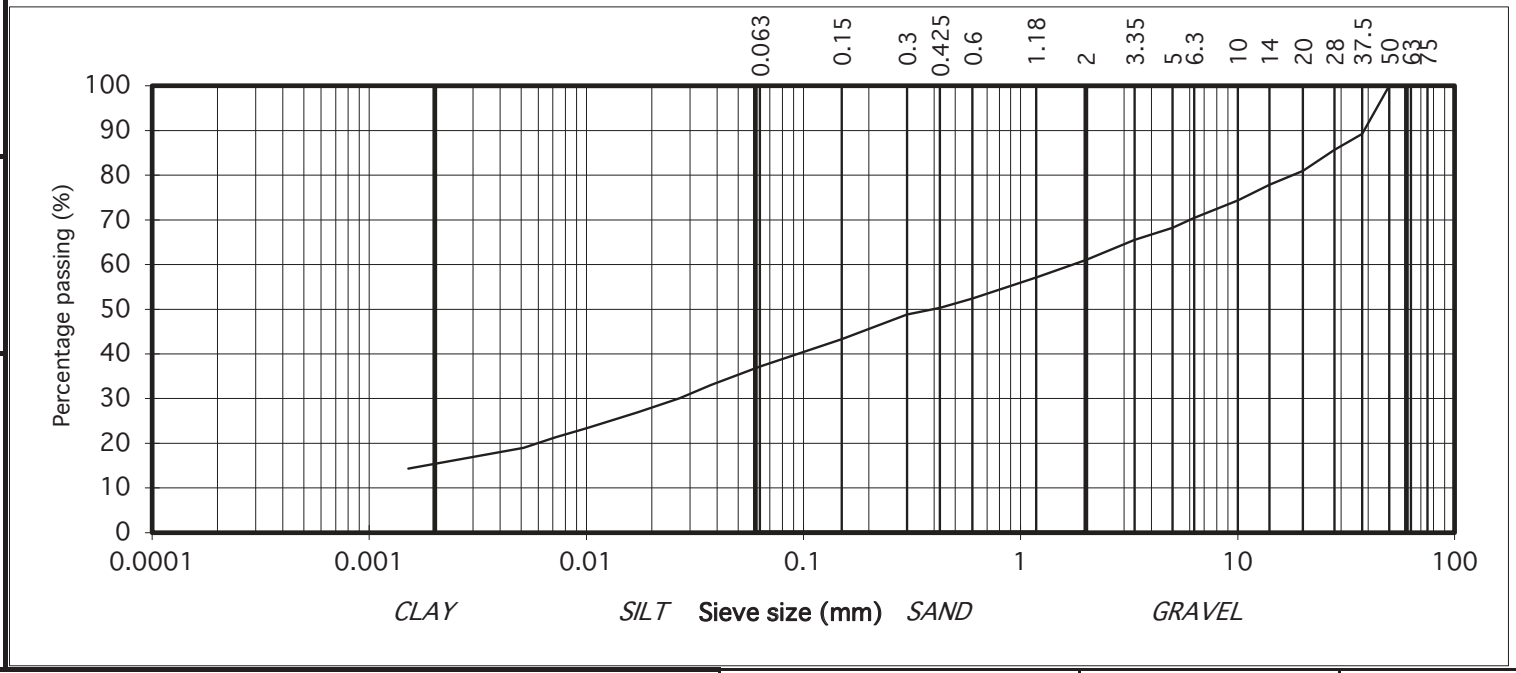

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	23/02/24	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	94	
10	91	
6.3	86	
5	83	
3.35	78	
2	72	
1.18	67	SAND
0.6	61	
0.425	58	
0.3	55	
0.15	50	
0.063	43	SILT/CLAY
0.037	39	
0.027	35	
0.017	32	
0.010	28	
0.007	25	
0.005	21	
0.002	13	

Contract No. 25000 Report No. R154020
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH05
Sample No.* AA210219 Lab. Sample No. A24/0534
Sample Type: B
Depth* (m) 5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Grey/Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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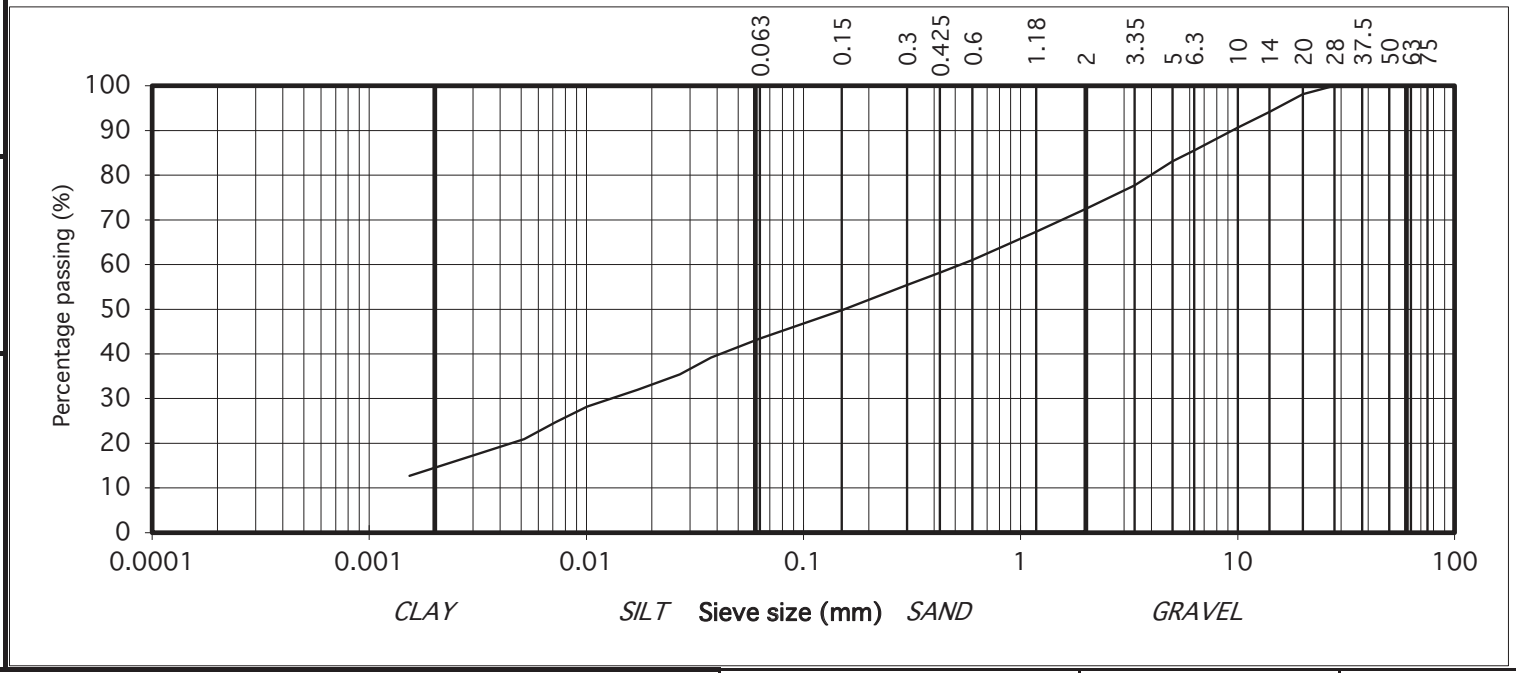

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	23/02/24	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	95	
10	90	
6.3	85	
5	82	
3.35	78	
2	73	
1.18	68	SAND
0.6	64	
0.425	61	
0.3	57	
0.15	50	
0.063	43	SILT/CLAY
0.037	36	
0.027	32	
0.017	29	
0.010	25	
0.007	21	
0.005	18	
0.002	11	

Contract No. 25000 Report No. R154017
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH06
Sample No.* AA210215 Lab. Sample No. A24/0537
Sample Type: B
Depth* (m) 6m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Grey Brown slightly sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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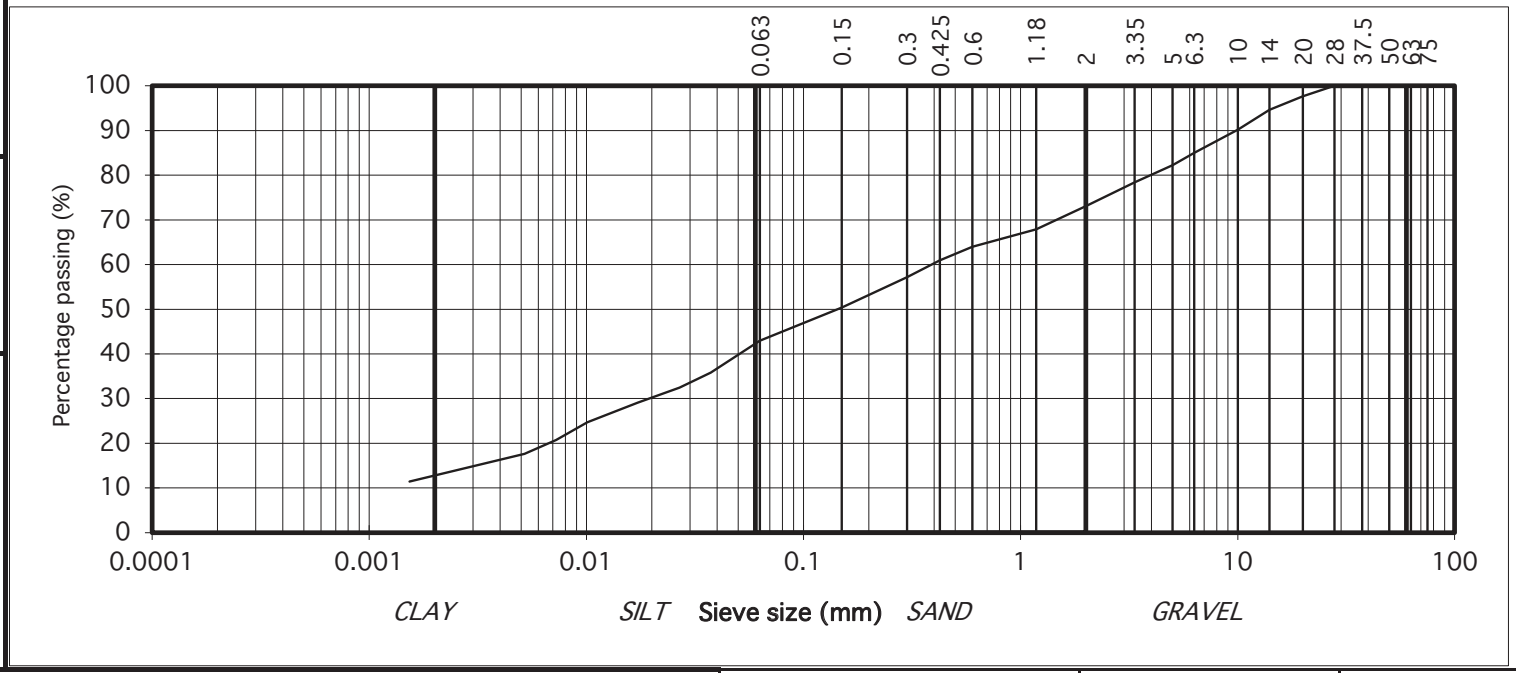

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	23/02/24	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	97	
28	96	
20	93	
14	89	
10	84	
6.3	79	
5	77	
3.35	72	
2	66	
1.18	60	SAND
0.6	54	
0.425	52	
0.3	49	
0.15	44	
0.063	38	SILT/CLAY
0.038	33	
0.027	29	
0.017	24	
0.010	21	
0.007	18	
0.005	16	
0.002	12	

Contract No. 25000 Report No. R154022
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH07
Sample No.* AA210209 Lab. Sample No. A24/0540
Sample Type: B
Depth* (m) 4m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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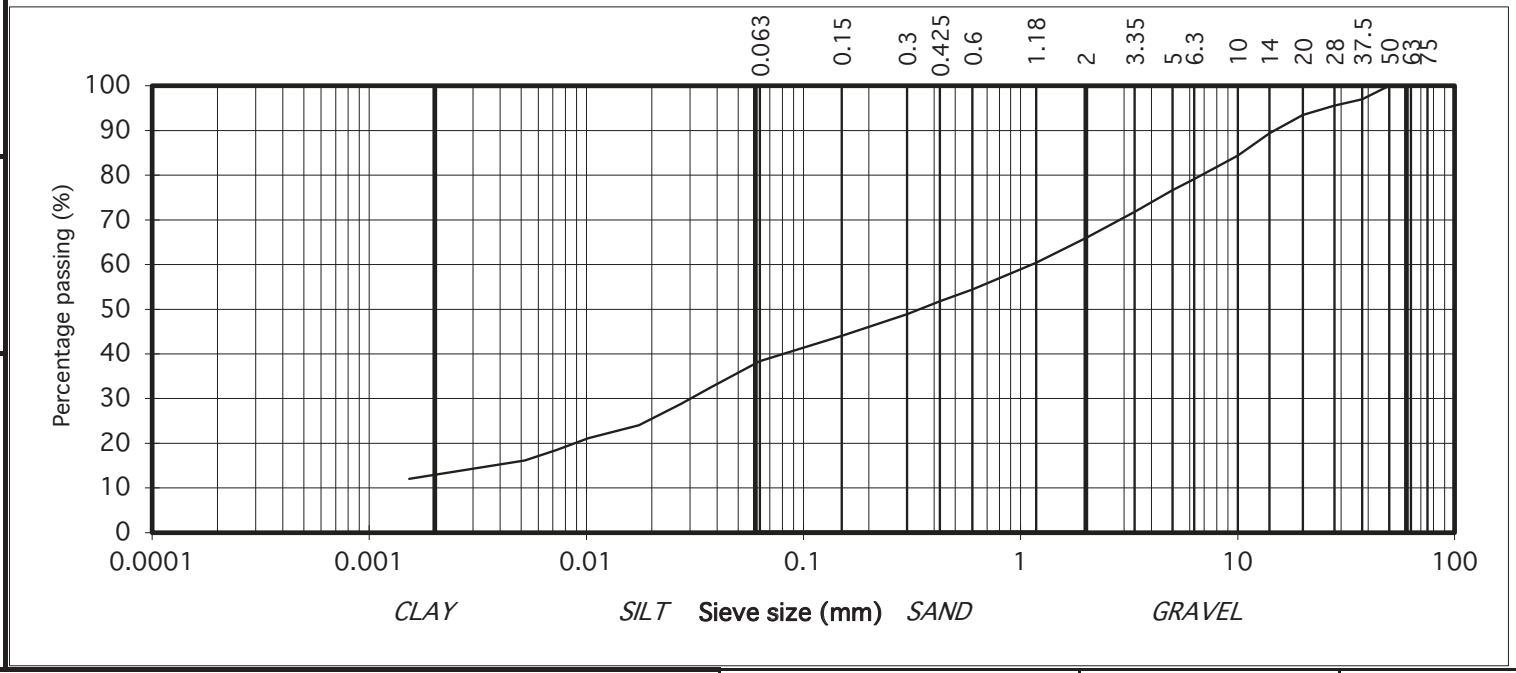

