

APPENDIX 07

Land, Soils & Geology

- Appendix 7-1 - Cloghroe Ground Investigation Report – Interpretive’ - Ocbgeo





Cloghroe Housing Development – Site Investigation Interpretative Report

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Client's Representative: MHL & Associates Ltd

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001	Draft Interim Factual	Ian Holley	Glen Byrne	Michael O'Connell	15 th December 2020
002	Draft Interp	Ian Holley	Glen Byrne	Michael O'Connell	16 th December 2020

The works were conducted in accordance with:

BS EN 1997: *Eurocode 7 - Geotechnical Design – Parts 1 & 2* (2007)

UK Specification for Ground Investigation 2nd Edition (2012)

British Standards Institute (2010) BS 5930:1999 + A2: 2010, Code of practice for site investigations. Incorporating Amendment Nos. 1 and 2, as partially replaced by:

- BS EN ISO 22475-1:2006: Geotechnical investigation and testing. Sampling methods and groundwater measurements. Technical principles for execution
- BS EN ISO 14688-1:2002/Amd 1:2013: Geotechnical investigation and testing. Identification and classification of soil. Identification and description
- BS EN ISO 14688-2:2004/Amd 1:2013: Geotechnical investigation and testing. Identification and classification of soil. Principles for a classification
- BS EN ISO 14689-1:2003: Geotechnical investigation and testing. Identification and classification of rock. Identification and description
- BS EN ISO 22476-2:2005/Amd 1:2011: Geotechnical investigation and testing. Field testing. Dynamic probing
- BS EN ISO 22476-3:2005/Amd 1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test



METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in Section 6 of BS 5930: 1999 + A2: 2010, The Code of Practice for Site Investigation. The amendments revised the Standard to remove text superseded by BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and EN ISO 14689-1:2003 and refers to the relevant standard for each affected subclause. However, the following terms are used in the description of fine-grained soils, where applicable:

- Soft to Firm: fine-grained soil with consistency description close to the boundary between soft and firm soil (Table 13 of BS5930).
- Firm to Stiff: fine-grained soil with consistency description close to the boundary between firm and stiff soil (Table 13 of BS5930).

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample
P	Nominal 100mm diameter undisturbed piston sample
B	Bulk disturbed sample
D	Small disturbed sample
W	Water sample
ES / EW	Soil sample for environmental testing / Water sample for environmental testing
SPT	Standard penetration test using a split spoon sampler (small disturbed sample obtained)
SPT (C)	Standard penetration test using 60-degree solid cone
x,x/x,x,x,x	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length. The length achieved is stated (mm) for any test increment less than 75mm
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm)
N=X/Z	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given test length 'Z' (mm)
V VR	Shear vane test (borehole) Hand vane test (trial pit) Shear strength stated in kPa V: undisturbed vane shear strength VR: remoulded vane shear strength
dd/mm/yy: 1.0 dd/mm/yy: dry	Date & water level at the borehole depth at the end of shift and the start of the following shift
Abbreviations relating to rock core – reference Clause 44.4.4 of BS 5930: 1999	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non-Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.

Cloghroe Housing Development

1 AUTHORITY

On the instructions of BMOR (“the Client’s Representative”), acting on the behalf of MHL & Associates (“the Client”), a ground investigation was undertaken at the above location to provide geotechnical information for input to the design and construction of a proposed residential development.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and the laboratory test results.

All information given in this report is based upon the ground conditions encountered during the site investigation works, and on the results of the laboratory and field tests performed. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those measured during the investigation.

This report was prepared by OCB Geotechnical Ltd for the use of BMOR and MHL & Associates Ltd. in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SCOPE

The extent of the investigation, as instructed by the Client’s Representative, included boreholes, trial pits, soil sampling, in-situ and laboratory testing, and the preparation of a report on the findings including recommendations for construction.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the site is a greenfield site located on the west side of the R617 Regional Road between Cloghroe to the south and Tower to the northeast. The site is located at the southwest corner of Coolflugh townland. The site is an elongate property up to 480m long, that narrows from approximately 300m wide at the north end to 90m wide at the south end.

The site consists of several agricultural fields bordered by hedgerows with bushes and mature trees. A group of farming buildings and a yard are located at the northeast portion of the site.

Ground surface slopes from north to south, with the ground sloping more steeply in the northern portion of the site and more gently in the southern portion. Ground surface elevation ranges from approximately 50m MSL at the north end to 23m MSL at the south end. A stream flows in a southeasterly direction along the west side of the site and a historic field drain network within the lower southern portion of the site drains westwards into this stream.

The existing site is presented on the site and exploratory hole location plans in Appendix A.

4 SITE OPERATIONS

Site operations, which were conducted between 31st August 2020 and 28th September 2020, included:

- Seven (7) Cable Percussion Boreholes
- A Standpipe Installation in three (3) Boreholes
- Fourteen (14) Trial Pits
- CBR tests at three (3) locations
- An Infiltration test performed in three (3) Trial Pits

The exploratory holes and in situ tests were located as instructed by the Client’s Representative, as shown on the exploratory hole location plan in Appendix A.

4.1 Cable Percussion Boreholes

Seven boreholes (BH01 and BH01A to BH06) were put down to completion in minimum 200mm diameter using a Pilcon cable percussion soil boring rig. All boreholes were terminated either at their scheduled completion depths, or else on encountering virtual refusal on obstructions, including large boulders and weathered bedrock.

Hand dug inspection pits were carried out between ground level and 1.2m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

Disturbed (bulk bag and tub) samples were taken within the encountered strata.

Standard penetration tests were carried out in accordance with EC7 at standard depth intervals using the split spoon sampler (SPT). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections.

Any water strikes encountered during boring were recorded along with any changes in their levels as the borehole proceeded.

Where water was added to assist with boring, a note has been added to the log to account for same.

Appendix B presents the borehole logs.

4.2 Standpipe Installations

A groundwater monitoring standpipe was installed in boreholes BH01A, BH02 and BH03.

Details of the installations, including the diameter of the pipe and depth range of the response zone, are provided in Appendix B on the individual borehole logs.

4.3 Trial Pits

Fourteen trial pits (TP01 – TP14) were excavated using a 20t tracked excavator fitted with a 600mm wide bucket, to depths of between 1.70m and 3.60m. Trial pits TP05, TP06 and TP10 were excavated to allow completion of infiltration tests, see section 4.5 below for details.

Disturbed (small tub and bulk bag) samples were taken at standard depth intervals and at change of strata.

Any water strikes encountered during excavation were recorded along with any changes in their levels as the excavation proceeded. The stability of the trial pit walls was noted on completion.

Note: TP14 was excavated in order to complete a further infiltration test but upon review it was deemed unnecessary after the three required infiltration tests had been completed elsewhere. It was not surveyed so coordinates are not provided on the log, an approximate location has been included on the site plan in Appendix A. The log is provided as an extra piece of information on the subsurface conditions.

Appendix C presents the trial pit logs with photographs of the pits and arising provided in Appendix D.

4.4 In-Situ CBR Testing

In-situ California Bearing Ratio (CBR) testing was conducted at three locations (CBR1 through CBR3) using a Controls Group field CBR test set to evaluate the strength of shallow materials.

An excavator removed approximately 0.4m of topsoil to expose the underlying subsoil (see trial pit logs for detailed strata description) where the test was commenced from.

CBR field test data and calculations are provided in Appendix E and are summarized in Section 6.4 below.

4.5 Infiltration Tests

An infiltration/soakaway test was carried out at three locations within trial pits (TP05, TP06 and TP10) in accordance with BRE Digest 365 - Soakaways (BRE, 2007).

Appendix F presents the results and analysis of the infiltration test. The absence of outflow from the pits precluded calculation of infiltration coefficients in two of the tests. An estimated Infiltration Coefficient of 3.2×10^{-6} was calculated for the TP05 test.

4.6 Surveying

A broad survey of the site using a handheld CAT scanner to identify any existing buried services or old foundations/obstructions to excavation was carried out before commencement of excavation works.

The as-built exploratory hole positions were surveyed following completion of site operations by a Site Engineer from OCB Geotechnical. Surveying was carried out using a Trimble R6 GPS system employing VRS and real time kinetic (RTK) techniques.

The plan coordinates (Irish Transverse Mercator, ITM) and ground elevation (mOD Malin) at each location are recorded on the individual exploratory hole logs. The exploratory hole plan presented in Appendix A shows these as-built positions.

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described and their descriptions incorporated into the borehole logs.

5.1 Geotechnical Laboratory Testing of Soils

Laboratory testing of soils comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests and particle size distribution analysis.
- **soil chemistry:** pH and water-soluble sulphate content

Laboratory testing of soils samples was carried out in accordance with British Standards Institute (1990) *BS 1377:1990, Methods of test for soils for civil engineering purposes. Parts 1 to 9.*

The test results are presented in Appendix G.