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

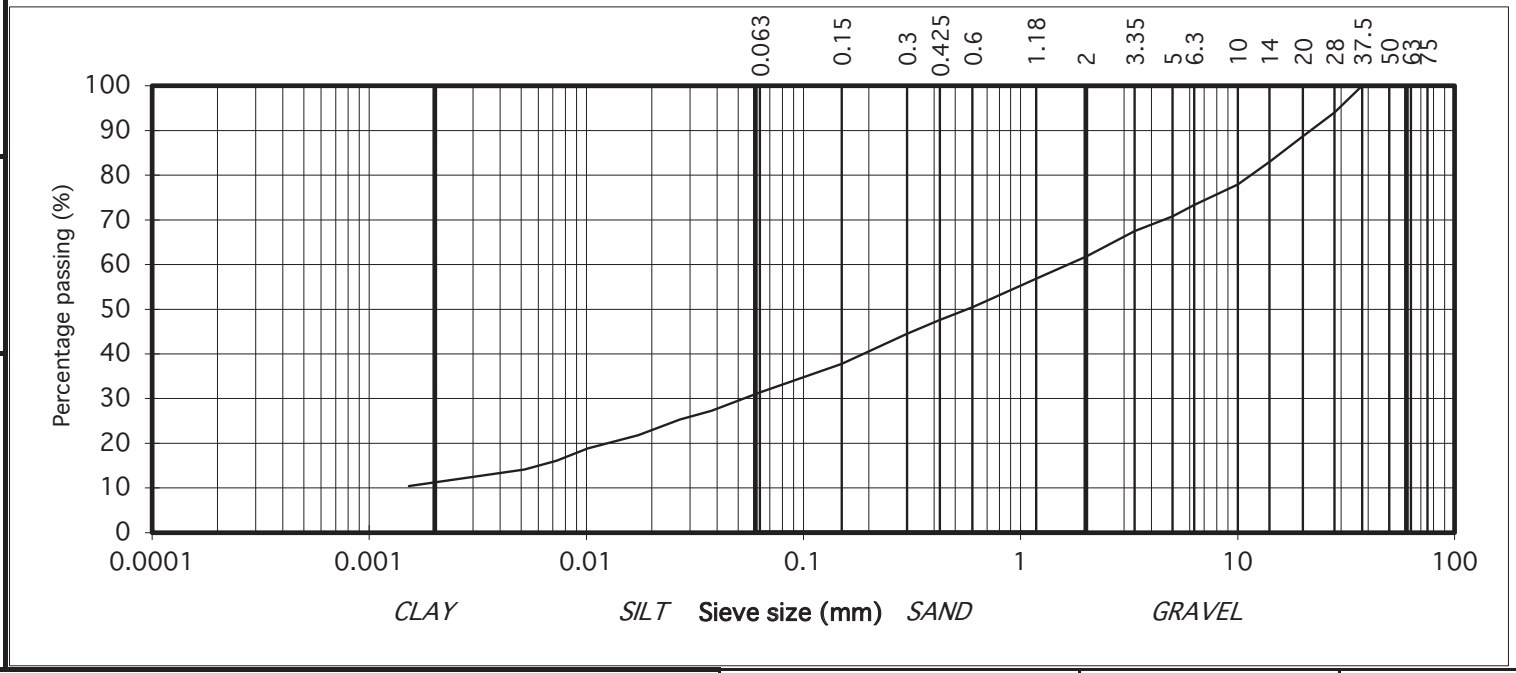
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	94	
20	89	
14	83	
10	78	
6.3	73	
5	71	
3.35	68	
2	62	
1.18	57	SAND
0.6	50	
0.425	48	
0.3	45	
0.15	38	
0.063	31	SILT/CLAY
0.038	27	
0.027	25	
0.017	22	
0.010	19	
0.007	16	
0.005	14	
0.002	10	

Contract No. 25000 Report No. R154023
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH10
Sample No.* AA207650 Lab. Sample No. A24/0547
Sample Type: B
Depth* (m) 5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown/grey slightly sandy, gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

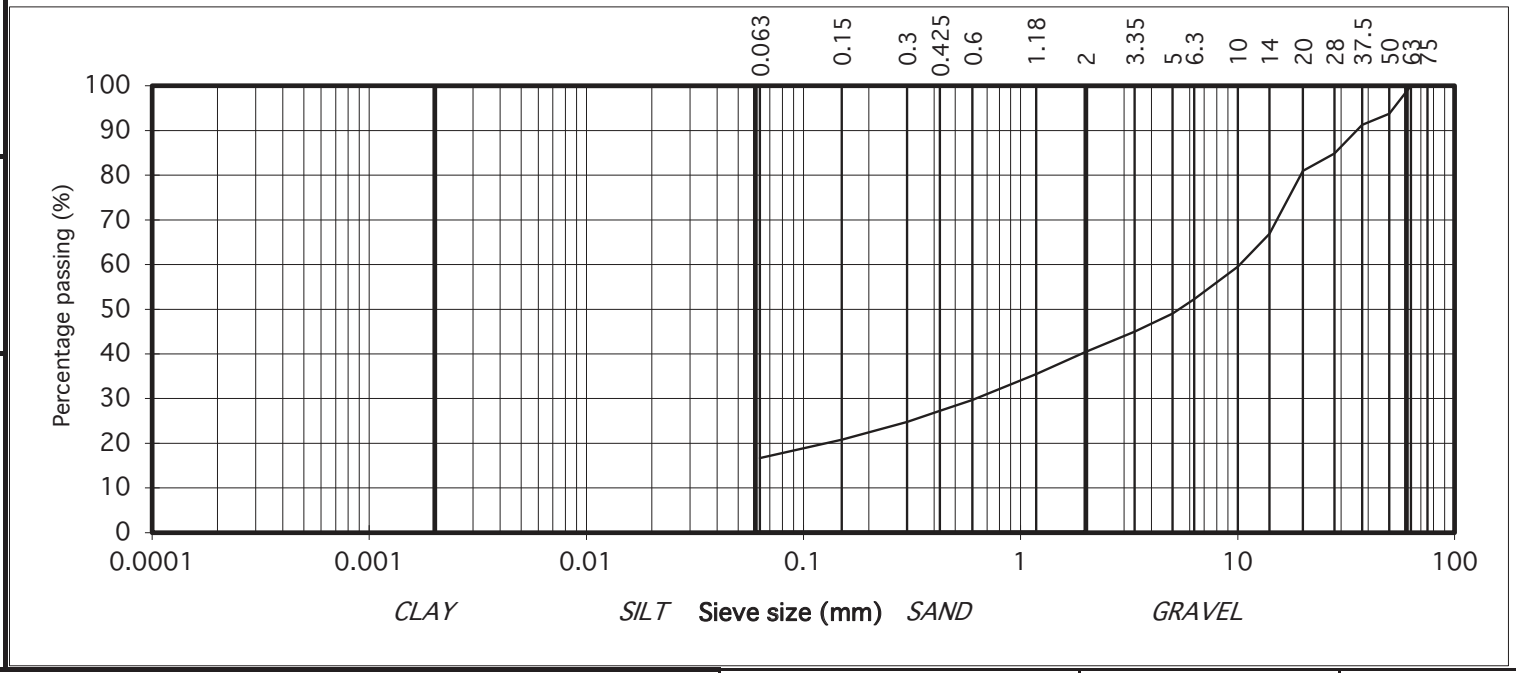
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	94	GRAVEL
37.5	91	
28	85	
20	81	
14	67	
10	60	
6.3	52	
5	49	
3.35	45	
2	40	
1.18	35	SAND
0.6	30	
0.425	27	
0.3	25	
0.15	21	
0.063	17	SILT/CLAY

Contract No. 25000 Report No. R154026
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH12
Sample No.* AA207643 Lab. Sample No. A24/0549
Sample Type: B
Depth* (m) 2m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown silty, very sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

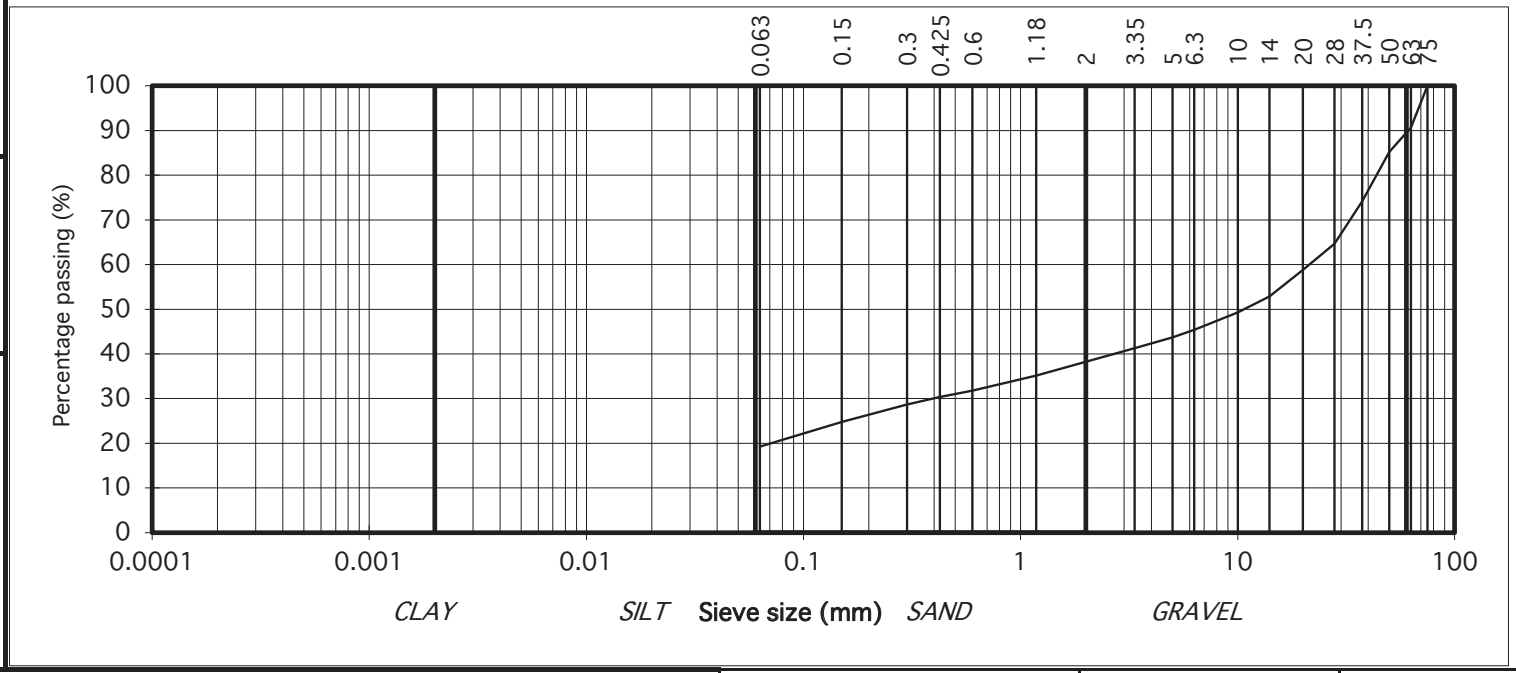
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	91	
50	85	GRAVEL
37.5	74	
28	65	
20	59	
14	53	
10	49	
6.3	45	
5	44	
3.35	41	
2	38	
1.18	35	SAND
0.6	32	
0.425	30	
0.3	29	
0.15	25	
0.063	19	SILT/CLAY

Contract No. 25000 Report No. R154027
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH12
Sample No.* AA207646 Lab. Sample No. A24/0551
Sample Type: B
Depth* (m) 5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown clayey, sandy, GRAVEL with some cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

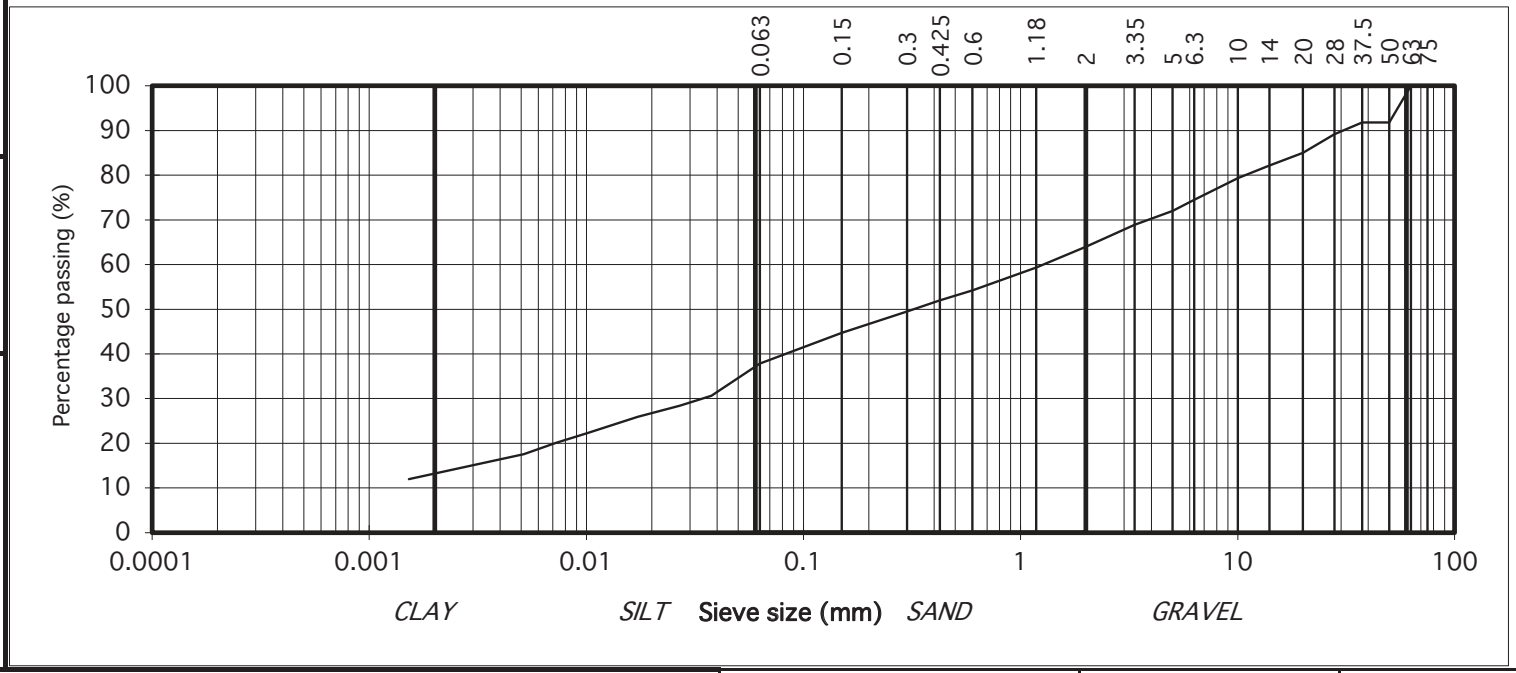
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	92	GRAVEL
37.5	92	
28	89	
20	85	
14	82	
10	79	
6.3	74	
5	72	
3.35	69	
2	64	
1.18	59	SAND
0.6	54	
0.425	52	
0.3	50	
0.15	45	
0.063	38	SILT/CLAY
0.038	31	
0.027	28	
0.017	26	
0.010	22	
0.007	20	
0.005	18	
0.002	12	

Contract No. 25000 Report No. R154024
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. BH13
Sample No.* AA207639 Lab. Sample No. A24/0554
Sample Type: B
Depth* (m) 5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	23/02/24	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

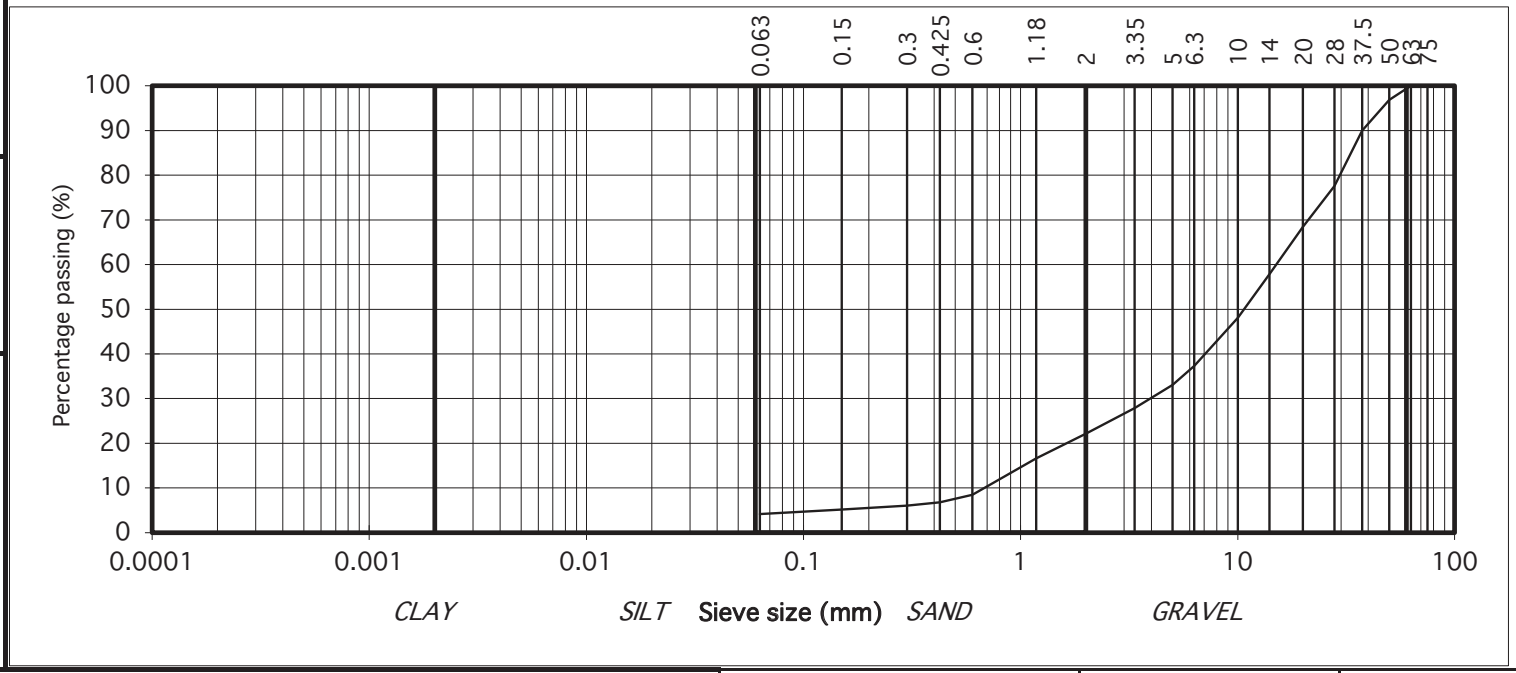
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	97	GRAVEL
37.5	90	
28	78	
20	68	
14	58	
10	48	
6.3	37	
5	33	
3.35	28	
2	22	
1.18	17	SAND
0.6	9	
0.425	7	
0.3	6	
0.15	5	
0.063	4	SILT/CLAY

Contract No. 25000 Report No. R154015
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP01
Sample No.* AA198503 Lab. Sample No. A24/0556
Sample Type: B
Depth* (m) 2.2m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly clayey/silty, sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	93	
50	88	GRAVEL
37.5	84	
28	79	
20	72	
14	67	
10	61	
6.3	57	
5	53	
3.35	50	
2	46	
1.18	41	SAND
0.6	39	
0.425	37	
0.3	34	
0.15	30	
0.063	26	SILT/CLAY
0.038	21	
0.027	19	
0.017	17	
0.010	14	
0.007	12	
0.005	11	
0.002	8	

Contract No. 25000 Report No. R154019
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP03
Sample No.* AA198508 Lab. Sample No. A24/0558
Sample Type: B
Depth* (m) 2.4m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, gravelly, SILT with some cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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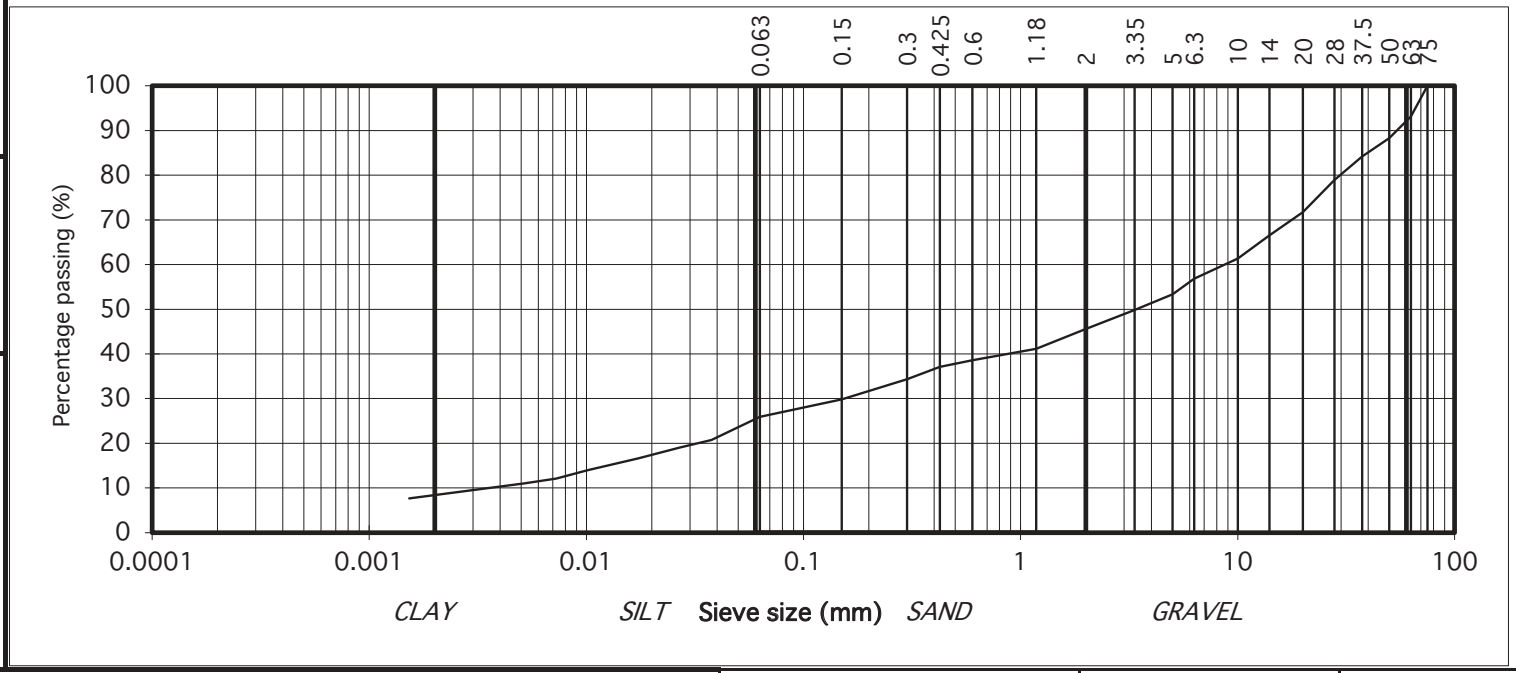

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	96	GRAVEL
37.5	88	
28	82	
20	76	
14	68	
10	64	
6.3	58	
5	55	
3.35	51	
2	47	
1.18	42	SAND
0.6	36	
0.425	33	
0.3	31	
0.15	28	
0.063	23	SILT/CLAY
0.038	19	
0.027	17	
0.017	16	
0.010	14	
0.007	12	
0.005	11	
0.002	8	

Contract No. 25000 Report No. R154029
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP04
Sample No.* AA198511 Lab. Sample No. A24/0560
Sample Type: B
Depth* (m) 2.3m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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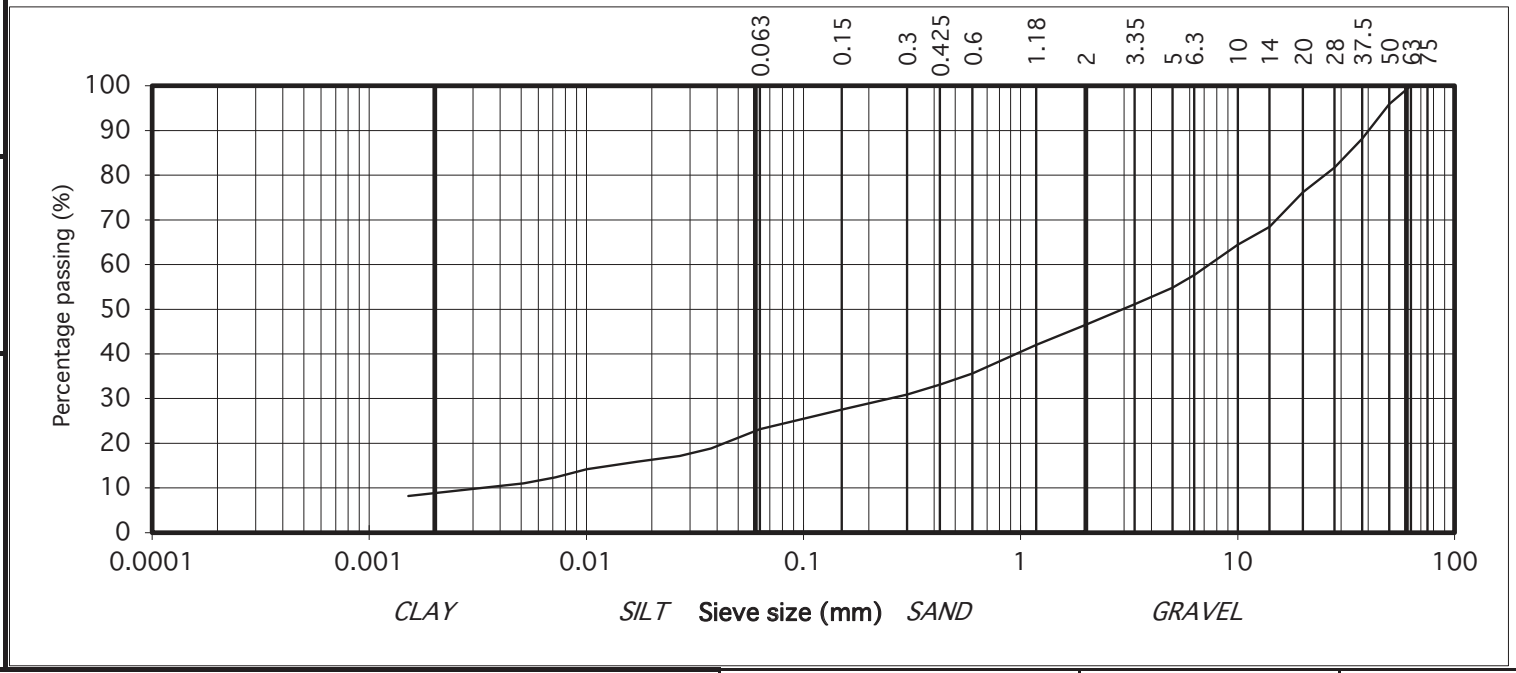

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	85	
28	79	
20	71	
14	60	
10	53	
6.3	41	
5	36	
3.35	29	
2	21	
1.18	16	SAND
0.6	11	
0.425	10	
0.3	8	
0.15	8	
0.063	7	SILT/CLAY

Contract No. 25000 Report No. R154018
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP06
Sample No.* AA198518 Lab. Sample No. A24/0561
Sample Type: B
Depth* (m) 2.5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown clayey/silty, sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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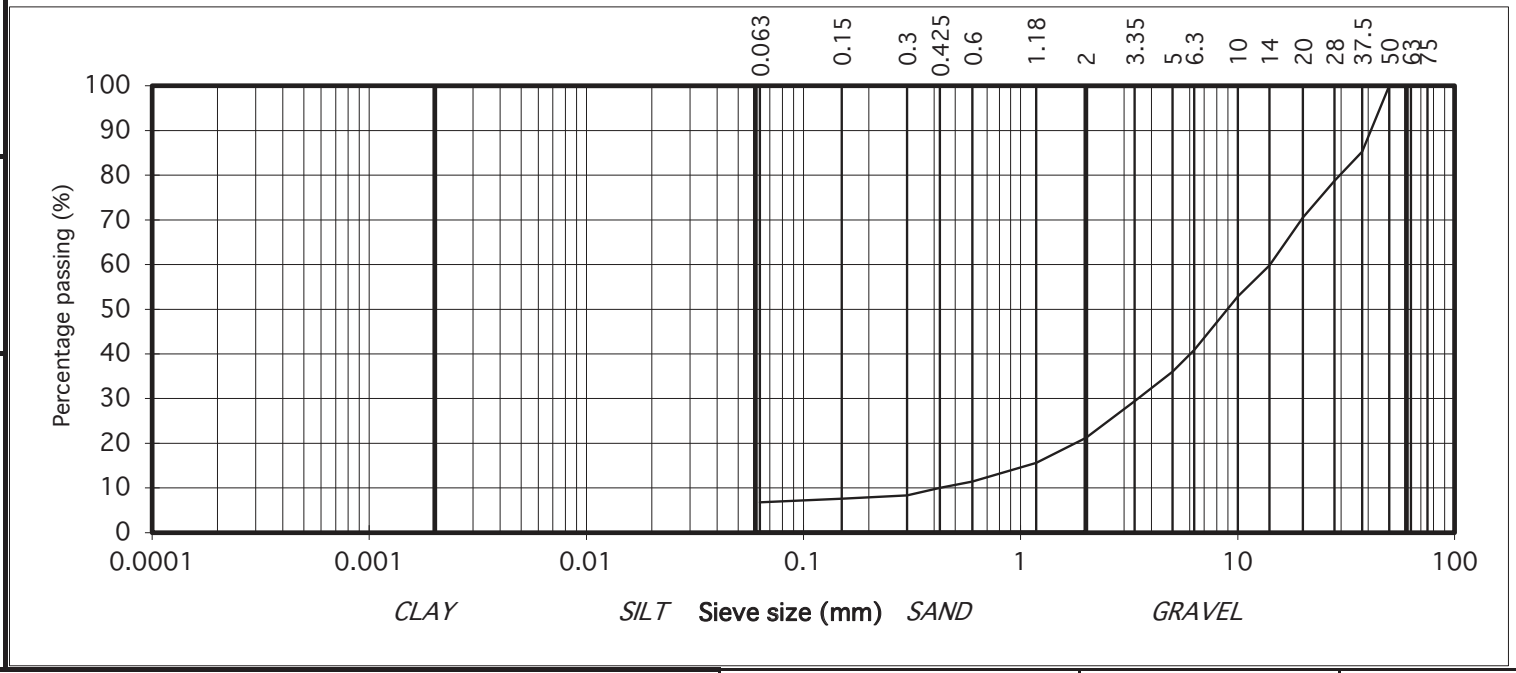

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

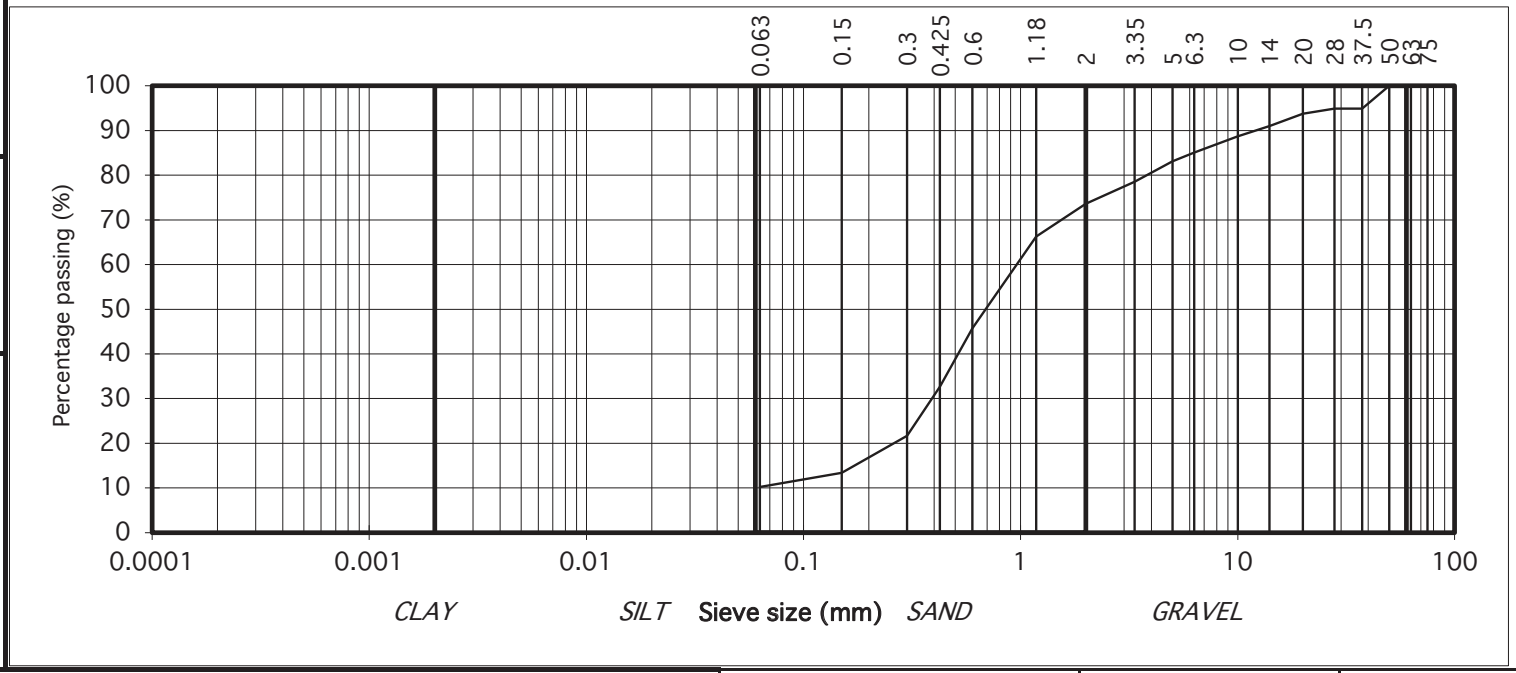
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	95	
20	94	
14	91	
10	89	
6.3	85	
5	83	
3.35	79	
2	74	
1.18	66	SAND
0.6	46	
0.425	33	
0.3	22	
0.15	13	
0.063	10	SILT/CLAY