6 GROUND CONDITIONS

6.1 General Geology of the Area

Teagasc soil mapping indicates that surficial soils in the site vicinity consist primarily of Glacial Till derived chiefly from Devonian sandstones.

According to Geological Survey of Ireland (GSI) database, the site is located on the northern flank of the Blarney Syncline (downfold). Soils at the upper northern portion of the site are underlain by the Upper Devonian-age Gyleen Formation while soils at the more low-lying southern portion of the site are underlain by the younger Lower Carboniferous-age Cuskinny Member. The Gyleen Formation consists of fining-upwards sequences of red siltstone and subsidiary red sandstone, with thinly bedded alternations of green and red sandstones, siltstones and mudstones towards the top. The Cuskinny Member consists of flaser-bedded sandstones, lenticular-bedded (linsen) mudstones, massive sandstones and nodular mudstones. Thin quartz-pebbly sandstones and conglomerates also occur throughout the member.

The Upper Devonian and Lower Carboniferous strata were subjected to compressional deformation (tectonic shortening) and low-grade metamorphism during the Variscan Orogeny in Late Carboniferous and Early Permian times resulting in the formation of an east-west trending fold-thrust belt. The bedrock in the site vicinity has a predominant west-southwest to east-northeast strike and is transected by faults with a predominant north-northwest to south-southeast orientation.

The bedrock is classified as a locally productive aquifer, which is moderately productive only in local zones. According to GSI maps the site a high to extreme groundwater vulnerability index.

6.2 Ground Types Encountered During Investigation of the Site

A summary of the ground types encountered in the exploratory holes is listed below, in approximate stratigraphic order:

- Topsoil: Encountered between 0.10m and 0.40m thickness. Potentially mixed with made ground material in TP07.
- Made Ground (fill): Reworked clay fill. Extends to approximately 0.70m with possible made ground material extending to 1.70m in TP13.
- Glacial Till: Sandy gravelly clay, frequently with low cobble content, typically firm or stiff. Observed below the topsoil or made ground and atop the Sands and Gravels beneath in almost all locations. Extends to a depth of 2.80m in TP07.
- Fluvio-glacial deposits: Typically medium dense to very dense sands and gravels. Extend to the end off all boreholes and trial pits.

6.3 Groundwater

Details of the individual groundwater strikes, along with any relative changes in levels as works proceeded, are presented on the exploratory hole logs for each location.

It should be noted that any groundwater conditions between or below exploratory hole locations cannot be commented upon and groundwater conditions are subject to change seasonally or in response to local weather events.

6.4 In-Situ CBR Test Results

In-situ test data indicates CBR results ranging from 10.53% to 41.30% for soils at the three locations. See below Table 1 for a summary of the CBR results.

CBR Test Location	Easting	Northing	Depth (m BGL)	CBR value at 2.5mm penetration (%)	CBR value at 5mm penetration (%)
CBR1	557328.2	574662.5	0.385	41.30	N/A
CBR2	557342.3	574611.8	0.385	14.58	10.53
CBR3	557413	574505.4	0.385	13.36	11.34

7 DISCUSSION

7.1 Proposed Construction

It is proposed to construct a new residential development on this site. The works will include the development of all internal roads, housing services and an access junction onto the R617.

No further details were available to OCB Geotechnical at the time of preparing this report.

7.2 Recommendations for Construction

7.2.1 Foundations and Ground Floor Construction

Foundations should transfer loading to below any Made Ground, subsoil or soft/loose strata. The estimated allowable bearing pressure (ABP) relative to strata descriptions at the borehole locations are presented in Table 1 on the following page.

Table 1: ABP Estimations vs Strata

Borehole / Trial Pit	Depth Below GL to Possible Bearing Stratum (m)	Estimated ABP (kPa)	Strata Description	Notes
BH01	1.2 - 2.0	40 - 75	Medium Dense Gravel	
	2.0 - 3.3	150 - 300	Very Dense Gravel	Some large boulders observed from 2.0m to 3.3m, could make ground conditions unpredictable and lead to some possible settlement if founding atop one or more of these boulders.
BH01A	1.2 - 3.0	150 - 300	Very Dense Gravel	Many large boulders observed from 1.2m to 4.5m, could make ground conditions unpredictable and lead to some possible settlement if founding atop one or more of these boulders.
	3.0 - 4.0	100 - 150	Dense Gravel	As Above
	4.0 - 4.5	150 - 300	Very Dense Gravel	As Above
BH02	1.2 - 1.8	100 - 150	Stiff Glacial Till	
	1.8 - 3.0	50 - 75	Firm Glacial Till	
	3.0 - 4.0	75 - 100	Stiff Glacial Till	
	4.0 - 5.0	40 - 75	Medium Dense Gravel	Water strike at 4.9m
	5.0 - 6.0	75 - 150	Dense Gravel	
	6.0 - 9.7	150 - 300	Very Dense Gravel	
BH03	1.2 - 2.6	50 - 75	Firm Glacial Till	Water strike at 0.6m
	2.6 - 4.0	40 - 75	Medium Dense Gravel	Water strike at 2.6m
	4.0 - 7.0	20 - 40	Loose Gravel and Sand	
	7.0 - 9.0	40 - 75	Medium Dense Sand	
	9.0 - 9.95	75 - 120	Dense Sand	
BH04	1.2 - 3.0	40 - 75	Medium Dense Gravel	

Borehole / Trial Pit	Depth Below GL to Possible Bearing Stratum (m)	Estimated ABP (kPa)	Strata Description	Notes
	3.0 - 6.2	150 - 300	Very Dense Gravel	Some boulders observed from 3.0m to 6.2m, could make ground conditions unpredictable and lead to some possible settlement if founding atop one or more of these boulders.
BH05	1.2 - 5.0	75 - 150	Stiff Glacial Till	Water strike at 2.4m
	5.0 - 7.0	75 - 150	Dense Gravel	
	7.0 - 9.8	150 - 300	Very Dense Gravel	
BH06	1.2 - 2.4	40 - 75	Firm Glacial Till	Water strike at 2.4m
	2.4 - 6.0	40 - 75	Medium Dense Gravel	Water strike at 4.6m
	6.0 - 8.0	75 - 150	Dense Gravel	
	8.0 - 10.0	150 - 300	Very Dense Gravel	

The above table provides estimated Allowable Bearing Pressures (ABP's) where appropriate using the SPT results alongside the strata description from the borehole logs. As the majority of the strata encountered within the trial pits was granular in nature it is not possible to give estimates of its density/strength. It should be noted where firm glacial clay is described in the Trial Pit logs an approximate estimate of 40 - 75kPa is reasonable and where it is described as stiff an approximate estimate of 75 - 150kPa is reasonable.

The base of any foundation excavations should be thoroughly inspected by an experienced engineer and the required bearing capacity verified in-situ. Any soft/loose soils should be removed with the resultant void backfilled with leanmix concrete or granular engineering fill (Class 6 or similar approved material). A consistent bearing stratum should be provided across each structure in order to limit differential settlements.

Given the generally coarse-grained nature of the soils and presence of groundwater, excavations for foundations and drainage devices are likely to be relatively unstable. Any instability can be minimised by battering the side slopes at one vertical to two horizontal (1V:2H) and by limiting the duration that the excavation is open. Groundwater control, if required, should be possible by pumping from sumps formed in the base of excavations although some excavations may require more extensive dewatering. Groundwater was consistently observed below 1.50m with one occurrence at 4.50m (in BH03). The groundwater level is anticipated to vary with seasons.

The use of ground bearing floor slabs is appropriate following the removal of any surface Made Ground and soft/loose layers and their replacement using well-graded well-compacted granular fill. However, a suspended floor slab should be adopted where the difference in levels of the proposed floor and the base of Made Ground/soft/loose soils is greater than 600mm.

Therefore, given the depth to the base of relative low strength of upper soil layers, a suspended floor slab may be required over parts of the site. The use of intermediate lines of support stub walls would reduce the spans required for flooring units.

The depth to a consistent bearing stratum across the site varies and it is unknown to OCB the exact loadings expected so we cannot identify one level where founding could be sought consistently across the site. The designing engineer should refer to Table 1 above and the exploratory hole location logs provided in order to tailor foundation design as required.

7.2.2 Soil Aggressivity

An assessment of the Aggressive Chemical Environment for Concrete (ACEC) was undertaken through reference to the Building Research Establishment (BRE) Special Digest 1 (2005).

As noted by BRE Special Digest 1, sulphates in the soil and groundwater are the chemical agents most likely to attack concrete. The extent to which sulphates affect concrete is linked to their concentrations, the type of ground, the presence of groundwater, the type of concrete and the form of construction in which concrete is used.

BRE Special Digest 1 identifies four different categories of site which require specific procedures for investigation for aggressive ground conditions:

- Sites not subjected to previous development and not perceived as containing pyrite;
- Sites not subjected to previous development and perceived as containing pyrite;
- Brownfield sites not perceived as containing pyrite;
- Brownfield sites perceived as containing pyrite.

For the purposes of this report the site was classified as having been subject to previous development and not perceived as containing pyrite.

The results of chemical tests (pH and water-soluble sulphate contents) on soil samples indicate Design Sulphate Class DS-1 and ACEC Class AC-1 – reference Table C1 of BRE Special Digest 1 (Building Research Establishment, 2005). The Special Digest does not require any measures to protect underground concrete elements greater than 140mm thick.

7.2.3 Access Roads, Car Parks and Hard Standing

Although the CBR values obtained from in-situ tests frequently suggest moderate to good construction conditions, caution is advised due to the limited number of tests and the presence of obstructions (cobbles and boulders) within the Glacial Till.

The use of geosynthetics in the construction of paved areas, will be beneficial, particularly in areas of Made Ground or soft/loose strata. These could include a geosynthetic (e.g., a geogrid) at subgrade level with further benefit gained by incorporating further layer(s) within the capping/sub-base layer.



8 REFERENCES

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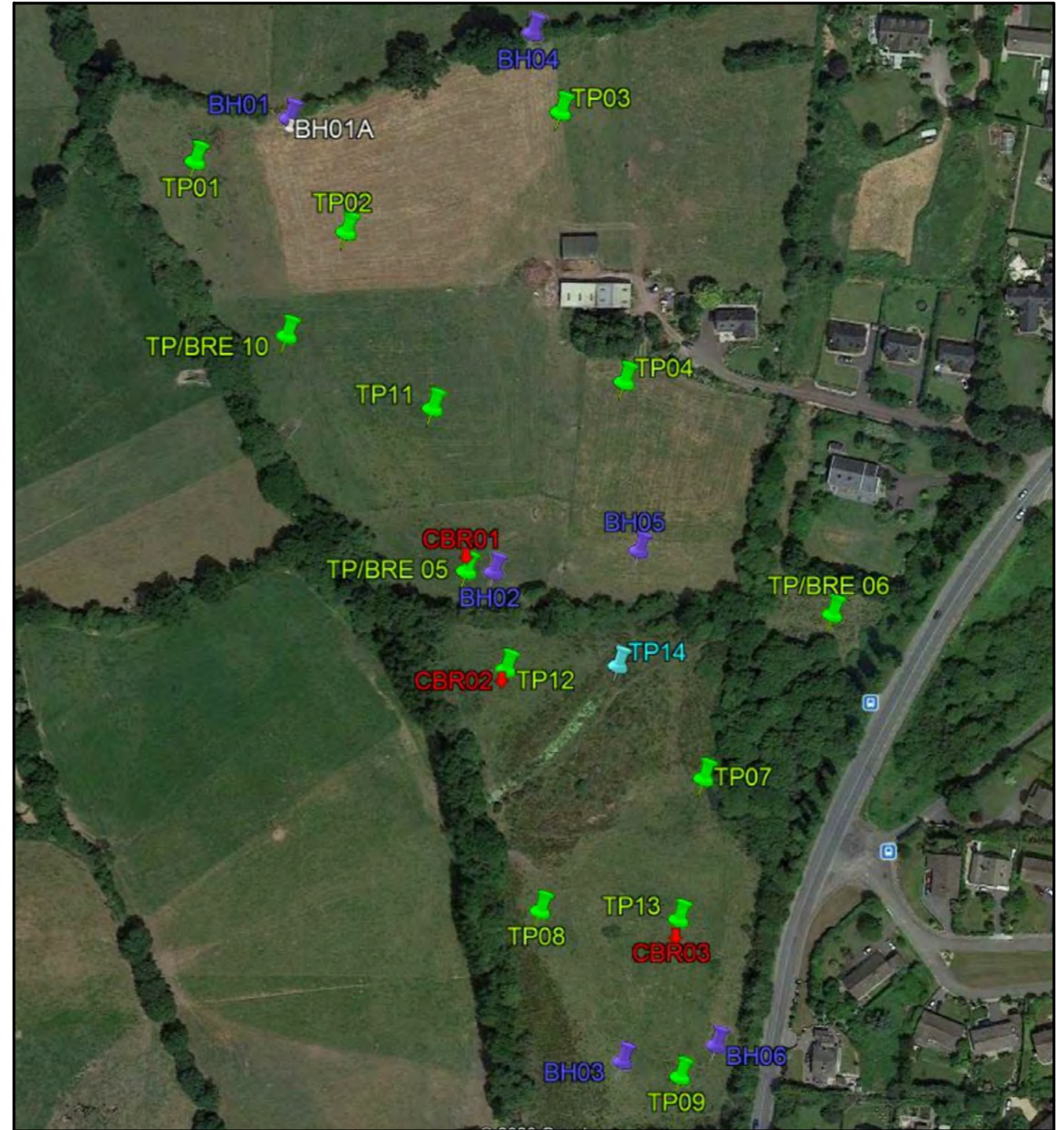
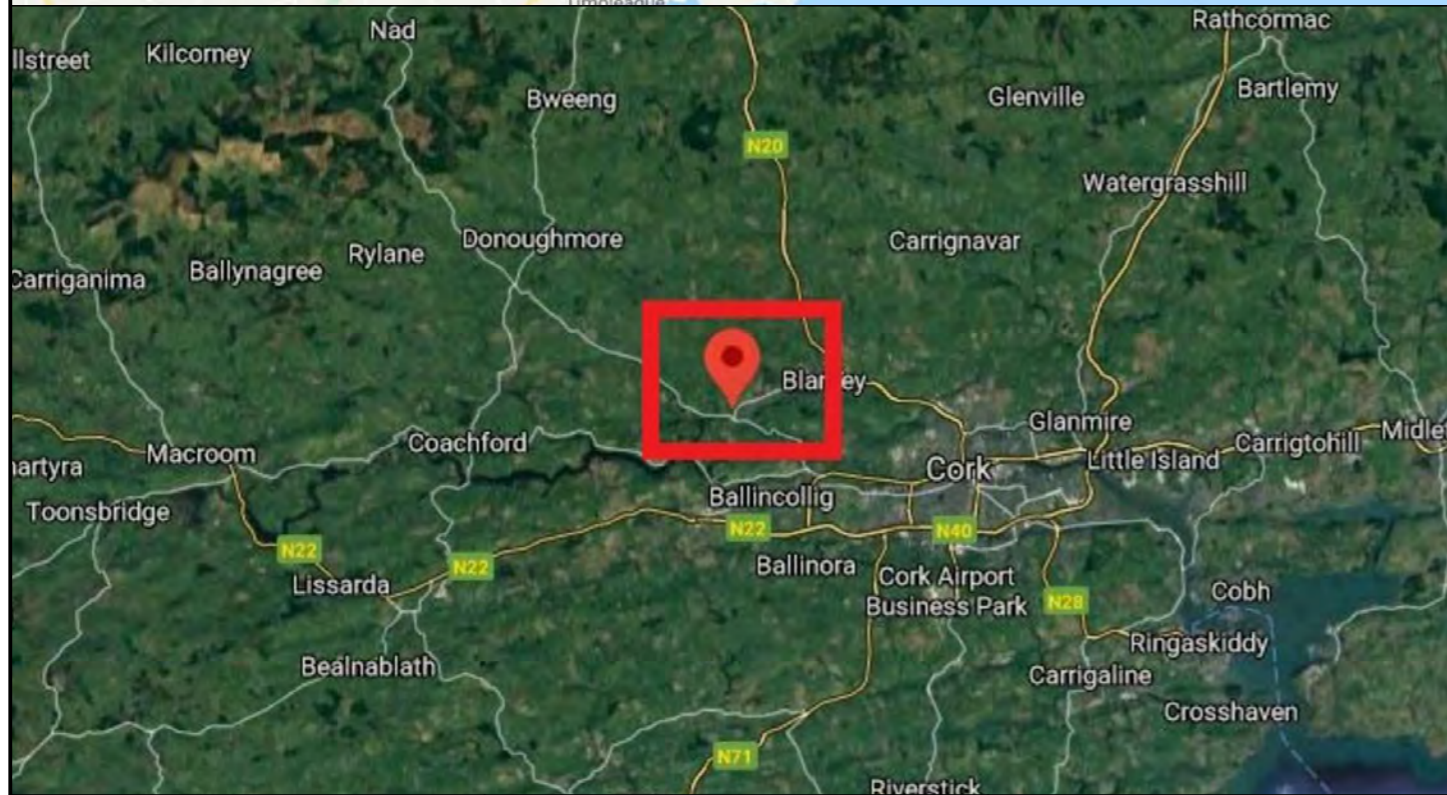
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Appendix A Site and Exploratory Hole Location Plans



Cloghroe Housing
Development.