Contract No. 25000 Report No. R154028
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP07
Sample No.* AA198522 Lab. Sample No. A24/0563
Sample Type: B
Depth* (m) 2.5m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown silty, very gravelly, SAND

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

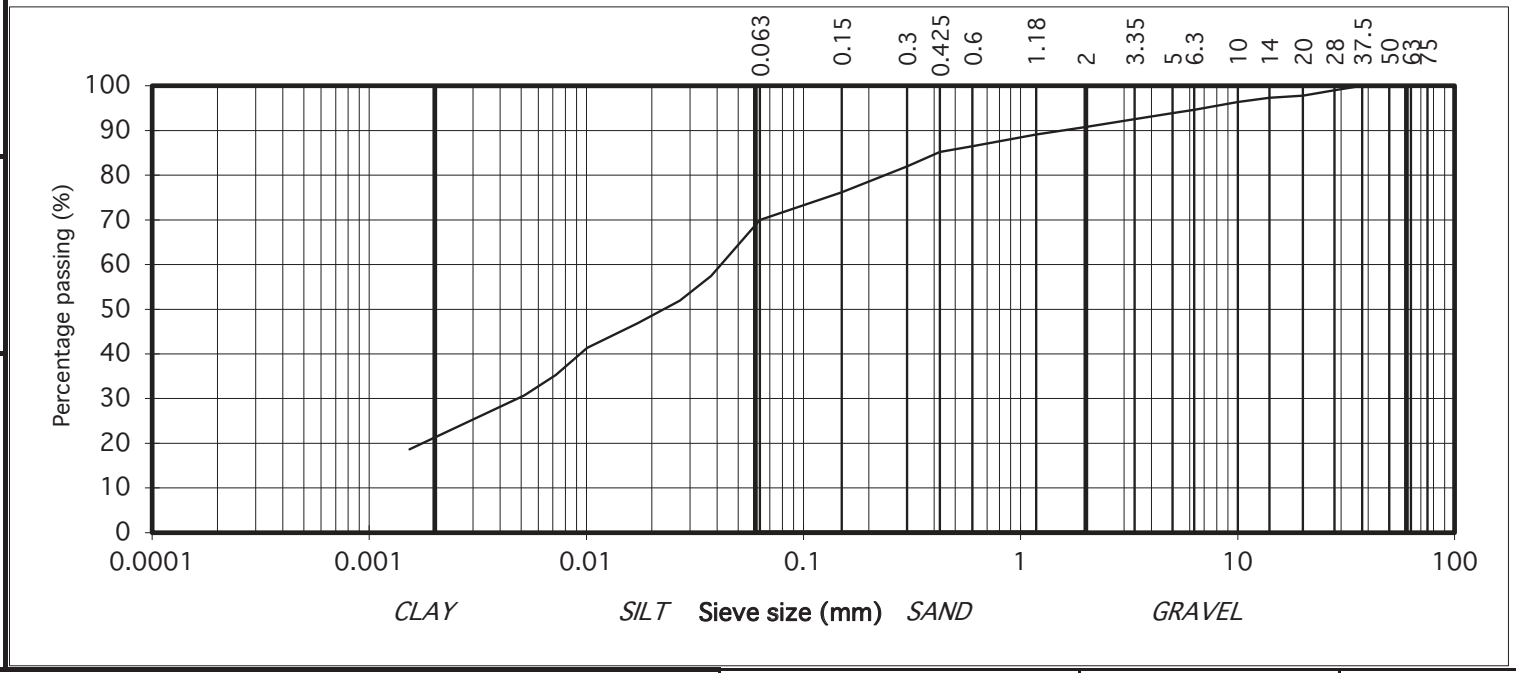
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	99	
20	98	
14	97	
10	96	
6.3	95	
5	94	
3.35	93	
2	91	
1.18	89	SAND
0.6	86	
0.425	85	
0.3	82	
0.15	76	
0.063	70	SILT/CLAY
0.037	57	
0.027	52	
0.017	47	
0.010	41	
0.007	35	
0.005	31	
0.002	19	

Contract No. 25000 Report No. R154025
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP08
Sample No.* AA198527 Lab. Sample No. A24/0565
Sample Type: B
Depth* (m) 2.7m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



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Approved by:	Date:	Page no:
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

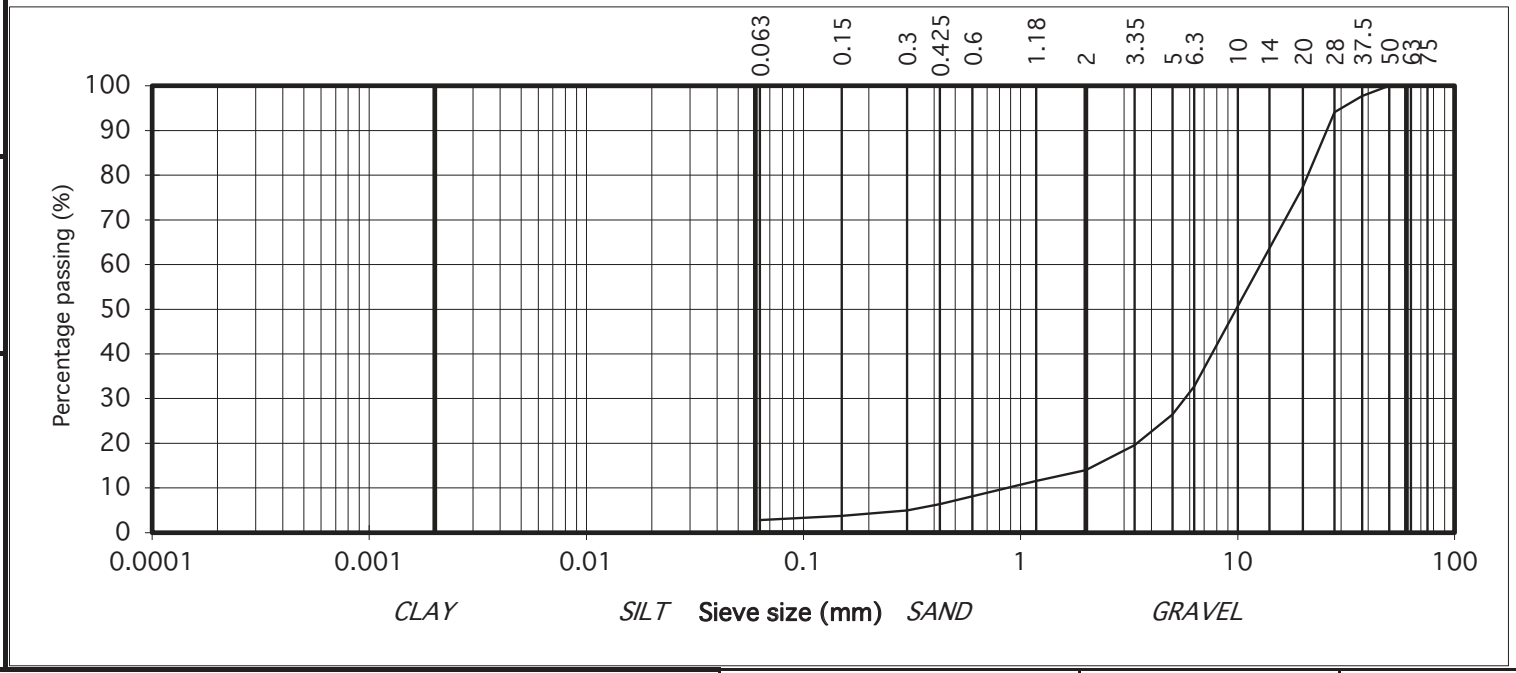
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	94	
20	77	
14	64	
10	51	
6.3	33	
5	26	
3.35	20	
2	14	
1.18	12	SAND
0.6	8	
0.425	6	
0.3	5	
0.15	4	
0.063	3	SILT/CLAY

Contract No. 25000 Report No. R154014
Contract Name : NDFA Social Housing Site 3 Croke Villas
BH/TP No. TP10
Sample No.* AA198539 Lab. Sample No. A24/0568
Sample Type: B
Depth* (m) 2.3m Customer: MORCE
Date Received 15/02/2024 Date Testing started 15/02/2024
Description: Brown slightly clayey/silty, sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
This report shall not be reproduced except in full without the written approval of the Laboratory.



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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

Appendix 8

Geo-Environmental & Chemical Laboratory Results (Soils)

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-03653-1
Initial Date of Issue:	22-Feb-2024
Re-Issue Details:	
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	25000 Croke Villas
Quotation No.:	Q20-21693
Order No.:	
No. of Samples:	19
Turnaround (Wkdays):	7
Date Approved:	22-Feb-2024
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	07-Feb-2024
Date Instructed:	07-Feb-2024
Results Due:	15-Feb-2024

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: 25000 Croke Villas

Client: IGSL						**Chemtest Job No.:**	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693						**Chemtest Sample ID.:**	1763594	1763595	1763596	1763597	1763599	1763601	1763602	1763604	1763605
Order No.:						Client Sample Ref.:	TP2	TP2	TP3	TP4	TP5	TP5	TP6	TP7	TP8
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	0.70	1.40	0.80	0.80	0.80	2.50	0.70	0.70	0.60
						Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**										
Ammonium	U	1220	10:1	mg/l	0.050		0.056	0.058	0.058	0.078	< 0.050	0.070	0.061	0.078	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10		0.63	0.63	0.64	0.85	0.65	0.87	0.68	0.93	0.50

Results - Leachate

Project: 25000 Croke Villas

Client: IGSL						**Chemtest Job No.:**	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693						**Chemtest Sample ID.:**	1763611	1763612	1763614	1763616
Order No.:						Client Sample Ref.:	TP9	TP9	TP10	TP11
						Sample Type:	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	0.70	1.50	0.70	0.80
						Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
Ammonium	U	1220	10:1	mg/l	0.050		0.092	0.074	0.077	0.066
Ammonium	N	1220	10:1	mg/kg	0.10		1.0	1.0	1.0	0.75

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763594	1763595	1763596	1763597	1763598	1763599	1763600
Order No.:				Client Sample Ref.:		TP2	TP2	TP3	TP4	TP4	TP5	TP5
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		0.70	1.40	0.80	0.80	1.50	0.80	1.60
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		U	2192		N/A	-	-	-	-		Fibres/Clumps	
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		Chrysotile	
Asbestos by Gravimetry		U	2192	%	0.001						<0.001	
Total Asbestos		U	2192	%	0.001						<0.001	
Moisture		N	2030	%	0.020	18	26	23	15	16	12	13
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture		N	2040		N/A	Sand	Sand	Sand	Sand	Clay	Sand	Sand
pH at 20C		M	2010		4.0	7.9	8.0	8.1	8.1		8.5	
pH (2.5:1) at 20C		N	2010		4.0					8.4		8.5
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.3	1.6	1.3	0.85		1.5	
Magnesium (Water Soluble)		N	2120	g/l	0.010					< 0.010		< 0.010
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010					0.032		0.32
Total Sulphur		U	2175	%	0.010					0.032		0.20
Sulphur (Elemental)		M	2180	mg/kg	1.0	10	22	3.9	7.4		2.1	
Chloride (Water Soluble)		M	2220	g/l	0.010					< 0.010		< 0.010
Nitrate (Water Soluble)		N	2220	g/l	0.010					< 0.010		0.011
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	0.70	< 0.50		< 0.50	
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	5.5	8.2	3.7	5.0		5.5	
Ammonium (Water Soluble)		M	2220	g/l	0.01					< 0.01		< 0.01
Sulphate (Total)		U	2430	%	0.010	0.13	0.98	0.42	0.32		0.091	
Sulphate (Acid Soluble)		U	2430	%	0.010					0.077		0.44
Arsenic		M	2455	mg/kg	0.5	19	19	29	37		22	
Barium		M	2455	mg/kg	0	170	170	220	200		270	
Cadmium		M	2455	mg/kg	0.10	2.6	2.3	1.1	1.2		2.0	
Chromium		M	2455	mg/kg	0.5	20	19	20	22		25	
Molybdenum		M	2455	mg/kg	0.5	4.0	3.6	4.8	6.3		4.0	
Antimony		N	2455	mg/kg	2.0	14	12	15	10		4.9	
Copper		M	2455	mg/kg	0.50	52	52	140	360		83	
Mercury		M	2455	mg/kg	0.05	0.72	0.70	2.3	1.4		0.93	
Nickel		M	2455	mg/kg	0.50	31	26	45	65		46	
Lead		M	2455	mg/kg	0.50	490	480	860	610		230	
Selenium		M	2455	mg/kg	0.25	1.7	0.53	1.6	1.5		1.3	
Zinc		M	2455	mg/kg	0.50	3000	3000	310	340		280	
Chromium (Trivalent)		N	2490	mg/kg	1.0	20	19	20	22		25	
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763594	1763595	1763596	1763597	1763598	1763599	1763600
Order No.:				Client Sample Ref.:		TP2	TP2	TP3	TP4	TP4	TP5	TP5
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		0.70	1.40	0.80	0.80	1.50	0.80	1.60
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25		< 0.25	
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	5.8	< 2.0	< 2.0		4.1	
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0	3.0	< 1.0	< 1.0		< 1.0	
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	3.7	< 2.0	< 2.0		< 2.0	
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	< 3.0	5.9	< 3.0	< 3.0		3.3	
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10		< 10	
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	< 5.0	18	< 5.0	< 5.0		9.2	
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25		< 0.25	
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	4.2	< 1.0	< 1.0		< 1.0	
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	5.5	23	16	3.2		17	
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	2.9	19	13	< 2.0		16	
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0	31	< 1.0	< 1.0		2.1	
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	8.3	46	29	< 5.0		34	
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	< 10	64	29	< 10		43	
Total Organic Carbon		M	2625	%	0.20	5.4	5.7	12	11		2.6	
Mineral Oil EPH	EH_CU_1D_Total	N	2670	mg/kg	10	< 10	18	< 10	< 10		< 10	
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	
Naphthalene		M	2800	mg/kg	0.10	0.72	0.49	< 0.10	0.24		< 0.10	
Acenaphthylene		N	2800	mg/kg	0.10	0.43	0.34	< 0.10	< 0.10		< 0.10	
Acenaphthene		M	2800	mg/kg	0.10	0.17	0.12	< 0.10	0.26		< 0.10	
Fluorene		M	2800	mg/kg	0.10	0.32	0.26	< 0.10	0.26		< 0.10	
Phenanthrene		M	2800	mg/kg	0.10	3.8	2.7	0.88	3.0		0.63	
Anthracene		M	2800	mg/kg	0.10	0.83	0.59	0.18	0.52		0.14	
Fluoranthene		M	2800	mg/kg	0.10	4.4	2.7	1.1	3.6		0.84	
Pyrene		M	2800	mg/kg	0.10	3.5	2.3	0.97	3.0		0.70	
Benzo[a]anthracene		M	2800	mg/kg	0.10	1.9	1.2	0.53	1.7		0.42	