SITE LOCATION MAPS


Client:	BMOR
Engineer:	MHL & Associates Ltd
Date:	Aug/Sep 2020



Cloghroe Housing
Development.


Exploratory Hole Locations

Client:	BMOR
Engineer:	MHL & Associates Ltd
Date:	Aug/Sep 2020

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH01A
	Coordinates: 557258.49 E 574834.41 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1
Method: Cable Percussion		Dates: 02/09/2020 -	Scale: 1:50
Plant: Pilcon	Ground Level: 49.13 mOD		Driller: AA
			Logger: MN


Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.10 - 1.20	B1				49.03	(0.10)	TOPSOIL			
0.10 - 1.20	D2					(1.10)		Brown sandy gravelly very silty CLAY with high content of cobbles up to small boulder size and occasional rootlets, moist. Sand fine to coarse. Gravel fine to coarse, angular to subrounded. Cobbles subangular to subrounded. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.		
1.20 - 2.00	B3			50 (50 for 10mm/50 for 0mm)	47.93	1.20		Very dense brown sandy GRAVEL with medium cobble content. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz. <i>Driller records possible boulder at 1.2m.</i>		
1.20 - 2.00	D4									
1.20 - 1.21	SPT (C)									
2.00 - 3.00	B5			59 (7,9/59 for 170mm)		(1.80)		<i>Driller records possible boulder at 2.3m.</i>		
2.00 - 3.00	D6									
2.00 - 2.32	SPT (C)									
3.00 - 4.00	B7			N=45 (7,7/11,13,10,11)	46.13	3.00		Dense brown slightly silty very sandy GRAVEL with medium cobble content. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz. <i>Driller records possible boulder at 3.7m.</i>		
3.00 - 4.00	D8					(1.00)				
3.00 - 3.45	SPT (C)									
4.00 - 4.50	B9			N=55 (9,11/11,10,15,19)	45.13	4.00		Very dense brown slightly silty very sandy GRAVEL with high cobble content. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz. <i>Driller records possible boulder at 4.5m.</i>		
4.00 - 4.50	D10					(0.50)				
4.00 - 4.45	SPT (C)									
4.50 - 4.50	SPT (C)			50 (50 for 0mm/50 for 0mm)	44.63	4.50		<i>Driller records possible boulder at 4.5m.</i> End of borehole at 4.500m		

Remarks Cable Percussion terminated at 4.50m upon encountering virtual refusal.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
	1.20	4.50				
	Casing Details		Chiselling Details			
To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)		
4.50	200	1.20	1.30	00:40		
		1.70	1.80	00:30		
		2.30	2.40	00:30		

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH02
	Coordinates: 557336.88 E 574652.45 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1
Method: Cable Percussion		Dates: 03/09/2020 - 07/09/2020	Scale: 1:50
Plant: Pilcon	Ground Level: 29.35 mOD		Driller: AA
			Logger: IH


Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.20 - 1.20	B1				29.14	(0.20)	TOPSOIL			
0.20 - 1.20	D2					(1.00)		Light brown slightly gravelly slightly sandy very silty CLAY with rootlets. Gravel is fine to coarse, angular to subangular. Sand is fine to coarse.		
1.20 - 1.80	B3			N=29 (0,1/4,7,9,9)	28.14	1.20		Stiff brown slightly sandy silty very gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subangular.		
1.20 - 1.80	D4					(0.60)				
1.20 - 1.65	SPT (C)									
1.80 - 3.00	B5			N=13 (2,2/4,3,3,3)	27.54	1.80		Firm brown slightly sandy silty gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subangular.		
1.80 - 3.00	D6					(1.20)				
2.00 - 2.45	SPT (C)									
3.00 - 4.00	B7			N=16 (3,4/4,4,4,4)	26.34	3.00		Stiff dark brown slightly sandy silty gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subangular.		
3.00 - 4.00	D8					(1.00)				
3.00 - 3.45	SPT (C)									
4.00 - 5.00	B9			N=24 (5,5/5,5,8,6)	25.34	4.00		Medium Dense brown slightly silty sandy very clayey GRAVEL with medium cobble content and low small boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles and boulders are subangular.		
4.00 - 5.00	D10					(1.00)				
4.00 - 4.45	SPT (C)									
5.00 - 6.00	B11			N=35 (6,10/8,9,8,10)	24.34	5.00		Dense dark grey slightly silty clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular.		
5.00 - 6.00	D12					(1.00)				
5.00 - 5.45	SPT (C)									
6.00 - 7.00	B13			N=54 (12,17/12,12,17,13)	23.34	6.00		Very Dense dark grey slightly clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular.		
6.00 - 7.00	D14					(2.00)				
6.00 - 6.45	SPT (C)									
7.00 - 8.00	B15			N=65 (10,10/14,19,16,16)	21.34	8.00		Very Dense dark grey slightly clayey very sandy GRAVEL with medium cobble content and low small boulder content. Sand is fine to coarse. Gravel is angular to subangular. Cobbles and boulders are angular to subangular.		
7.00 - 8.00	D16					(1.00)				
7.00 - 7.45	SPT (C)									
8.00 - 9.00	B17			N=54 (9,13/13,12,15,14)	20.34	9.00		Very Dense dark grey slightly clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is angular to subangular. Cobbles are angular to subangular.		
8.00 - 9.00	D18					(0.70)				
8.00 - 8.45	SPT (C)									
9.00 - 9.70	B19			N=54 (11,12/12,12,15,15)	19.64	9.70		Very Dense dark grey slightly clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is angular to subangular. Cobbles are angular to subangular.		
9.00 - 9.70	D20									
9.00 - 9.45	SPT (C)									
9.60 - 9.74	SPT (C)			50 (43 for 135mm/50 for 0mm)				End of borehole at 9.700m		

Remarks Cable Percussion terminated at 9.70m upon encountering virtual refusal.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
	1.20	4.90	4.90	4.90	20	4.50
	Casing Details		Chiselling Details			
To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)		
9.70	200	9.60	9.70	01:00		

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH03
	Coordinates: 557364.95 E 574434.04 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1
Method: Cable Percussion		Dates: 10/09/2020 - 11/09/2020	Scale: 1:50
Plant: Pilcon	Ground Level: 24.49 mOD		Driller: AA
			Logger: IH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.10 - 1.20	B1 D2				24.38	(0.10)	TOPSOIL	Mottled brown and light brown slightly sandy slightly gravelly silty CLAY with occasional rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
1.20 - 2.00	B3 D4 SPT (C) N=16			N=16 (4,4/3,5,4,4)	23.28	1.20		Firm to Stiff brown slightly sandy slightly gravelly CLAY with occasional rootlet fragments.		
2.00 - 2.60	B5 D6 SPT (C) N=16			N=16 (3,3/3,5,4,4)	21.88	2.60		Medium Dense purple / brown slightly silty clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subrounded.		
3.00 - 4.00	B7 D8 SPT (C) N=22			N=22 (2,5/4,7,6,5)	20.48	4.00		Loose purple / brown slightly silty clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subrounded.		
4.00 - 4.70	B9 D10 SPT (C) N=5			N=5 (0,1/0,1,2,2)	19.78	4.70		Loose purple / brown clayey SAND. Sand is fine to coarse.		
4.70 - 6.00	B11 D12 SPT (C) N=9			N=9 (1,2/2,2,3,2)	18.48	6.00		Loose to Medium Dense purple / brown slightly silty very gravelly SAND. Gravel is fine to coarse, subangular to subrounded. Sand is fine to coarse.		
6.00 - 7.00	B13 D14 SPT (C) N=10			N=10 (2,5/3,3,2,2)	17.48	7.00		Medium Dense reddish brown slightly clayey SAND. Sand is fine to coarse.		
7.00 - 8.00	B15 D16 SPT (C) N=17 U21			N=17 (3,4/6,4,3,4)	16.48	8.00		Medium Dense reddish brown slightly clayey gravelly SAND with low cobble content. Gravel is fine to coarse, subangular. Sand is fine to coarse. Cobbles are subangular to subrounded.		
8.00 - 9.00	B17 D18 SPT (C) N=17			N=17 (4,4/4,4,5,4)	15.48	9.00		Dense reddish brown slightly clayey gravelly SAND with medium cobble and low boulder content. Gravel is fine to coarse, subangular. Sand is fine to coarse. Cobbles and boulders are subangular to subrounded.		
9.00 - 9.50	B19 D20 SPT (C) N=31 SPT (C) N=38			N=31 (7,8/5,9,9,8) N=38 (8,11/9,10,10,9)	14.54	9.95		End of borehole at 9.950m		

Remarks Cable Percussion terminated upon reaching scheduled depth.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
			0.60	2.60	20	0.50
			2.60		20	1.20
	Casing Details		Chiselling Details			
	To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)	
	9.95	200				

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH04
	Coordinates: 557355.60 E 574868.44 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1
Method: Cable Percussion		Dates: 27/08/2020 - 31/08/2020	Scale: 1:50
Plant: Pilcon	Ground Level: 47.76 mOD		Driller: AA
			Logger: MN

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.00 - 1.20	B1 D2					(1.20)		Brown slightly sandy gravelly very silty CLAY with low cobble content and occasional rootlets, moist. Sand fine to coarse. Gravel fine to coarse, angular to subrounded. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.		
1.20 - 2.00	B3 D4 SPT (C) N=14			N=14 (3,4/2,5,4,3)	46.56	1.20		Medium dense brown slightly clayey slightly silty very sandy GRAVEL with low cobble content. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.		
2.00 - 3.00	B5 D6 SPT (C) N=24	2.00	0.80	N=24 (5,5/5,7,6,6) 27-08-2020	45.76	2.00		Medium dense brown slightly silty very sandy GRAVEL with medium cobble content. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.		
3.00 - 4.00	B7 D8 SPT (C)			70 (4,12/70 for 90mm)	44.76	3.00		Very Dense to Dense brown slightly silty very sandy GRAVEL with medium, locally high, cobble content and a trace of slightly sandy gravelly silty clay pockets. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, occasional red conglomeratic sandstone, and occasional quartz. <i>Driller records possible boulder at 3.0m.</i>		
4.00 - 5.00	B9 D10 SPT (C) N=47			N=47 (3,5/11,12,11,13) 28-08-2020	42.76	5.00		Very dense brown slightly clayey slightly silty sandy GRAVEL with high cobble content and a trace of slightly sandy gravelly silty clay pockets. Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.		
5.00 - 6.20	B11 D12 SPT (C) N=48			N=48 (4,5/9,12,14,13)	41.56	6.20		<i>Driller records possible boulder at 6.2m.</i> End of borehole at 6.200m		
6.00 - 6.20	SPT (C)			50 (6,9/50 for 50mm)						
6.20 - 6.20	SPT (C)	6.20		50 (50 for 0mm/50 for 0mm) 31-08-2020						

Remarks Cable Percussion terminated at 6.20m upon encountering virtual refusal.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
			1.20	6.20		
	Casing Details		Chiselling Details			
	To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)	
	6.20	200				

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH05
	Coordinates: 557429.99 E 574677.97 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1
Method: Cable Percussion	Ground Level: 30.74 mOD	Dates: 09/09/2020 - 10/09/2020	Scale: 1:50
Plant: Pilcon			Driller: AA
			Logger: IH

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.10 - 1.20	B1				30.64	(0.10)	TOPSOIL			
0.10 - 1.20	D2					(1.10)		Light brown (light grey and yellow mottling) slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.		
1.20 - 2.00	B3			N=18 (1,3/4,4,5,5)	29.54	1.20		Stiff light brown (light grey and yellow mottling) slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.		
1.20 - 2.00	D4					(0.80)				
1.20 - 1.65	SPT (C) N=18									
2.00 - 2.30	B5			N=20 (4,7/5,4,5,6)	28.74	2.00		Stiff yellowish brown slightly sandy slightly silty gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
2.00 - 2.30	D6					(0.30)				
2.00 - 2.45	SPT (C) N=20				28.44	2.30		Stiff light brown slightly silty sandy very gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular to subangular.		
2.30 - 4.00	B7			N=29 (6,4/7,7,6,9)		(1.70)				
2.30 - 4.00	D8									
3.00 - 3.45	SPT (C) N=29									
4.00 - 5.00	B9			N=30 (5,7/9,7,6,8)	26.74	4.00		Stiff light grey slightly sandy very gravelly CLAY with low cobble content.. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		
4.00 - 5.00	D10					(1.00)				
4.00 - 4.45	SPT (C) N=30									
5.00 - 6.00	B11			N=46 (8,11/14,10,10,12)	25.74	5.00		Dense light brown slightly silty clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular.		
5.00 - 6.00	D12					(2.00)				
5.00 - 5.45	SPT (C) N=46									
6.00 - 7.00	B13			N=42 (9,11/10,9,9,14)		(1.00)				
6.00 - 7.00	D14									
6.00 - 6.45	SPT (C) N=42									
7.00 - 8.00	B15			N=50 (10,12/12,12,11,15)	23.74	7.00		Very Dense light brown slightly silty clayey very sandy GRAVEL with medium cobble and low small boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular.		
7.00 - 8.00	D16					(1.00)				
7.00 - 7.45	SPT (C) N=50									
8.00 - 9.00	B17			N=51 (9,14/13,13,11,14)	22.74	8.00		Very Dense light greyish brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.		
8.00 - 9.00	D18					(1.00)				
8.00 - 8.45	SPT (C) N=51									
9.00 - 9.80	B19			N=68 (12,12/12,17,20,19)	21.74	9.00		Very Dense light greyish brown slightly clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular.		
9.00 - 9.80	D20					(0.80)				
9.00 - 9.45	SPT (C) N=68									
9.80 - 9.81	SPT (C)			50 (50 for 10mm/50 for 0mm)	20.94	9.80		End of borehole at 9.800m		

Remarks Cable Percussion terminated at 9.80m upon encountering virtual refusal.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
			2.40	2.40	20	0.60
	Casing Details		Chiselling Details			
To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)		
9.80	200	9.80	9.80	01:00		

	Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH06
	Coordinates: 557426.96 E 574456.90 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 2
Method: Cable Percussion	Ground Level: 24.56 mOD	Dates: 14/09/2020 - 15/09/2020	Scale: 1:50
Plant: Pilcon			Driller: AA
			Logger: MN

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
0.10 - 1.00	B1				24.46	(0.10)	TOPSOIL			
0.10 - 1.00	D2					(0.90)		Driller Described: Brown / grey slightly gravelly sandy CLAY.		
1.00 - 1.80	B3			N=9 (2,1/2,3,2,2)	23.56	1.00		Driller Described: (Firm) Brown slightly gravelly sandy CLAY.		
1.00 - 1.80	D4					(0.80)				
1.20 - 1.65	SPT (C) N=9									
1.80 - 2.40	B5			N=11 (2,2/4,2,3,2)	22.76	1.80		Driller Described: (Firm) Grey / Purple slightly gravelly silty sandy CLAY.		
1.80 - 2.40	D6					(0.60)				
2.00 - 2.45	SPT (C) N=11									
2.40 - 3.00	B7			N=16 (2,2/3,3,5,5)	22.16	2.40		Driller Described: (Medium Dense) Sandy GRAVEL		
2.40 - 3.00	D8					(1.60)				
3.00 - 4.00	B9			N=18 (3,3/4,5,5,4)	20.56	4.00		Driller Described: (Medium Dense) Silty sandy gravelly CLAY.		
3.00 - 4.00	D10					(0.60)				
3.00 - 3.45	SPT (C) N=16									
4.00 - 4.60	B11			N=28 (3,5/5,5,8,10)	19.96	4.60		Driller Described: (Medium Dense to Dense) Very sandy GRAVEL.		
4.00 - 4.60	D12					(2.40)				
4.00 - 4.45	SPT (C) N=18									
4.60 - 6.00	B13			N=45 (2,7/8,14,13,10)		(3.00)				
4.60 - 6.00	D14									
5.00 - 5.45	SPT (C) N=28									
6.00 - 7.00	B15			N=48 (5,9/11,9,15,13)	17.56	7.00		Driller Described: (Dense to Very dense) Slightly silty very sandy CLAY.		
6.00 - 7.00	D16					(1.00)				
6.00 - 6.45	SPT (C) N=45									
7.00 - 8.00	B17			N=55 (7,7/10,14,14,17)		(3.00)				
7.00 - 8.00	D18									
7.00 - 7.45	SPT (C) N=48									
8.00 - 9.00	B19			N=58 (6,8/11,13,18,16)						
8.00 - 9.00	D20									
8.00 - 8.45	SPT (C) N=55									
9.00 - 10.00	B21									
9.00 - 10.00	D22									
9.00 - 9.45	SPT (C) N=58									
					14.56	10.00		Continued on Next Page		

Remarks Cable Percussion terminated upon reaching scheduled depth.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
			2.40	2.40	20	1.60
			4.60	2.40	20	2.00
	Casing Details		Chiselling Details			
To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)		
10.00	200					








Project No.: 20-087	Project Name: Cloghroe Housing Development	Borehole No.: BH06
Coordinates: 557426.96 E 574456.90 N	Client: BMOR	Sheet 2 of 2
Method: Cable Percussion	Client's Representative: MHL & Associates Ltd	Scale: 1:50
Plant: Pilcon	Ground Level: 24.56 mOD	Dates: 14/09/2020 - 15/09/2020
		Driller: AA Logger: MN

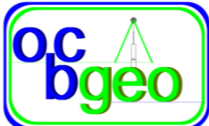




Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill
10.00 - 10.45	SPT (C) N=59			N=59 (8,10/14,11,17,17)				End of borehole at 10.000m		