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763594	1763595	1763596	1763597	1763598	1763599	1763600
Order No.:				Client Sample Ref.:		TP2	TP2	TP3	TP4	TP4	TP5	TP5
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		0.70	1.40	0.80	0.80	1.50	0.80	1.60
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Chrysene		M	2800	mg/kg	0.10	1.9	1.3	0.57	1.8		0.34	
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	2.3	1.4	0.65	1.9		0.45	
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.81	0.60	0.21	0.59		0.16	
Benzo[a]pyrene		M	2800	mg/kg	0.10	1.7	1.0	0.50	1.6		0.34	
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.0	0.64	0.32	0.96		0.23	
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.21	0.16	< 0.10	0.26		< 0.10	
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	0.99	0.72	0.31	0.99		0.22	
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0	25	17	6.2	21		4.5	
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 153		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 138		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
PCB 180		U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763601	1763602	1763603	1763604	1763605	1763610	1763611
Order No.:				Client Sample Ref.:		TP5	TP6	TP6	TP7	TP8	TP8	TP9
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		2.50	0.70	1.70	0.70	0.60	1.50	0.70
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		U	2192		N/A	-	-		-	-		-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Asbestos by Gravimetry		U	2192	%	0.001							
Total Asbestos		U	2192	%	0.001							
Moisture		N	2030	%	0.020	13	14	12	16	13	19	15
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture		N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Clay	Sand
pH at 20C		M	2010		4.0	8.3	8.1		8.3	8.0		8.1
pH (2.5:1) at 20C		N	2010		4.0			8.6			8.0	
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.0	1.3		1.1	2.4		1.1
Magnesium (Water Soluble)		N	2120	g/l	0.010			< 0.010			< 0.010	
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010			0.021			0.052	
Total Sulphur		U	2175	%	0.010			0.13			0.023	
Sulphur (Elemental)		M	2180	mg/kg	1.0	1.9	6.2		4.7	2.8		2.2
Chloride (Water Soluble)		M	2220	g/l	0.010			< 0.010			0.016	
Nitrate (Water Soluble)		N	2220	g/l	0.010			< 0.010			< 0.010	
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50		0.60
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	5.2	4.3		6.3	4.7		4.7
Ammonium (Water Soluble)		M	2220	g/l	0.01			< 0.01			< 0.01	
Sulphate (Total)		U	2430	%	0.010	0.31	0.21		0.17	0.12		0.24
Sulphate (Acid Soluble)		U	2430	%	0.010			0.085			0.046	
Arsenic		M	2455	mg/kg	0.5	23	33		25	18		43
Barium		M	2455	mg/kg	0	220	130		90	85		280
Cadmium		M	2455	mg/kg	0.10	2.1	1.1		1.0	1.2		2.0
Chromium		M	2455	mg/kg	0.5	18	18		15	20		26
Molybdenum		M	2455	mg/kg	0.5	3.3	7.1		3.4	3.1		7.5
Antimony		N	2455	mg/kg	2.0	19	4.2		4.9	3.7		6.3
Copper		M	2455	mg/kg	0.50	61	88		63	56		120
Mercury		M	2455	mg/kg	0.05	0.75	1.7		1.0	0.54		3.0
Nickel		M	2455	mg/kg	0.50	41	59		44	36		64
Lead		M	2455	mg/kg	0.50	210	250		320	100		420
Selenium		M	2455	mg/kg	0.25	1.0	1.2		0.96	0.92		1.4
Zinc		M	2455	mg/kg	0.50	220	190		160	220		1100
Chromium (Trivalent)		N	2490	mg/kg	1.0	18	18		15	20		26
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763601	1763602	1763603	1763604	1763605	1763610	1763611
Order No.:				Client Sample Ref.:		TP5	TP6	TP6	TP7	TP8	TP8	TP9
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		2.50	0.70	1.70	0.70	0.60	1.50	0.70
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25		< 0.25	< 0.25		< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0	< 1.0		2.0	< 1.0		< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0		2.4	< 2.0		< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	< 3.0	< 3.0		< 3.0	< 3.0		< 3.0
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10		< 10	< 10		< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	< 5.0	< 5.0		7.1	< 5.0		< 5.0
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25		< 0.25	< 0.25		< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	6.2	2.0		3.5	3.2		9.9
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	5.0	< 2.0		4.3	4.4		13
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0	< 1.0		15	< 1.0		< 1.0
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	11	< 5.0		7.8	7.5		23
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	11	< 10		15	11		26
Total Organic Carbon		M	2625	%	0.20	3.8	8.0		4.9	2.6		8.1
Mineral Oil EPH	EH_CU_1D_Total	N	2670	mg/kg	10	< 10	< 10		< 10	< 10		< 10
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Naphthalene		M	2800	mg/kg	0.10	1.5	< 0.10		< 0.10	< 0.10		0.41
Acenaphthylene		N	2800	mg/kg	0.10	0.21	< 0.10		< 0.10	< 0.10		0.19
Acenaphthene		M	2800	mg/kg	0.10	0.45	< 0.10		< 0.10	< 0.10		0.22
Fluorene		M	2800	mg/kg	0.10	0.71	< 0.10		< 0.10	< 0.10		0.21
Phenanthrene		M	2800	mg/kg	0.10	6.1	0.88		0.54	< 0.10		3.5
Anthracene		M	2800	mg/kg	0.10	1.5	< 0.10		< 0.10	< 0.10		0.73
Fluoranthene		M	2800	mg/kg	0.10	5.9	0.74		0.29	< 0.10		8.2
Pyrene		M	2800	mg/kg	0.10	4.5	0.63		0.27	< 0.10		7.5
Benzo[a]anthracene		M	2800	mg/kg	0.10	2.6	0.31		0.21	< 0.10		4.6

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763601	1763602	1763603	1763604	1763605	1763610	1763611
Order No.:				Client Sample Ref.:		TP5	TP6	TP6	TP7	TP8	TP8	TP9
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		2.50	0.70	1.70	0.70	0.60	1.50	0.70
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Chrysene		M	2800	mg/kg	0.10	2.0	0.41		0.23	< 0.10		4.0
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	2.9	0.50		0.28	< 0.10		7.6
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.0	0.12		< 0.10	< 0.10		2.4
Benzo[a]pyrene		M	2800	mg/kg	0.10	2.2	0.30		< 0.10	< 0.10		6.3
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.3	0.21		< 0.10	< 0.10		4.0
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		0.82
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	1.3	0.23		< 0.10	< 0.10		3.9
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0	34	4.3		1.8	< 1.0		55
PCB 28		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05		< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763612	1763613	1763614	1763615	1763616
Order No.:				Client Sample Ref.:		TP9	TP9	TP10	TP10	TP11
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.50	2.10	0.70	1.30	0.80
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM		DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type		U	2192		N/A	-		-		-
Asbestos Identification		U	2192		N/A	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected
Asbestos by Gravimetry		U	2192	%	0.001					
Total Asbestos		U	2192	%	0.001					
Moisture		N	2030	%	0.020	9.6	16	7.5	7.1	11
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones and Roots	Stones	Stones	Stones
Soil Texture		N	2040		N/A	Sand	Sand	Sand	Sand	Sand
pH at 20C		M	2010		4.0	8.5		8.8		7.9
pH (2.5:1) at 20C		N	2010		4.0		7.7		8.5	
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	0.69		0.46		1.5
Magnesium (Water Soluble)		N	2120	g/l	0.010		< 0.010		< 0.010	
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010		0.88		0.094	
Total Sulphur		U	2175	%	0.010		0.22		0.025	
Sulphur (Elemental)		M	2180	mg/kg	1.0	1.6		3.6		2.7
Chloride (Water Soluble)		M	2220	g/l	0.010		< 0.010		< 0.010	
Nitrate (Water Soluble)		N	2220	g/l	0.010		0.017		< 0.010	
Cyanide (Total)		M	2300	mg/kg	0.50	0.90		< 0.50		< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	9.7		7.5		6.1
Ammonium (Water Soluble)		M	2220	g/l	0.01		< 0.01		< 0.01	
Sulphate (Total)		U	2430	%	0.010	0.15		0.21		0.37
Sulphate (Acid Soluble)		U	2430	%	0.010		0.55		0.057	
Arsenic		M	2455	mg/kg	0.5	17		12		12
Barium		M	2455	mg/kg	0	83		88		85
Cadmium		M	2455	mg/kg	0.10	1.5		1.6		1.5
Chromium		M	2455	mg/kg	0.5	20		20		19
Molybdenum		M	2455	mg/kg	0.5	4.0		4.6		4.3
Antimony		N	2455	mg/kg	2.0	2.3		< 2.0		2.0
Copper		M	2455	mg/kg	0.50	40		30		30
Mercury		M	2455	mg/kg	0.05	0.34		0.18		0.19
Nickel		M	2455	mg/kg	0.50	44		40		38
Lead		M	2455	mg/kg	0.50	75		49		48
Selenium		M	2455	mg/kg	0.25	1.2		1.4		1.3
Zinc		M	2455	mg/kg	0.50	150		110		110
Chromium (Trivalent)		N	2490	mg/kg	1.0	20		20		19
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50		< 0.50		< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763612	1763613	1763614	1763615	1763616
Order No.:				Client Sample Ref.:		TP9	TP9	TP10	TP10	TP11
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.50	2.10	0.70	1.30	0.80
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM		DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**					
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25		< 0.25		< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0		< 2.0		< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0		1.7		< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0		2.6		< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	< 3.0		3.7		< 3.0
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10		< 10		< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	< 5.0		9.8		< 5.0
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25		< 0.25		< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0		< 1.0		< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0		< 1.0		< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	3.8		6.1		4.1
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	< 2.0		7.4		3.0
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0		< 1.0		< 1.0
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	< 5.0		14		7.2
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50		< 0.50		< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	< 10		23		< 10
Total Organic Carbon		M	2625	%	0.20	2.3		2.1		1.6
Mineral Oil EPH	EH_CU_1D_Total	N	2670	mg/kg	10	< 10		< 10		< 10
Benzene		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10		0.24		< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.45		0.30		< 0.10
Pyrene		M	2800	mg/kg	0.10	0.39		0.28		< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	0.24		0.22		< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03653	24-03653	24-03653	24-03653	24-03653
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763612	1763613	1763614	1763615	1763616
Order No.:				Client Sample Ref.:		TP9	TP9	TP10	TP10	TP11
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.50	2.10	0.70	1.30	0.80
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		DURHAM		DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**					
Chrysene		M	2800	mg/kg	0.10	0.23		0.21		< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	0.36		< 0.10		< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.11		< 0.10		< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	0.28		< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	0.25		< 0.10		< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	0.25		< 0.10		< 0.10
Coronene		N	2800	mg/kg	0.10	< 0.10		< 0.10		< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0	2.6		1.3		< 1.0
PCB 28		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010		< 0.010		< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05		< 0.05		< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10		< 0.10		< 0.10

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763594							
Sample Ref:	TP2							
Sample ID:								
Sample Location:								
Top Depth(m):	0.70							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	5.4	3	5	6
Loss On Ignition	2610		M	%	9.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	64	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		7.9	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0069	0.069	0.5	2	25
Barium	1455		U	0.006	0.058	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0009	0.0089	0.5	10	70
Copper	1455		U	0.0030	0.030	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0046	0.046	0.5	10	30
Nickel	1455		U	0.0008	0.0076	0.4	10	40
Lead	1455		U	0.0024	0.024	0.5	10	50
Antimony	1455		U	0.013	0.13	0.06	0.7	5
Selenium	1455		U	0.0006	0.0059	0.1	0.5	7
Zinc	1455		U	0.020	0.21	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.15	1.5	10	150	500
Sulphate	1220		U	47	470	1000	20000	50000
Total Dissolved Solids	1020		N	110	1100	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763595							
Sample Ref:	TP2							
Sample ID:								
Sample Location:								
Top Depth(m):	1.40							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	5.7	3	5	6
Loss On Ignition	2610		M	%	11	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	170	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.0	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.035	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0092	0.092	0.5	2	25
Barium	1455		U	0.005	0.051	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0010	0.0099	0.5	10	70
Copper	1455		U	0.0027	0.027	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0039	0.040	0.5	10	30
Nickel	1455		U	0.0008	0.0081	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	0.0087	0.087	0.06	0.7	5
Selenium	1455		U	0.0006	0.0059	0.1	0.5	7
Zinc	1455		U	0.018	0.18	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.14	1.4	10	150	500
Sulphate	1220		U	51	510	1000	20000	50000
Total Dissolved Solids	1020		N	130	1300	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	26

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763596							
Sample Ref:	TP3							
Sample ID:								
Sample Location:								
Top Depth(m):	0.80							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	12	3	5	6
Loss On Ignition	2610		M	%	12	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	130	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.1	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.012	0.12	0.5	2	25
Barium	1455		U	0.008	0.080	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0010	0.0096	0.5	10	70
Copper	1455		U	0.0042	0.042	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0025	0.026	0.5	10	30
Nickel	1455		U	0.0008	0.0080	0.4	10	40
Lead	1455		U	0.0043	0.043	0.5	10	50
Antimony	1455		U	0.026	0.26	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.021	0.22	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.40	4.0	10	150	500
Sulphate	1220		U	28	280	1000	20000	50000
Total Dissolved Solids	1020		N	95	940	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	23

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763597							
Sample Ref:	TP4							
Sample ID:								
Sample Location:								
Top Depth(m):	0.80							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	11	3	5	6
Loss On Ignition	2610		M	%	11	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	80	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.1	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0070	0.070	0.5	2	25
Barium	1455		U	0.006	0.060	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0009	0.0094	0.5	10	70
Copper	1455		U	0.0057	0.057	2	50	100
Mercury	1455		U	0.00007	0.00069	0.01	0.2	2
Molybdenum	1455		U	0.0063	0.063	0.5	10	30
Nickel	1455		U	0.0008	0.0077	0.4	10	40
Lead	1455		U	0.0032	0.032	0.5	10	50
Antimony	1455		U	0.0051	0.051	0.06	0.7	5
Selenium	1455		U	0.0008	0.0085	0.1	0.5	7
Zinc	1455		U	0.019	0.19	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.35	3.5	10	150	500
Sulphate	1220		U	29	290	1000	20000	50000
Total Dissolved Solids	1020		N	96	950	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763599							
Sample Ref:	TP5							
Sample ID:								
Sample Location:								
Top Depth(m):	0.80							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.6	3	5	6
Loss On Ignition	2610		M	%	5.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	170	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.014	0.14	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0024	0.024	0.5	10	70
Copper	1455		U	0.0026	0.026	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0051	0.052	0.5	10	30
Nickel	1455		U	0.0005	0.0053	0.4	10	40
Lead	1455		U	0.0005	0.0053	0.5	10	50
Antimony	1455		U	0.0036	0.036	0.06	0.7	5
Selenium	1455		U	0.0011	0.011	0.1	0.5	7
Zinc	1455		U	0.018	0.18	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.13	1.3	10	150	500
Sulphate	1220		U	66	660	1000	20000	50000
Total Dissolved Solids	1020		N	140	1400	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763601							
Sample Ref:	TP5							
Sample ID:								
Sample Location:								
Top Depth(m):	2.50							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	3.8	3	5	6
Loss On Ignition	2610		M	%	3.8	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	360	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.012	0.12	0.5	2	25
Barium	1455		U	0.005	0.052	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0006	0.0062	0.5	10	70
Copper	1455		U	0.0031	0.031	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0023	0.023	0.5	10	30
Nickel	1455		U	0.0008	0.0078	0.4	10	40
Lead	1455		U	0.0020	0.020	0.5	10	50
Antimony	1455		U	0.0047	0.047	0.06	0.7	5
Selenium	1455		U	0.0006	0.0061	0.1	0.5	7
Zinc	1455		U	0.023	0.23	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.13	1.3	10	150	500
Sulphate	1220		U	32	320	1000	20000	50000
Total Dissolved Solids	1020		N	90	900	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763602							
Sample Ref:	TP6							
Sample ID:								
Sample Location:								
Top Depth(m):	0.70							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	8.0	3	5	6
Loss On Ignition	2610		M	%	14	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	85	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.1	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.025	0.25	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0034	0.034	2	50	100
Mercury	1455		U	0.00006	0.00057	0.01	0.2	2
Molybdenum	1455		U	0.0046	0.046	0.5	10	30
Nickel	1455		U	0.0016	0.016	0.4	10	40
Lead	1455		U	0.0030	0.031	0.5	10	50
Antimony	1455		U	0.0036	0.036	0.06	0.7	5
Selenium	1455		U	0.0006	0.0062	0.1	0.5	7
Zinc	1455		U	0.018	0.18	4	50	200
Chloride	1220		U	1.1	11	800	15000	25000
Fluoride	1220		U	0.20	2.0	10	150	500
Sulphate	1220		U	6.7	67	1000	20000	50000
Total Dissolved Solids	1020		N	77	770	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763604							
Sample Ref:	TP7							
Sample ID:								
Sample Location:								
Top Depth(m):	0.70							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	4.9	3	5	6
Loss On Ignition	2610		M	%	9.7	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	76	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0030	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.021	0.21	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0039	0.039	2	50	100
Mercury	1455		U	0.00007	0.00066	0.01	0.2	2
Molybdenum	1455		U	0.0016	0.016	0.5	10	30
Nickel	1455		U	0.0017	0.017	0.4	10	40
Lead	1455		U	0.0041	0.041	0.5	10	50
Antimony	1455		U	0.0029	0.029	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.020	0.20	4	50	200
Chloride	1220		U	1.2	12	800	15000	25000
Fluoride	1220		U	0.17	1.7	10	150	500
Sulphate	1220		U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020		N	55	550	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	6.5	65	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763605							
Sample Ref:	TP8							
Sample ID:								
Sample Location:								
Top Depth(m):	0.60							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.6	3	5	6
Loss On Ignition	2610		M	%	6.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.0	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.014	0.14	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0008	0.0081	0.5	10	70
Copper	1455		U	0.0037	0.037	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0035	0.035	0.5	10	30
Nickel	1455		U	0.0017	0.017	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	0.0048	0.048	0.06	0.7	5
Selenium	1455		U	0.0007	0.0071	0.1	0.5	7
Zinc	1455		U	0.041	0.41	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.11	1.1	10	150	500
Sulphate	1220		U	5.7	57	1000	20000	50000
Total Dissolved Solids	1020		N	63	630	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763611							
Sample Ref:	TP9							
Sample ID:								
Sample Location:								
Top Depth(m):	0.70							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	8.1	3	5	6
Loss On Ignition	2610		M	%	20	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	130	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.1	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0030	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.013	0.13	0.5	2	25
Barium	1455		U	0.009	0.092	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0053	0.053	0.5	10	70
Copper	1455		U	0.0044	0.044	2	50	100
Mercury	1455		U	0.00011	0.0011	0.01	0.2	2
Molybdenum	1455		U	0.0018	0.018	0.5	10	30
Nickel	1455		U	0.0019	0.019	0.4	10	40
Lead	1455		U	0.0050	0.050	0.5	10	50
Antimony	1455		U	0.0039	0.039	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.037	0.37	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.32	3.2	10	150	500
Sulphate	1220		U	4.3	43	1000	20000	50000
Total Dissolved Solids	1020		N	67	670	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763612							
Sample Ref:	TP9							
Sample ID:								
Sample Location:								
Top Depth(m):	1.50							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.3	3	5	6
Loss On Ignition	2610		M	%	3.6	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0079	0.079	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0013	0.013	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0071	0.071	0.5	10	30
Nickel	1455		U	0.0005	0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0015	0.015	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.018	0.19	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.15	1.5	10	150	500
Sulphate	1220		U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020		N	53	530	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763614							
Sample Ref:	TP10							
Sample ID:								
Sample Location:								
Top Depth(m):	0.70							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	2.1	3	5	6
Loss On Ignition	2610		M	%	1.9	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.8	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.050	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0028	0.028	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0006	0.0063	0.5	10	70
Copper	1455		U	0.0010	0.0096	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.014	0.14	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0014	0.014	0.06	0.7	5
Selenium	1455		U	0.0011	0.011	0.1	0.5	7
Zinc	1455		U	0.017	0.17	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.18	1.8	10	150	500
Sulphate	1220		U	1.5	15	1000	20000	50000
Total Dissolved Solids	1020		N	51	510	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03653							
Chemtest Sample ID:	1763616							
Sample Ref:	TP11							
Sample ID:								
Sample Location:								
Top Depth(m):	0.80							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	1.6	3	5	6
Loss On Ignition	2610		M	%	5.0	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		7.9	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0048	0.048	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0013	0.013	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0054	0.054	0.5	10	30
Nickel	1455		U	0.0007	0.0069	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0010	0.010	0.06	0.7	5
Selenium	1455		U	0.0013	0.013	0.1	0.5	7
Zinc	1455		U	0.039	0.39	4	50	200
Chloride	1220		U	2.1	21	800	15000	25000
Fluoride	1220		U	0.12	1.2	10	150	500
Sulphate	1220		U	75	750	1000	20000	50000
Total Dissolved Solids	1020		N	150	1500	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water