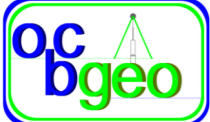



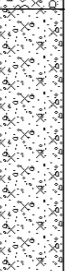
Appendix C

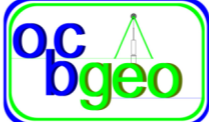





Trial Pit Logs






Remarks Cable Percussion terminated upon reaching scheduled depth.	Water Added		Water Strike - General			
	From (m)	To (m)	Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
			2.40	2.40	20	1.60
			4.60		20	2.00
	Casing Details		Chiselling Details			
To (m)	Diam (mm)	From (m)	To (m)	Time (hh:mm)		
10.00	200					

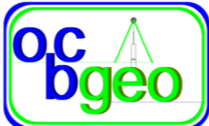




		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP01		
		Co-ordinates: 557218.29 E 574818.78 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd	Scale: 1:20				
Plant: Kobelco E135SR		Ground Level: 42.41 mOD	Date: 28/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.40 - 0.90 0.40 - 0.90	B1 D2		42.01	0.40		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with low cobble content and frequent rootlets, moist.	
1.50 - 2.00 1.50 - 2.00	B3 D4			(1.60)		Firm light brown becoming reddish brown (little orange mottling) sandy gravelly very silty CLAY with low cobble and small boulder content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles and boulders are mostly subangular sandstone.	0.5
2.00 - 2.40 2.00 - 2.40	B5 D6		40.41	2.00		Brown slightly clayey gravelly very silty SAND with low cobble content, moist becoming wet. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and some quartz.	2.0
2.50 - 3.00 2.50 - 3.00	B7 D8	Water seepage from 2.4m, no rise after 20 minutes.	40.01	2.40		Very stiff reddish brown slightly gravelly slightly sandy to sandy CLAY / SILT with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	2.5
			39.41	3.00		End of trial pit at 3.000m	3.0
Remarks			Water Strikes:		Stability: Slight spalling		
			Struck at (m):	Remarks:			
			2.40	Water seepage from 2.4m, no rise after 20 minutes.	Width: 1.30		
					Length: 3.90		

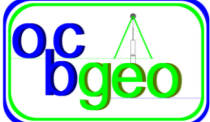
		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP02		
		Co-ordinates: 557279.02 E 574789.96 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd	Scale: 1:20				
Plant: Kobelco E135SR		Ground Level: 43.23 mOD	Date: 28/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.50 - 1.00 0.50 - 1.00	B1 D2		42.93	0.30		TOPSOIL: Soft dark brown slightly gravelly sandy very silty CLAY with frequent rootlets, moist.	
1.50 - 2.00 1.50 - 2.00	B3 D4		42.73	0.50		Orange brown slightly silty very gravelly SAND with low cobble content and occasional rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	0.5
1.50 - 2.00 1.50 - 2.00	B3 D4			(1.90)		Brown silty very gravelly SAND with low cobble and small boulder content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	1.5
2.60 - 3.10 2.60 - 3.10	B5 D6		40.83	2.40		Dark brown silty very gravelly SAND with low cobble and small boulder content, moist t wet. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	2.5
			39.63	3.60		End of trial pit at 3.600m	3.0
Remarks			Water Strikes:		Stability: Slight spalling		
			Struck at (m):	Remarks:			
				None Encountered	Width: 1.30		
					Length: 3.80		

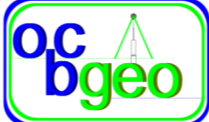
		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP03		
		Co-ordinates: 557366.05 E 574837.00 N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: 44.24 mOD	Date: 28/09/2020		Scale: 1:20		
Plant: Kobelco E135SR				Driver: TW	Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.60 - 1.10 0.60 - 1.10	B1 D2		43.94	0.30 (0.30)		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with low cobble content and frequent rootlets, moist.	
			43.64	0.60 (0.30)		Firm light greyish brown sandy gravelly very silty CLAY with low cobble content and occasional rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	0.5
1.60 - 2.10 1.60 - 2.10	B3 D4			0.60 (1.70)		Firm becoming stiff orange brown and light greyish brown mottled sandy gravelly very silty CLAY with low to medium cobble content and low small boulder content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles and boulders are subangular, sandstone, siltstone and occasional quartz.	1.0
2.50 - 3.00 2.50 - 3.00	B5 D6		41.94	2.30 (0.70)		Brown silty very gravelly SAND with low cobble content, moist to wet. Sand is fine to coarse. Gravel is fine to coarse, mostly subangular. Cobbles are subangular, siltstone, sandstone and occasional quartz.	2.5
			41.24	3.00		End of trial pit at 3.000m	3.0
Remarks Water seepage from 2.8m, no rise after 20 minutes.			Water Strikes:		Stability:		
			Struck at (m): 2.80	Remarks: Water seepage from 2.8m, no rise after 20 minutes.	Slight spalling		Width: 1.30 Length: 4.40

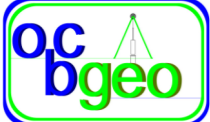




		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP04		
		Co-ordinates: 557390.99 E 574729.00 N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: 37.96 mOD	Date: 25/09/2020		Scale: 1:20		
Plant: Kobelco E135SR				Driver: TW	Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.40 - 0.90 0.40 - 0.90	B1 D2		37.66	0.30 (0.30)		TOPSOIL / SUBSOIL: Soft dark brown becoming greyish brown slightly sandy silty CLAY with occasional gravel and rootlets.	
			37.06	0.90 (0.60)		Firm light greyish brown and orange brown mottled slightly sandy slightly gravelly silty CLAY with low cobble content and occasional partially decayed rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular.	0.5
0.90 - 1.15 0.90 - 1.15	B3 D4		36.81	1.15 (0.25)		Light brown clayey silty sandy GRAVEL with medium cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.	1.0
1.30 - 1.80 1.30 - 1.80	B5 D6			1.15 (1.25)		Stiff orange brown mottled light brownish grey slightly sandy slightly gravelly silty CLAY with low cobble content, moist.	1.5
2.40 - 2.90 2.40 - 2.90	B7 B8	Water seepage from 2.5m, slight pooling after 20 minutes.	35.56	2.40 (0.60)		Yellowish brown slightly clayey slightly silty very sandy GRAVEL with medium to high cobble and small boulder content, wet. Sand is fine to coarse. Gravel is fine to coarse, angular subangular. Cobbles and boulders are subangular, sandstone, siltstone and occasional quartz.	2.5
			34.96	3.00		End of trial pit at 3.000m	3.0
Remarks Water seepage from 2.5m, slight pooling after 20 minutes.			Water Strikes:		Stability:		
			Struck at (m): 2.50	Remarks: Water seepage from 2.5m, slight pooling after 20 minutes.	Slight spalling in gravel		Width: 1.30 Length: 4.70






		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP05		
		Co-ordinates: 557325.98 E 574653.08 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd		Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 29.42 mOD	Date: 24/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.30 - 0.80 0.30 - 0.80	B1 D2		29.17	0.25		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist.	
				(0.55)		Firm light greyish brown with a little orange brown mottling slightly sandy slightly gravelly silty CLAY with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and occasional quartz.	0.5
1.00 - 1.50 1.00 - 1.50	B3 D4		28.62	0.80		Brown with a little orange brown mottling slightly clayey slightly silty very gravelly SAND with low cobble and small boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles and boulders are mostly subangular, sandstone.	1.0
				(0.90)			1.5
		Steady inflow from 1.65m, rose from base to 1.65m depth after 20 minutes.	27.72	1.70		End of trial pit at 1.700m	2.0
							2.5
							3.0
							3.5
Remarks			Water Strikes:		Stability: Spalling below 0.8m		
			Struck at (m):	Remarks:			
			1.65	Steady inflow from 1.65m, rose from base to 1.65m depth after 20 minutes.			
		Width: 1.15					
		Length: 2.40					






		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP06		
		Co-ordinates: 557475.99 E 574634.01 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd		Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 28.80 mOD	Date: 25/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.30 - 0.80 0.30 - 0.80	B1 D2		28.55	0.25		TOPSOIL: Soft dark greyish brown sandy CLAY with occasional gravel and frequent rootlets, moist.	
				(0.55)		Soft becoming light brownish grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	0.5
1.00 - 1.50 1.00 - 1.50	B3 D4		28.00	0.80		Firm brown gravelly very silty very sandy CLAY with medium cobble and low small boulder content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles and boulders are mostly subangular, sandstone.	1.0
				(0.90)			1.5
			27.10	1.70		End of trial pit at 1.700m	2.0
							2.5
							3.0
							3.5
Remarks			Water Strikes:		Stability: Slight spalling below 0.8m		
			Struck at (m):	Remarks:			
				None Encountered			
		Width: 1.15					
		Length: 2.30					