Report Information

RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-03656-1
Initial Date of Issue:	15-Feb-2024
Re-Issue Details:	
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	25000 Croke Villas
Quotation No.:	Q20-21693
Order No.:	
No. of Samples:	22
Turnaround (Wkdays):	7
Date Approved:	15-Feb-2024
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	07-Feb-2024
Date Instructed:	07-Feb-2024
Results Due:	15-Feb-2024

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: 25000 Croke Villas

Client: IGSL						**Chemtest Job No.:**	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693						**Chemtest Sample ID.:**	1763617	1763618	1763620	1763621	1763622	1763623	1763625	1763627	1763628
Order No.:						Client Sample Ref.:	BH1	BH2	BH3	BH4	BH4	BH5	BH6	BH7	BH9
						Client Sample ID.:	BH1	BH2	BH3	BH4	BH4	BH5	BH6	BH7	BH9
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	1.0	1.0	2.0	1.0	3.0	1.0	2.0	1.0	1.0
						Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**										
Ammonium	U	1220	10:1	mg/l	0.050		< 0.050	0.065	0.26	0.13	0.10	0.084	0.067	0.065	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10		0.62	0.83	3.2	1.4	1.3	0.97	0.78	0.78	0.56

Results - Leachate

Project: 25000 Croke Villas

Client: IGSL						**Chemtest Job No.:**	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693						**Chemtest Sample ID.:**	1763630	1763632	1763633	1763634	1763635	1763637	1763638
Order No.:						Client Sample Ref.:	BH10	BH11	BH11	BH12	BH13	TP1	TP1
						Client Sample ID.:	BH10	BH11	BH11	BH12	BH13	TP1	TP1
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	1.0	1.0	2.5	1.0	1.0	0.7	1.3
						Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Ammonium	U	1220	10:1	mg/l	0.050		0.066	0.055	0.061	0.059	< 0.050	< 0.050	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10		0.78	0.67	0.79	0.64	0.53	0.49	0.50

Results - Soil

Project: 25000 Croke Villas

Client: IGSL					**Chemtest Job No.:**	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693					**Chemtest Sample ID.:**	1763617	1763618	1763619	1763620	1763621	1763622	1763623
Order No.:					Client Sample Ref.:	BH1	BH2	BH2	BH3	BH4	BH4	BH5
					Client Sample ID.:	BH1	BH2	BH2	BH3	BH4	BH4	BH5
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	1.0	3.0	2.0	1.0	3.0	1.0
					Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
					Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		U	2192		N/A	-	-		-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	14	17	9.3	20	15	9.9	18
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones	Stones	Stones	Stones and Roots	Stones	Stones and Roots
Soil Texture		N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Loam
pH at 20C		M	2010		4.0	8.6	8.4		8.4	8.2	8.7	10.2
pH (2.5:1) at 20C		N	2010		4.0			9.3				
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	0.54	0.46		1.5	0.84	< 0.40	0.50
Magnesium (Water Soluble)		N	2120	g/l	0.010			< 0.010				
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010			0.032				
Total Sulphur		U	2175	%	0.010			0.038				
Sulphur (Elemental)		M	2180	mg/kg	1.0	2.0	2.6		4.3	3.9	< 1.0	7.9
Chloride (Water Soluble)		M	2220	g/l	0.010			< 0.010				
Nitrate (Water Soluble)		N	2220	g/l	0.010			< 0.010				
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50	1.0	< 0.50	4.9
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.5	4.1		3.7	3.3	4.5	3.9
Ammonium (Water Soluble)		M	2220	g/l	0.01			< 0.01				
Sulphate (Total)		U	2430	%	0.010	0.095	0.20		0.32	0.27	0.082	0.30
Sulphate (Acid Soluble)		U	2430	%	0.010			0.046				
Arsenic		M	2455	mg/kg	0.5	12	15		20	22	12	17
Barium		M	2455	mg/kg	0	84	230		320	320	78	210
Cadmium		M	2455	mg/kg	0.10	1.4	0.74		10	1.2	2.3	0.40
Chromium		M	2455	mg/kg	0.5	19	19		200	24	18	36
Molybdenum		M	2455	mg/kg	0.5	4.3	1.9		3.5	2.6	5.1	4.2
Antimony		N	2455	mg/kg	2.0	3.7	9.2		5.3	150	2.0	190
Copper		M	2455	mg/kg	0.50	25	45		67	92	32	110
Mercury		M	2455	mg/kg	0.05	0.18	0.62		0.53	0.69	0.06	6.9
Nickel		M	2455	mg/kg	0.50	31	25		43	29	53	44
Lead		M	2455	mg/kg	0.50	43	240		1600	1300	29	1100
Selenium		M	2455	mg/kg	0.25	1.2	0.63		1.9	0.86	1.1	0.67
Zinc		M	2455	mg/kg	0.50	90	180		3700	700	98	220
Chromium (Trivalent)		N	2490	mg/kg	1.0	19	19		200	24	18	36
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763617	1763618	1763619	1763620	1763621	1763622	1763623
Order No.:				Client Sample Ref.:		BH1	BH2	BH2	BH3	BH4	BH4	BH5
				Client Sample ID.:		BH1	BH2	BH2	BH3	BH4	BH4	BH5
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.0	1.0	3.0	2.0	1.0	3.0	1.0
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25		< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0	2.8
Aliphatic EPH >C12-C16 MC	EH_AL_2D_#1	M	2690	mg/kg	1.00	< 1.0	4.8		5.1	1.1	1.9	4.6
Aliphatic EPH >C16-C21 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00	< 2.0	6.5		4.9	6.5	< 2.0	4.0
Aliphatic EPH >C21-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	3.00	< 3.0	4.1		5.3	10	< 3.0	< 3.0
Aliphatic EPH >C35-C40 MC	EH_AL_2D_#1	N	2690	mg/kg	10.00	< 10	< 10		< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	5.00	< 5.0	17		17	19	< 5.0	13
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25		< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00	< 1.0	1.5		< 1.0	3.3	< 1.0	1.1
Aromatic EPH >C16-C21 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00	4.2	21		9.0	97	4.9	110
Aromatic EPH >C21-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00	< 2.0	84		17	320	3.5	220
Aromatic EPH >C35-C40 MC	EH_AR_2D_#1	N	2690	mg/kg	1.00	< 1.0	3.8		1.6	31	< 1.0	7.8
Total Aromatic EPH >C10-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	5.00	6.1	110		26	420	8.4	340
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35 MC	EH_Total_2D_#1	U	2690	mg/kg	10.00	< 10	120		43	430	12	350
Total Organic Carbon		M	2625	%	0.20	1.9	5.2		8.1	8.5	0.41	12
Mineral Oil EPH	EH_AL_2D_#1	N	2670	mg/kg	10	< 10	17		17	19	< 10	13
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10	0.19		< 0.10	< 0.10	< 0.10	0.33
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	0.14		< 0.10	< 0.10	< 0.10	0.16
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	0.13		< 0.10	< 0.10	< 0.10	0.11
Fluorene		M	2800	mg/kg	0.10	< 0.10	0.15		< 0.10	< 0.10	< 0.10	0.11
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	1.6		0.93	2.6	< 0.10	2.0
Anthracene		M	2800	mg/kg	0.10	< 0.10	0.37		0.24	0.87	< 0.10	0.86
Fluoranthene		M	2800	mg/kg	0.10	< 0.10	2.9		1.3	10	< 0.10	10
Pyrene		M	2800	mg/kg	0.10	< 0.10	2.7		1.2	10	< 0.10	11
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	1.7		0.61	6.5	< 0.10	5.5

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763617	1763618	1763619	1763620	1763621	1763622	1763623
Order No.:				Client Sample Ref.:		BH1	BH2	BH2	BH3	BH4	BH4	BH5
				Client Sample ID.:		BH1	BH2	BH2	BH3	BH4	BH4	BH5
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.0	1.0	3.0	2.0	1.0	3.0	1.0
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Chrysene		M	2800	mg/kg	0.10	< 0.10	2.0		0.72	6.8	< 0.10	6.0
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	2.7		0.86	11	< 0.10	8.2
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	1.0		0.26	3.9	< 0.10	3.2
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	2.5		0.66	8.6	< 0.10	6.6
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	1.8		0.45	5.7	< 0.10	4.4
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	0.40		< 0.10	1.1	< 0.10	0.85
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	1.7		0.45	5.4	< 0.10	4.5
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0	< 1.0	22		7.7	73	< 1.0	64
PCB 28		U	2815	mg/kg	0.010	< 0.010	0.060		< 0.010	< 0.010	< 0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010	0.048		< 0.010	< 0.010	< 0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010	0.048		< 0.010	< 0.010	< 0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010	0.048		< 0.010	< 0.010	< 0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010	0.036		< 0.010	< 0.010	< 0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010	0.036		< 0.010	< 0.010	< 0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010	0.048		< 0.010	< 0.010	< 0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05	0.32		< 0.05	< 0.05	< 0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL						**Chemtest Job No.:**	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693						**Chemtest Sample ID.:**	1763624	1763625	1763626	1763627	1763628	1763629	1763630
Order No.:						Client Sample Ref.:	BH5	BH6	BH6	BH7	BH9	BH9	BH10
						Client Sample ID.:	BH5	BH6	BH6	BH7	BH9	BH9	BH10
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	2.0	2.0	4.0	1.0	1.0	2.0	1.0
						Date Sampled:	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
						Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type		U	2192		N/A		-		-	-		-
Asbestos Identification		U	2192		N/A		No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture		N	2030	%	0.020	20	19	11	14	14	23	14
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones	None	Stones	Stones	Stones	Stones
Soil Texture		N	2040		N/A	Clay	Clay	Clay	Loam	Clay	Loam	Clay
pH at 20C		M	2010		4.0		8.4		8.4	8.5		9.5
pH (2.5:1) at 20C		N	2010		4.0	9.3		8.9			8.9	
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40		0.55		< 0.40	0.83		0.50
Magnesium (Water Soluble)		N	2120	g/l	0.010	< 0.010		< 0.010			< 0.010	
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010		0.012			< 0.010	
Total Sulphur		U	2175	%	0.010	0.063		0.020			0.097	
Sulphur (Elemental)		M	2180	mg/kg	1.0		4.6		2.7	5.0		2.0
Chloride (Water Soluble)		M	2220	g/l	0.010	< 0.010		< 0.010			< 0.010	
Nitrate (Water Soluble)		N	2220	g/l	0.010	< 0.010		< 0.010			< 0.010	
Cyanide (Total)		M	2300	mg/kg	0.50		< 0.50		< 0.50	< 0.50		< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50		4.7		4.1	13		4.7
Ammonium (Water Soluble)		M	2220	g/l	0.01	< 0.01		< 0.01			< 0.01	
Sulphate (Total)		U	2430	%	0.010		0.20		0.26	0.23		0.16
Sulphate (Acid Soluble)		U	2430	%	0.010	0.063		0.024			0.12	
Arsenic		M	2455	mg/kg	0.5		46		26	16		21
Barium		M	2455	mg/kg	0		140		180	240		73
Cadmium		M	2455	mg/kg	0.10		1.1		2.0	0.84		0.94
Chromium		M	2455	mg/kg	0.5		15		26	19		16
Molybdenum		M	2455	mg/kg	0.5		5.9		6.0	2.6		2.4
Antimony		N	2455	mg/kg	2.0		33		4.1	9.3		< 2.0
Copper		M	2455	mg/kg	0.50		100		65	55		32
Mercury		M	2455	mg/kg	0.05		2.4		0.86	0.83		0.26
Nickel		M	2455	mg/kg	0.50		49		55	28		25
Lead		M	2455	mg/kg	0.50		320		200	280		51
Selenium		M	2455	mg/kg	0.25		1.3		1.4	0.76		0.74
Zinc		M	2455	mg/kg	0.50		160		230	220		76
Chromium (Trivalent)		N	2490	mg/kg	1.0		15		26	19		16
Chromium (Hexavalent)		N	2490	mg/kg	0.50		< 0.50		< 0.50	< 0.50		< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763624	1763625	1763626	1763627	1763628	1763629	1763630
Order No.:				Client Sample Ref.:		BH5	BH6	BH6	BH7	BH9	BH9	BH10
				Client Sample ID.:		BH5	BH6	BH6	BH7	BH9	BH9	BH10
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		2.0	2.0	4.0	1.0	1.0	2.0	1.0
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:			COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25		< 0.25		< 0.25	< 0.25		< 0.25
Aliphatic EPH >C10-C12 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00		2.4		< 2.0	< 2.0		< 2.0
Aliphatic EPH >C12-C16 MC	EH_AL_2D_#1	M	2690	mg/kg	1.00		2.8		4.1	< 1.0		< 1.0
Aliphatic EPH >C16-C21 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00		2.9		7.1	< 2.0		< 2.0
Aliphatic EPH >C21-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	3.00		4.0		4.3	< 3.0		< 3.0
Aliphatic EPH >C35-C40 MC	EH_AL_2D_#1	N	2690	mg/kg	10.00		< 10		< 10	< 10		< 10
Total Aliphatic EPH >C10-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	5.00		12		16	< 5.0		< 5.0
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25		< 0.25		< 0.25	< 0.25		< 0.25
Aromatic EPH >C10-C12 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00		< 1.0		< 1.0	< 1.0		< 1.0
Aromatic EPH >C12-C16 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00		< 1.0		< 1.0	< 1.0		< 1.0
Aromatic EPH >C16-C21 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00		9.5		17	9.9		4.4
Aromatic EPH >C21-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00		19		57	9.1		4.5
Aromatic EPH >C35-C40 MC	EH_AR_2D_#1	N	2690	mg/kg	1.00		1.6		2.3	< 1.0		< 1.0
Total Aromatic EPH >C10-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	5.00		29		74	19		8.9
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50		< 0.50		< 0.50	< 0.50		< 0.50
Total EPH >C10-C35 MC	EH_Total_2D_#1	U	2690	mg/kg	10.00		41		90	22		13
Total Organic Carbon		M	2625	%	0.20		14		5.3	4.4		1.6
Mineral Oil EPH	EH_AL_2D_#1	N	2670	mg/kg	10		12		16	< 10		< 10
Benzene		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
Toluene		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
Ethylbenzene		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
m & p-Xylene		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
o-Xylene		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0		< 1.0
Naphthalene		M	2800	mg/kg	0.10		< 0.10		0.15	< 0.10		< 0.10
Acenaphthylene		N	2800	mg/kg	0.10		< 0.10		< 0.10	< 0.10		< 0.10
Acenaphthene		M	2800	mg/kg	0.10		< 0.10		< 0.10	< 0.10		< 0.10
Fluorene		M	2800	mg/kg	0.10		< 0.10		< 0.10	< 0.10		< 0.10
Phenanthrene		M	2800	mg/kg	0.10		0.52		1.7	1.5		< 0.10
Anthracene		M	2800	mg/kg	0.10		< 0.10		0.39	0.16		< 0.10
Fluoranthene		M	2800	mg/kg	0.10		0.49		3.2	1.9		< 0.10
Pyrene		M	2800	mg/kg	0.10		0.42		2.8	1.5		< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10		< 0.10		2.0	0.76		< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763624	1763625	1763626	1763627	1763628	1763629	1763630
Order No.:				Client Sample Ref.:		BH5	BH6	BH6	BH7	BH9	BH9	BH10
				Client Sample ID.:		BH5	BH6	BH6	BH7	BH9	BH9	BH10
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		2.0	2.0	4.0	1.0	1.0	2.0	1.0
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:			COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Chrysene		M	2800	mg/kg	0.10		< 0.10		2.2	0.81		< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10		< 0.10		3.4	1.2		< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10		< 0.10		1.2	0.32		< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10		< 0.10		2.5	0.73		< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10		< 0.10		1.8	0.56		< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10		< 0.10		0.33	< 0.10		< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10		< 0.10		1.9	0.52		< 0.10
Coronene		N	2800	mg/kg	0.10		< 0.10		< 0.10	< 0.10		< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0		1.4		24	10		< 1.0
PCB 28		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 52		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 101		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 118		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 153		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 138		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
PCB 180		U	2815	mg/kg	0.010		< 0.010		< 0.010	< 0.010		< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05		< 0.05		< 0.05	< 0.05		< 0.05
Total Phenols		M	2920	mg/kg	0.10		< 0.10		< 0.10	< 0.10		< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763631	1763632	1763633	1763634	1763635	1763636	1763637
Order No.:				Client Sample Ref.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Client Sample ID.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		3.0	1.0	2.5	1.0	1.0	2.0	0.7
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		U	2192		N/A		-	-	-	-		-
Asbestos Identification		U	2192		N/A		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture		N	2030	%	0.020	17	14	16	12	11	6.6	19
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones	Roots and Stones	Stones	Stones	Stones	Stones	Roots and Stones
Soil Texture		N	2040		N/A	Clay	Clay	Clay	Clay	Loam	Clay	Loam
pH at 20C		M	2010		4.0		8.4	9.0	8.5	8.0		8.5
pH (2.5:1) at 20C		N	2010		4.0	9.0					9.1	
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40		0.63	0.44	1.3	0.69		1.9
Magnesium (Water Soluble)		N	2120	g/l	0.010	< 0.010					< 0.010	
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010					< 0.010	
Total Sulphur		U	2175	%	0.010	0.020					0.043	
Sulphur (Elemental)		M	2180	mg/kg	1.0		2.8	1.8	1.9	4.3		6.3
Chloride (Water Soluble)		M	2220	g/l	0.010	< 0.010					< 0.010	
Nitrate (Water Soluble)		N	2220	g/l	0.010	< 0.010					< 0.010	
Cyanide (Total)		M	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50		4.2	3.3	5.2	5.1		4.9
Ammonium (Water Soluble)		M	2220	g/l	0.01	< 0.01					< 0.01	
Sulphate (Total)		U	2430	%	0.010		0.25	0.29	0.15	0.37		0.25
Sulphate (Acid Soluble)		U	2430	%	0.010	0.060					0.047	
Arsenic		M	2455	mg/kg	0.5		44	18	12	20		24
Barium		M	2455	mg/kg	0		130	140	73	90		210
Cadmium		M	2455	mg/kg	0.10		1.2	1.8	1.5	1.2		1.0
Chromium		M	2455	mg/kg	0.5		27	26	23	19		33
Molybdenum		M	2455	mg/kg	0.5		3.0	5.1	4.9	4.5		4.9
Antimony		N	2455	mg/kg	2.0		2.0	2.7	3.4	3.1		10
Copper		M	2455	mg/kg	0.50		47	41	29	52		89
Mercury		M	2455	mg/kg	0.05		0.26	0.47	0.20	0.82		0.94
Nickel		M	2455	mg/kg	0.50		41	43	40	44		44
Lead		M	2455	mg/kg	0.50		74	110	46	150		460
Selenium		M	2455	mg/kg	0.25		1.2	1.1	1.1	1.2		1.2
Zinc		M	2455	mg/kg	0.50		110	180	93	110		200
Chromium (Trivalent)		N	2490	mg/kg	1.0		27	26	23	19		33
Chromium (Hexavalent)		N	2490	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763631	1763632	1763633	1763634	1763635	1763636	1763637
Order No.:				Client Sample Ref.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Client Sample ID.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		3.0	1.0	2.5	1.0	1.0	2.0	0.7
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25		< 0.25	< 0.25	< 0.25	< 0.25		< 0.25
Aliphatic EPH >C10-C12 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00		< 2.0	< 2.0	< 2.0	< 2.0		< 2.0
Aliphatic EPH >C12-C16 MC	EH_AL_2D_#1	M	2690	mg/kg	1.00		4.4	2.3	3.8	< 1.0		< 1.0
Aliphatic EPH >C16-C21 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00		5.1	< 2.0	2.0	< 2.0		< 2.0
Aliphatic EPH >C21-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	3.00		5.7	< 3.0	< 3.0	< 3.0		< 3.0
Aliphatic EPH >C35-C40 MC	EH_AL_2D_#1	N	2690	mg/kg	10.00		< 10	< 10	< 10	< 10		< 10
Total Aliphatic EPH >C10-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	5.00		16	7.4	9.1	< 5.0		< 5.0
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25		< 0.25	< 0.25	< 0.25	< 0.25		< 0.25
Aromatic EPH >C10-C12 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic EPH >C12-C16 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Aromatic EPH >C16-C21 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00		6.9	5.3	4.7	< 2.0		15
Aromatic EPH >C21-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00		12	7.7	6.4	< 2.0		5.2
Aromatic EPH >C35-C40 MC	EH_AR_2D_#1	N	2690	mg/kg	1.00		< 1.0	< 1.0	1.1	12		1.1
Total Aromatic EPH >C10-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	5.00		19	13	11	< 5.0		20
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Total EPH >C10-C35 MC	EH_Total_2D_#1	U	2690	mg/kg	10.00		35	20	20	< 10		22
Total Organic Carbon		M	2625	%	0.20		2.3	2.0	1.9	4.7		7.6
Mineral Oil EPH	EH_AL_2D_#1	N	2670	mg/kg	10		16	< 10	< 10	< 10		< 10
Benzene		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Toluene		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Ethylbenzene		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
m & p-Xylene		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
o-Xylene		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Naphthalene		M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthylene		N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthene		M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Fluorene		M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Phenanthrene		M	2800	mg/kg	0.10		0.19	0.58	< 0.10	< 0.10		1.8
Anthracene		M	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		0.39
Fluoranthene		M	2800	mg/kg	0.10		0.40	1.0	0.15	< 0.10		2.9
Pyrene		M	2800	mg/kg	0.10		0.37	0.87	0.13	< 0.10		2.4
Benzo[a]anthracene		M	2800	mg/kg	0.10		< 0.10	0.42	< 0.10	< 0.10		1.3

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656	24-03656	24-03656	24-03656	24-03656	24-03656	24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763631	1763632	1763633	1763634	1763635	1763636	1763637
Order No.:				Client Sample Ref.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Client Sample ID.:		BH10	BH11	BH11	BH12	BH13	BH13	TP1
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		3.0	1.0	2.5	1.0	1.0	2.0	0.7
				Date Sampled:		02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024	02-Feb-2024
				Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Chrysene		M	2800	mg/kg	0.10		< 0.10	0.44	< 0.10	< 0.10		1.1
Benzo[b]fluoranthene		M	2800	mg/kg	0.10		< 0.10	0.63	< 0.10	< 0.10		1.6
Benzo[k]fluoranthene		M	2800	mg/kg	0.10		< 0.10	0.24	< 0.10	< 0.10		0.54
Benzo[a]pyrene		M	2800	mg/kg	0.10		< 0.10	0.42	< 0.10	< 0.10		1.2
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10		< 0.10	0.34	< 0.10	< 0.10		0.81
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		0.15
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10		< 0.10	0.36	< 0.10	< 0.10		0.80
Coronene		N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0		< 1.0	5.3	< 1.0	< 1.0		15
PCB 28		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 52		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 101		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 118		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 153		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 138		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
PCB 180		U	2815	mg/kg	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05		< 0.05
Total Phenols		M	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763638
Order No.:				Client Sample Ref.:		TP1
				Client Sample ID.:		TP1
				Sample Type:		SOIL
				Top Depth (m):		1.3
				Date Sampled:		02-Feb-2024
				Asbestos Lab:		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type		U	2192		N/A	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected
Moisture		N	2030	%	0.020	20
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones
Soil Texture		N	2040		N/A	Clay
pH at 20C		M	2010		4.0	8.1
pH (2.5:1) at 20C		N	2010		4.0	
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.0
Magnesium (Water Soluble)		N	2120	g/l	0.010	
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	
Total Sulphur		U	2175	%	0.010	
Sulphur (Elemental)		M	2180	mg/kg	1.0	3.7
Chloride (Water Soluble)		M	2220	g/l	0.010	
Nitrate (Water Soluble)		N	2220	g/l	0.010	
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.1
Ammonium (Water Soluble)		M	2220	g/l	0.01	
Sulphate (Total)		U	2430	%	0.010	0.11
Sulphate (Acid Soluble)		U	2430	%	0.010	
Arsenic		M	2455	mg/kg	0.5	19
Barium		M	2455	mg/kg	0	150
Cadmium		M	2455	mg/kg	0.10	1.8
Chromium		M	2455	mg/kg	0.5	24
Molybdenum		M	2455	mg/kg	0.5	6.0
Antimony		N	2455	mg/kg	2.0	9.0
Copper		M	2455	mg/kg	0.50	41
Mercury		M	2455	mg/kg	0.05	0.28
Nickel		M	2455	mg/kg	0.50	39
Lead		M	2455	mg/kg	0.50	110
Selenium		M	2455	mg/kg	0.25	1.1
Zinc		M	2455	mg/kg	0.50	150
Chromium (Trivalent)		N	2490	mg/kg	1.0	24
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763638
Order No.:				Client Sample Ref.:		TP1
				Client Sample ID.:		TP1
				Sample Type:		SOIL
				Top Depth (m):		1.3
				Date Sampled:		02-Feb-2024
				Asbestos Lab:		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16 MC	EH_AL_2D_#1	M	2690	mg/kg	1.00	< 1.0
Aliphatic EPH >C16-C21 MC	EH_AL_2D_#1	M	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40 MC	EH_AL_2D_#1	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35 MC	EH_AL_2D_#1	M	2690	mg/kg	5.00	< 5.0
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16 MC	EH_AR_2D_#1	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C21-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C35-C40 MC	EH_AR_2D_#1	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35 MC	EH_AR_2D_#1	U	2690	mg/kg	5.00	< 5.0
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35 MC	EH_Total_2D_#1	U	2690	mg/kg	10.00	< 10
Total Organic Carbon		M	2625	%	0.20	2.0
Mineral Oil EPH	EH_AL_2D_#1	N	2670	mg/kg	10	< 10
Benzene		M	2760	µg/kg	1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0
Naphthalene		M	2800	mg/kg	0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10

Results - Soil

Project: 25000 Croke Villas

Client: IGSL				**Chemtest Job No.:**		24-03656
Quotation No.: Q20-21693				**Chemtest Sample ID.:**		1763638
Order No.:				Client Sample Ref.:		TP1
				Client Sample ID.:		TP1
				Sample Type:		SOIL
				Top Depth (m):		1.3
				Date Sampled:		02-Feb-2024
				Asbestos Lab:		COVENTRY
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Chrysene		M	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10
Coronene		N	2800	mg/kg	0.10	< 0.10
Total Of 17 PAH's Lower		N	2800	mg/kg	1.0	< 1.0
PCB 28		U	2815	mg/kg	0.010	< 0.010
PCB 52		U	2815	mg/kg	0.010	< 0.010
PCB 101		U	2815	mg/kg	0.010	< 0.010
PCB 118		U	2815	mg/kg	0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010
Tot PCBs Low (7 Congeners)		N	2815	mg/kg	0.05	< 0.05
Total Phenols		M	2920	mg/kg	0.10	< 0.10