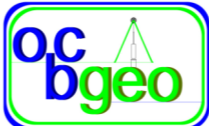
		Project No.: 20-087	Project Name: Cloghroe Housing Development	Trial Pit No.: TP07			
		Co-ordinates: 557422.73 E 574567.01 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1			
Method: Excavation				Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 25.82 mOD	Date: 24/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.15 - 0.50 0.15 - 0.50	B1 D2		25.67	(0.15) 0.15		TOPSOIL / MADE GROUND: Soft greyish brown slightly gravelly sandy silty clay with frequent rootlets, moist.	
				(0.35)		MADE GROUND: Soft light brown slightly gravelly sandy very silty Clay with low cobble and small boulder content and occasional rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles and boulders are subangular, sandstone, siltstone and occasional quartz.	
0.70 - 1.20 0.70 - 1.20	B3 B4		25.32 25.12	0.50 (0.20) 0.70		FORMER TOPSOIL: Soft dark greyish brown slightly sandy slightly gravelly silty CLAY with occasional partially decayed rootlets, moist. Firm light grey with a little orange brown mottling slightly gravelly sandy CLAY with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, angular subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	0.5
				(0.90)		STONE FIELD DRAIN - Along south side of TP (1.1m - 1.7m)	
1.70 - 2.20 1.70 - 2.20	B5 D6	Rapid water inflow from west end of field drain at 1.6m. Rose to 0.45m after 20 minutes.	24.22	1.60		Firm grey slightly sandy gravelly CLAY with low cobble content, moist to wet. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	1.0
				(0.60)			1.5
2.20 - 2.40 2.20 - 2.40	B7 D8		23.62	2.20		Firm to stiff light grey to grey and locally pale yellow slightly sandy gravelly silty CLAY with low cobble and small boulder content, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subrounded, sandstone, siltstone, limestone and occasional quartz.	2.0
2.40 - 2.80 2.40 - 2.80	B9 D10		23.02	2.80		End of trial pit at 2.800m	2.5
Remarks		Water Strikes:		Stability:			
		Struck at (m): 1.60		Remarks: Rapid water inflow from west end of field drain at 1.6m. Rose to 0.45m after		Sides collapsing below groundwater	
						Width: 1.30 Length: 4.70	




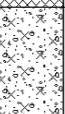
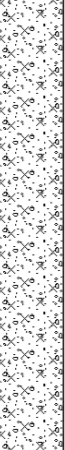
		Project No.: 20-087	Project Name: Cloghroe Housing Development	Trial Pit No.: TP08			
		Co-ordinates: 557355.03 E 574513.10 N	Client: BMOR Client's Representative: MHL & Associates Ltd	Sheet 1 of 1			
Method: Excavation				Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 25.30 mOD	Date: 24/09/2020	Driver: TW			
				Logger: MN			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.20 - 0.70 0.20 - 0.70	B1 D2		25.10	(0.20) 0.20		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist. Possible MADE GROUND: Firm light greyish brown with some reddish brown slightly sandy slightly gravelly to gravelly silty CLAY with low cobble content and occasional rootlets, moist becoming wet. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and occasional quartz.	
				(0.50)			0.5
1.00 - 1.50 1.00 - 1.50	B3 D4	Rapid water inflow from 0.8m, rose to 0.6m after 20 minutes.	24.60	0.70		Stiff reddish brown sandy gravelly clayey SILT with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and occasional quartz. Possible former STONE FIELD DRAIN. Angular and tabular boulder-sized slabs of purple siltstone.	1.0
				(1.00)			1.5
			23.60	1.70		End of trial pit at 1.700m	2.0
Remarks		Water Strikes:		Stability:			
		Struck at (m): 0.80		Remarks: Rapid water inflow from 0.8m, rose to 0.6m after 20 minutes.		Sides collapsing	
						Width: 1.60 Length: 4.50	




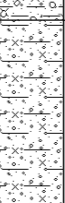
		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP09		
		Co-ordinates: 557412.16 E 574444.10 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd		Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 24.42 mOD	Date: 24/09/2020	Driver: TW	Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.60 - 1.10 0.60 - 1.10	B1 D2		24.22	0.20		TOPSOIL / SUBSOIL: Soft dark brown becoming greyish brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist.	
				(1.20)		Firm becoming stiff light greyish brown with a little orange brown mottling slightly sandy slightly gravelly silty CLAY with low cobble content and occasional partially decayed rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and occasional quartz.	0.5
1.70 - 2.20 1.70 - 2.20	B3 D4		23.02	1.40		Purplish brown silty fine SAND with occasional thin interbeds of fine sandy silt and slightly gravelly fine to medium sand, moist.	1.5
2.70 - 3.20 2.70 - 3.20	B5 D6	Rapid water inflow from 2.7m, rose to 2.6m after 20 minutes.	21.72	2.70		Brown slightly silty very sandy GRAVEL with low cobble content, wet. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	3.0
			21.22	3.20		End of trial pit at 3.200m	3.5
Remarks			Water Strikes:		Stability: Sides collapsing		
			Struck at (m): 2.70	Remarks: Rapid water inflow from 2.7m, rose to 2.6m after 20 minutes.			
			Width: 2.60	Length: 4.40			

		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP10		
		Co-ordinates: 557254.03 E 574749.06 N	Client: BMOR	Sheet 1 of 1			
Method: Excavation		Client's Representative: MHL & Associates Ltd		Scale: 1:20			
Plant: Kobelco E135SR		Ground Level: 36.71 mOD	Date: 25/09/2020	Driver: TW	Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.60 - 1.10 0.60 - 1.10	B1 D2		36.46	0.25		TOPSOIL: Soft dark brown slightly and slightly gravelly CLAY with frequent rootlets, moist.	
				(0.85)		Firm light greyish brown with a little orange brown mottling slightly gravelly sandy very silty CLAY with low cobble content and occasional brown partially decayed rootlets, moist.	0.5
1.10 - 1.45 1.10 - 1.45	B3 D4		35.61	1.10		Greyish brown slightly sandy very gravelly CLAY with low cobble content, moist becoming wet.	1.0
1.45 - 1.70 1.45 - 1.70	B5 D6	Steady water inflow from 1.45m, rose to 1.6m after 20 minutes.	35.26	1.45		Firm to stiff light brownish grey mottled orange brown sandy gravelly silty CLAY with medium cobble content and low small boulder content, moist.	1.5
			35.01	1.70		End of trial pit at 1.700m	2.0
Remarks			Water Strikes:		Stability: Slight spalling below 1.0m		
			Struck at (m): 1.45	Remarks: Steady water inflow from 1.45m, rose to 1.6m after 20 minutes.			
			Width: 1.15	Length: 2.20			

		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP11		
		Co-ordinates: 557313.07 E 574719.01 N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: 37.83 mOD	Date: 25/09/2020		Scale: 1:20		
Plant: Kobelco E135SR					Driver: TW		
					Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.50 - 1.00 0.50 - 1.00	B1 D2		37.58	0.25 (0.15)		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist. Firm light greyish brown slightly sandy slightly gravelly silty CLAY with low cobble content and occasional rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz. Stiff brown / orange and light grey mottled sandy gravelly very silty CLAY with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Cobbles are subangular, sandstone, siltstone and occasional quartz.	0.5
1.60 - 2.10 1.60 - 2.10	B3 D4		36.73	1.10 (0.20)		Brown clayey silty sandy GRAVEL with low to medium cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular.	
2.30 - 2.80 2.30 - 2.80	B5 D6		36.53	1.30 (1.50)		Stiff orange brown and light grey to grey mottled slightly sandy gravelly silty CLAY with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	
2.80 - 3.30 2.80 - 3.30	B7 D8		35.03	2.80 (0.50)		Very stiff light grey mottled orange brown slightly sandy slightly gravelly silty CLAY, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are subangular, sandstone, siltstone and occasional quartz.	
			34.53	3.30		End of trial pit at 3.300m	
Remarks			Water Strikes:		Stability: Good		
			Struck at (m):	Remarks:			
				None Encountered	Width: 1.20 Length: 4.20		

		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP12		
		Co-ordinates: 557341.78 E 574612.44 N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: 27.43 mOD	Date: 24/09/2020		Scale: 1:20		
Plant: Kobelco E135SR					Driver: TW		
					Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.70 - 1.20 0.70 - 1.20	B1 D2		27.18	0.25 (1.15)		TOPSOIL: Soft dark brown becoming greyish brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist. Firm becoming stiff light brownish grey with a little orange brown mottling slightly sandy slightly gravelly very silty CLAY with low cobble content and occasional rootlets, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subrounded.	0.5
1.60 - 2.10 1.60 - 2.10	B3 D4		26.03	1.40 (1.10)		Stiff purplish brown slightly sandy slightly gravelly CLAY with low cobble content, moist. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subrounded.	
2.50 - 2.70 2.50 - 2.70	B5 D6		24.93	2.50 (0.60)		Brown slightly clayey slightly silty very sandy GRAVEL with medium cobble content and with a thin dark partially cemented iron pan layer near the upper surfaces, moist becoming wet. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subrounded.	
2.70 - 3.10 2.70 - 3.10	B7 D8	Steady water inflow from 2.8m, no rise after 20 minutes.	24.33	3.10		End of trial pit at 3.100m	
Remarks			Water Strikes:		Stability: Sides collapsing below 2.5m		
			Struck at (m):	Remarks:			
			2.80	Steady water inflow from 2.8m, no rise after 20 minutes.	Width: 1.20 Length: 5.50		