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763617							
Sample Ref:	BH1							
Sample ID:	BH1							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	1.9	3	5	6
Loss On Ignition	2610		M	%	4.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.6	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0021	0.021	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0013	0.013	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.015	0.15	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0027	0.027	0.06	0.7	5
Selenium	1455		U	0.0007	0.0068	0.1	0.5	7
Zinc	1455		U	0.038	0.38	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.11	1.1	10	150	500
Sulphate	1220		U	5.8	58	1000	20000	50000
Total Dissolved Solids	1020		N	48	480	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763618							
Sample Ref:	BH2							
Sample ID:	BH2							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	5.2	3	5	6
Loss On Ignition	2610		M	%	5.8	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	0.32	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	780	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0049	0.049	0.5	2	25
Barium	1455		U	0.015	0.15	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0014	0.014	0.5	10	70
Copper	1455		U	0.0038	0.038	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0023	0.024	0.5	10	30
Nickel	1455		U	0.0010	0.0095	0.4	10	40
Lead	1455		U	0.0064	0.065	0.5	10	50
Antimony	1455		U	0.0050	0.050	0.06	0.7	5
Selenium	1455		U	0.0007	0.0068	0.1	0.5	7
Zinc	1455		U	0.024	0.24	4	50	200
Chloride	1220		U	1.2	12	800	15000	25000
Fluoride	1220		U	0.23	2.3	10	150	500
Sulphate	1220		U	4.7	47	1000	20000	50000
Total Dissolved Solids	1020		N	62	620	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763620							
Sample Ref:	BH3							
Sample ID:	BH3							
Sample Location:								
Top Depth(m):	2.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	8.1	3	5	6
Loss On Ignition	2610		M	%	10	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	57	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.017	0.17	0.5	2	25
Barium	1455		U	0.005	0.054	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0022	0.022	0.5	10	70
Copper	1455		U	0.0044	0.044	2	50	100
Mercury	1455		U	0.00017	0.0017	0.01	0.2	2
Molybdenum	1455		U	0.0065	0.065	0.5	10	30
Nickel	1455		U	0.0012	0.013	0.4	10	40
Lead	1455		U	0.0033	0.033	0.5	10	50
Antimony	1455		U	0.012	0.12	0.06	0.7	5
Selenium	1455		U	0.0016	0.016	0.1	0.5	7
Zinc	1455		U	0.022	0.22	4	50	200
Chloride	1220		U	2.4	24	800	15000	25000
Fluoride	1220		U	0.21	2.1	10	150	500
Sulphate	1220		U	51	510	1000	20000	50000
Total Dissolved Solids	1020		N	120	1200	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763621							
Sample Ref:	BH4							
Sample ID:	BH4							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	8.5	3	5	6
Loss On Ignition	2610		M	%	15	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	230	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.2	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0046	0.046	0.5	2	25
Barium	1455		U	0.022	0.22	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0024	0.024	0.5	10	70
Copper	1455		U	0.0064	0.064	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0021	0.021	0.5	10	30
Nickel	1455		U	0.0013	0.013	0.4	10	40
Lead	1455		U	0.017	0.17	0.5	10	50
Antimony	1455		U	0.049	0.49	0.06	0.7	5
Selenium	1455		U	0.0005	0.0054	0.1	0.5	7
Zinc	1455		U	0.038	0.38	4	50	200
Chloride	1220		U	2.4	24	800	15000	25000
Fluoride	1220		U	0.34	3.4	10	150	500
Sulphate	1220		U	18	180	1000	20000	50000
Total Dissolved Solids	1020		N	100	1000	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.3	53	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763622							
Sample Ref:	BH4							
Sample ID:	BH4							
Sample Location:								
Top Depth(m):	3.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	0.41	3	5	6
Loss On Ignition	2610		M	%	2.1	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.7	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.018	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0002	0.0021	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0008	0.0079	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.021	0.21	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0007	0.0072	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.024	0.24	4	50	200
Chloride	1220		U	1.0	10	800	15000	25000
Fluoride	1220		U	0.25	2.5	10	150	500
Sulphate	1220		U	11	110	1000	20000	50000
Total Dissolved Solids	1020		N	64	640	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763623							
Sample Ref:	BH5							
Sample ID:	BH5							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	12	3	5	6
Loss On Ignition	2610		M	%	10	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	780	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		10.2	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.010	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0038	0.038	0.5	2	25
Barium	1455		U	0.026	0.26	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0059	0.059	2	50	100
Mercury	1455		U	0.00028	0.0028	0.01	0.2	2
Molybdenum	1455		U	0.0059	0.059	0.5	10	30
Nickel	1455		U	0.0011	0.011	0.4	10	40
Lead	1455		U	0.021	0.21	0.5	10	50
Antimony	1455		U	0.25	2.5	0.06	0.7	5
Selenium	1455		U	0.0007	0.0066	0.1	0.5	7
Zinc	1455		U	0.023	0.23	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.29	2.9	10	150	500
Sulphate	1220		U	24	240	1000	20000	50000
Total Dissolved Solids	1020		N	86	860	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763625							
Sample Ref:	BH6							
Sample ID:	BH6							
Sample Location:								
Top Depth(m):	2.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**				
Total Organic Carbon	2625		M	%	14	3	5	6
Loss On Ignition	2610		M	%	14	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	61	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.048	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.017	0.17	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0005	0.0051	0.5	10	70
Copper	1455		U	0.0031	0.031	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0031	0.031	0.5	10	30
Nickel	1455		U	0.0014	0.014	0.4	10	40
Lead	1455		U	0.0063	0.063	0.5	10	50
Antimony	1455		U	0.043	0.42	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.023	0.23	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.31	3.1	10	150	500
Sulphate	1220		U	1.4	14	1000	20000	50000
Total Dissolved Solids	1020		N	65	640	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763627							
Sample Ref:	BH7							
Sample ID:	BH7							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	5.3	3	5	6
Loss On Ignition	2610		M	%	6.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	200	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.031	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0059	0.060	0.5	2	25
Barium	1455		U	0.015	0.15	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0013	0.013	0.5	10	70
Copper	1455		U	0.0039	0.039	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0014	0.014	0.5	10	30
Nickel	1455		U	0.0010	0.0096	0.4	10	40
Lead	1455		U	0.0075	0.075	0.5	10	50
Antimony	1455		U	0.0055	0.055	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.026	0.26	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.19	1.9	10	150	500
Sulphate	1220		U	4.3	43	1000	20000	50000
Total Dissolved Solids	1020		N	62	620	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	26	260	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763628							
Sample Ref:	BH9							
Sample ID:	BH9							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	4.4	3	5	6
Loss On Ignition	2610		M	%	5.0	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	54	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.011	0.11	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0028	0.028	0.5	10	70
Copper	1455		U	0.0027	0.027	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0054	0.055	0.5	10	30
Nickel	1455		U	0.0009	0.0090	0.4	10	40
Lead	1455		U	0.0018	0.018	0.5	10	50
Antimony	1455		U	0.0027	0.027	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.021	0.21	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.18	1.8	10	150	500
Sulphate	1220		U	8.5	85	1000	20000	50000
Total Dissolved Solids	1020		N	62	620	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	6.9	69	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763630							
Sample Ref:	BH10							
Sample ID:	BH10							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	1.6	3	5	6
Loss On Ignition	2610		M	%	3.6	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	30	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		9.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.013	0.13	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0005	0.0052	0.5	10	70
Copper	1455		U	0.0028	0.028	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0055	0.055	0.5	10	30
Nickel	1455		U	0.0012	0.012	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	0.0023	0.023	0.06	0.7	5
Selenium	1455		U	0.0010	0.0097	0.1	0.5	7
Zinc	1455		U	0.021	0.21	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.21	2.1	10	150	500
Sulphate	1220		U	8.6	86	1000	20000	50000
Total Dissolved Solids	1020		N	71	710	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	8.8	88	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763632							
Sample Ref:	BH11							
Sample ID:	BH11							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.3	3	5	6
Loss On Ignition	2610		M	%	4.5	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	40	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.018	0.18	0.5	2	25
Barium	1455		U	0.005	0.054	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0007	0.0065	0.5	10	70
Copper	1455		U	0.0041	0.041	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0070	0.070	0.5	10	30
Nickel	1455		U	0.0022	0.023	0.4	10	40
Lead	1455		U	0.0024	0.025	0.5	10	50
Antimony	1455		U	0.0019	0.019	0.06	0.7	5
Selenium	1455		U	0.0008	0.0081	0.1	0.5	7
Zinc	1455		U	0.023	0.23	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.28	2.8	10	150	500
Sulphate	1220		U	10	100	1000	20000	50000
Total Dissolved Solids	1020		N	72	720	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	6.6	66	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763633							
Sample Ref:	BH11							
Sample ID:	BH11							
Sample Location:								
Top Depth(m):	2.5							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.0	3	5	6
Loss On Ignition	2610		M	%	4.2	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	37	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		9.0	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0053	0.053	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0046	0.046	0.5	10	70
Copper	1455		U	0.0023	0.024	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.013	0.13	0.5	10	30
Nickel	1455		U	0.0013	0.013	0.4	10	40
Lead	1455		U	0.0014	0.014	0.5	10	50
Antimony	1455		U	0.0013	0.013	0.06	0.7	5
Selenium	1455		U	0.0006	0.0057	0.1	0.5	7
Zinc	1455		U	0.033	0.33	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.20	2.0	10	150	500
Sulphate	1220		U	4.7	47	1000	20000	50000
Total Dissolved Solids	1020		N	68	680	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763634							
Sample Ref:	BH12							
Sample ID:	BH12							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	1.9	3	5	6
Loss On Ignition	2610		M	%	3.7	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0009	0.0093	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0008	0.0083	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0043	0.043	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	0.0010	0.0099	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.025	0.25	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.081	< 1.0	10	150	500
Sulphate	1220		U	6.1	61	1000	20000	50000
Total Dissolved Solids	1020		N	44	440	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763635							
Sample Ref:	BH13							
Sample ID:	BH13							
Sample Location:								
Top Depth(m):	1.0							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	4.7	3	5	6
Loss On Ignition	2610		M	%	7.5	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.0	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0015	0.015	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0012	0.012	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0011	0.011	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.023	0.23	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.079	< 1.0	10	150	500
Sulphate	1220		U	36	360	1000	20000	50000
Total Dissolved Solids	1020		N	70	700	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763637							
Sample Ref:	TP1							
Sample ID:	TP1							
Sample Location:								
Top Depth(m):	0.7							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	7.6	3	5	6
Loss On Ignition	2610		M	%	11	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	57	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0043	0.043	0.5	2	25
Barium	1455		U	0.006	0.061	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0023	0.023	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0007	0.0074	0.5	10	30
Nickel	1455		U	0.0008	0.0084	0.4	10	40
Lead	1455		U	0.0035	0.035	0.5	10	50
Antimony	1455		U	0.0024	0.024	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.037	0.37	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.11	1.1	10	150	500
Sulphate	1220		U	2.9	29	1000	20000	50000
Total Dissolved Solids	1020		N	35	340	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 25000 Croke Villas

						Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	24-03656							
Chemtest Sample ID:	1763638							
Sample Ref:	TP1							
Sample ID:	TP1							
Sample Location:								
Top Depth(m):	1.3							
Bottom Depth(m):								
Sampling Date:	02-Feb-2024							
Determinand	**SOP**	**HWOL Code**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625		M	%	2.0	3	5	6
Loss On Ignition	2610		M	%	6.4	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (of 17) PAHs						100	--	--
pH at 20C	2010		M		8.1	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis				**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455		U	0.0004	0.0044	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	0.0007	0.0071	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0018	0.018	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.026	0.26	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.079	< 1.0	10	150	500
Sulphate	1220		U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020		N	19	190	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	3.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water

Report Information

RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 9

Geotechnical Laboratory Results (Rock)

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: Social Housing Bundles 4 & 5 - Croke Villas
Contract no. 25000

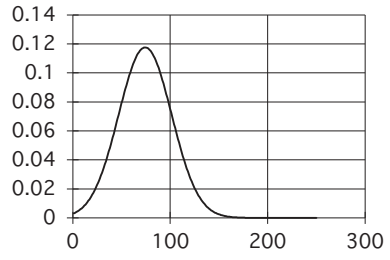
Sample Type: Core
Date of test: 26/2/24

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
RC02	20.6	78	22.0	1.222	3.62	4.42	88	d	//
	20.8	78	19.0	1.222	3.12	3.81	76	d	//
	21.0	78	17.0	1.222	2.79	3.41	68	d	//
	21.9	78	8.0	1.222	1.31	1.61	32	d	//
	22.1	78	28.0	1.222	4.60	5.62	112	d	//
	22.5	78	16.0	1.222	2.63	3.21	64	d	//
	22.9	78	26.0	1.222	4.27	5.22	104	d	//
	23.1	78	12.0	1.222	1.97	2.41	48	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	8	8
Minimum	1.61	32
Average	3.71	74
Maximum	5.62	112
Standard Dev.	1.36	27
Upper 95% Confidence Limit	6.38	127.50
Lower 95% Confidence Limit	1.05	21.07

Comments:
*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations	
i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of weakness/bedding

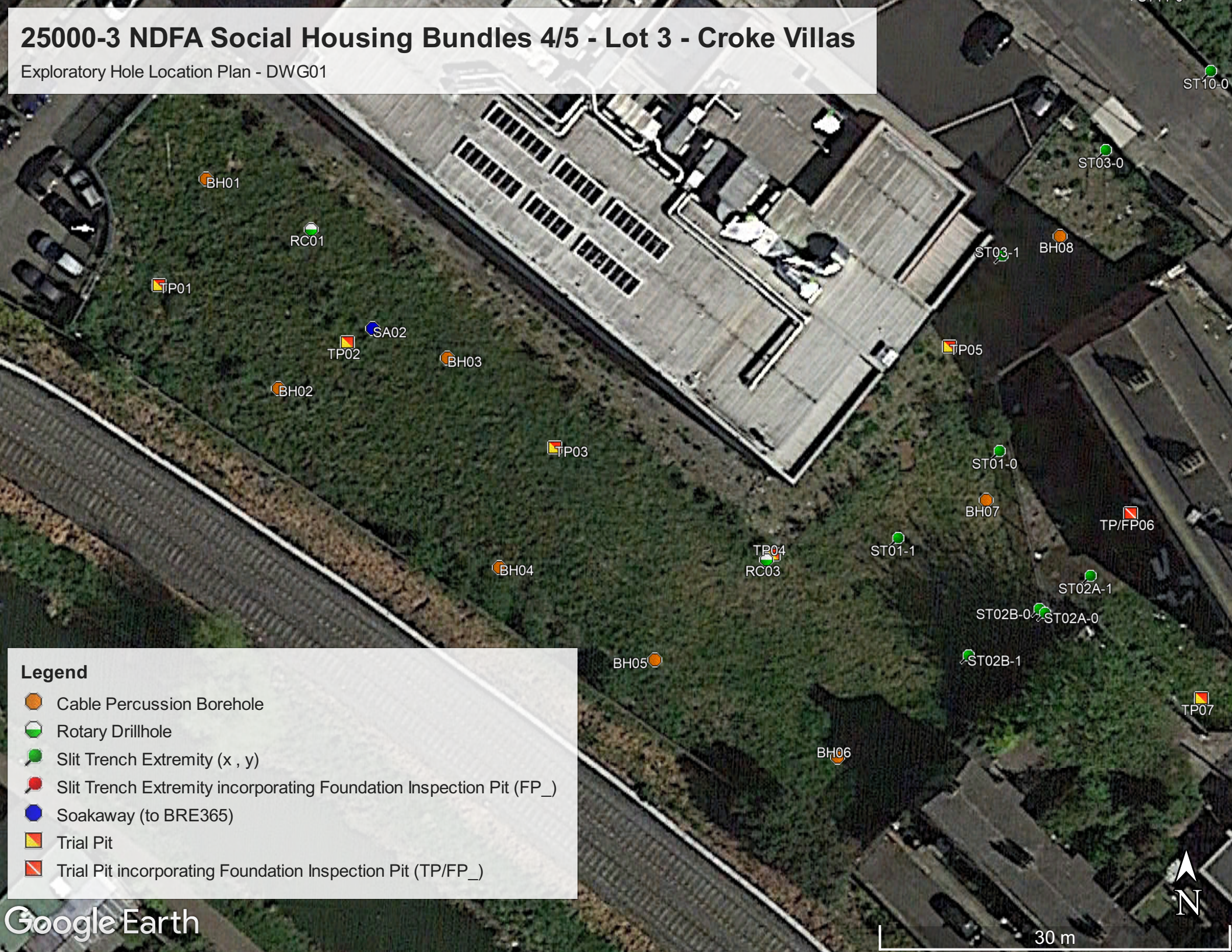
U	unknown
P	perpendicular
//	parallel

Appendix 10

Exploratory Hole Location Plans

25000-3 NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas

Exploratory Hole Location Plan - DWG01



Legend

- Cable Percussion Borehole
- Rotary Drillhole
- Slit Trench Extremity (x , y)
- Slit Trench Extremity incorporating Foundation Inspection Pit (FP_)
- Soakaway (to BRE365)
- Trial Pit
- Trial Pit incorporating Foundation Inspection Pit (TP/FP_)


25000-3 NDFA Social Housing Bundles 4/5 - Lot 3 - Croke Villas
Exploratory Hole Location Plan - DWG02
Legend
Cable Percussion Borehole
Rotary Drillhole
Slit Trench Extremity (x , y)
Slit Trench Extremity incorporating Foundation Inspection Pit (FP_)
Soakaway (to BRE365) incl. TP10
Trial Pit
Trial Pit incorporating Foundation Inspection Pit (TP/FP_)
ST11-1
TP/SA10
BH13
ST10-1
ST11-0
BH12
ST10-0
TP/FP11
ST03-0
BH08
ST03-1
TP05
ST04-0/FP04
BH09
ST01-0
BH07
TP/FP06
ST01-1
ST02A-1
ST02B-0
ST02A-0
ST02B-1
TP07
BH06
ST05-1
BH10
RC02
TP08
SA08
ST05-0
ST06-1
ST06-0
ST08-1
BH11
SA09
TP09
ST08-0
ST07-1
ST07-0
Google Earth
N
40 m