		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP13		
		Co-ordinates: 557412.03 E 574509.00 N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: 25.59 mOD		Date: 24/09/2020	Scale: 1:20		
Plant: Kobelco E135SR					Driver: TW		
					Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.50 - 1.00 0.50 - 1.00	B1 D2		25.39	0.20		TOPSOIL: Soft dark brown slightly sandy slightly gravelly silty CLAY with frequent rootlets, moist.	
						Possible MADE GROUND: Firm light greyish brown with some reddish brown slightly sandy slightly gravelly to gravelly silty CLAY with low cobble content and occasional rootlets, moist becoming wet. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are subangular to subrounded, sandstone, siltstone and occasional quartz.	0.5
1.70 - 2.20 1.70 - 2.20	B3 D4		23.89	1.70		Brown slightly gravelly silty to very silty fine to medium SAND with occasional interbeds of slightly gravelly sandy silt, moist becoming wet. Sand is fine to medium. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subangular, sandstone, siltstone and occasional quartz.	1.0
2.70 - 3.20 2.70 - 3.20	B5 D6	Seepage from 2.5m, no rise after 20 minutes.	22.39	3.20			1.5
						End of trial pit at 3.300m	2.0
							2.5
							3.0
							3.5
Remarks			Water Strikes:		Stability: Spalling below 1.7m		
			Struck at (m):	Remarks:			
			2.50	Seepage from 2.5m, no rise after 20 minutes.	Width: 1.20 Length: 5.20		

		Project No.: 20-087	Project Name: Cloghroe Housing Development		Trial Pit No.: TP14		
		Co-ordinates: E N	Client: BMOR Client's Representative: MHL & Associates Ltd		Sheet 1 of 1		
Method: Excavation		Ground Level: mOD		Date: 25/09/2020	Scale: 1:20		
Plant: Kobelco E135SR					Driver: TW		
					Logger: MN		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water
0.50 - 1.00 0.50 - 1.00	B1 D2			0.20		TOPSOIL: Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets, moist.	
						Firm becoming stiff greyish brown becoming orange brown mottled slightly gravelly to gravelly sandy very silty CLAY with low cobble content, moist.	0.5
1.30 - 1.80 1.30 - 1.80	B3 D4	Water seepage from 1.4m, no rise after 20 minutes.		1.20		Brown with a little orange brown mottling slightly clayey slightly silty very sandy GRAVEL with low cobble content, moist to wet.	1.0
						End of trial pit at 1.900m	1.5
							2.0
							2.5
							3.0
							3.5
Remarks			Water Strikes:		Stability: Slight spalling below 1.2m		
			Struck at (m):	Remarks:			
			1.40	Water seepage from 1.4m, no rise after 20 minutes.	Width: 1.20 Length: 2.90		

Appendix D

Trial Pit Photographs



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	T.PIT1
	Trial Pit Photographs
Client:	BMOR
Engineer:	MHL & Associates Ltd
Date:	September 2020



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T.PIT2
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	T.PIT2
	Trial Pit Photographs
Client:	BMOR
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	T.PIT2
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T.PIT3
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	T.PIT3
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T.PIT8
Trial Pit Photographs
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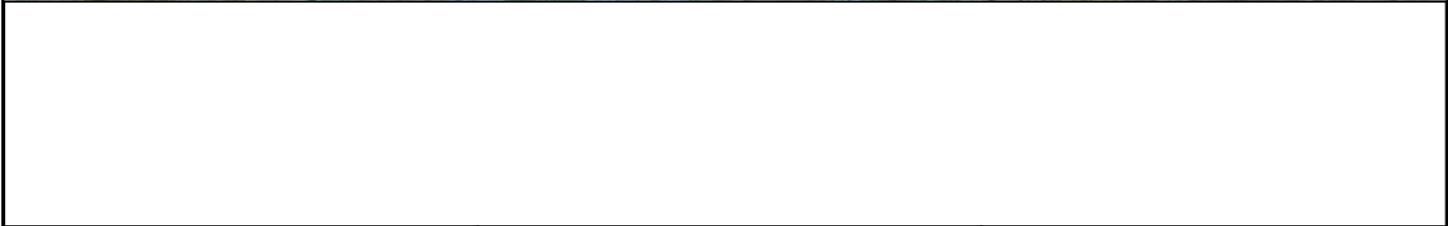
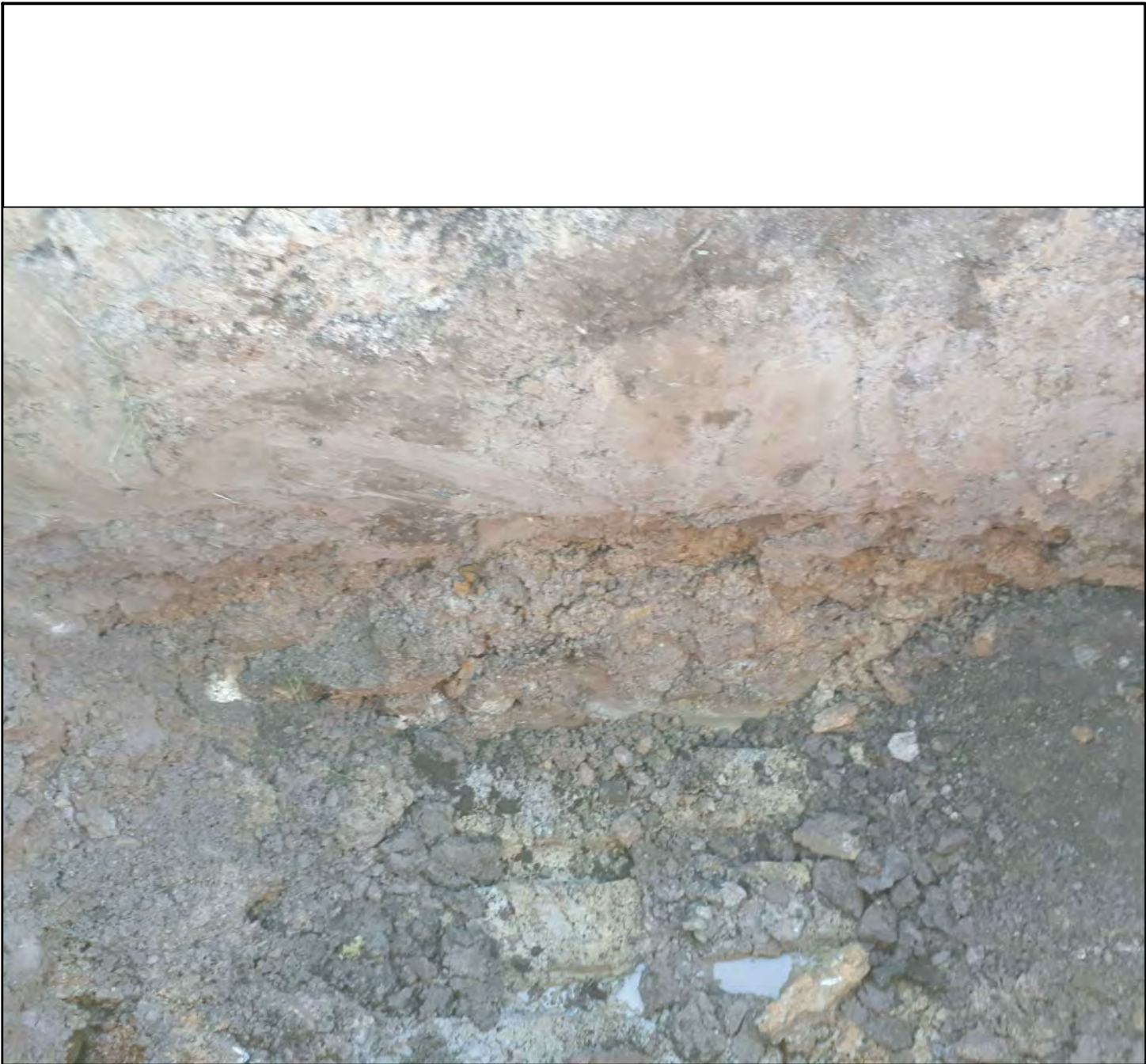
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Trial Pit Photographs
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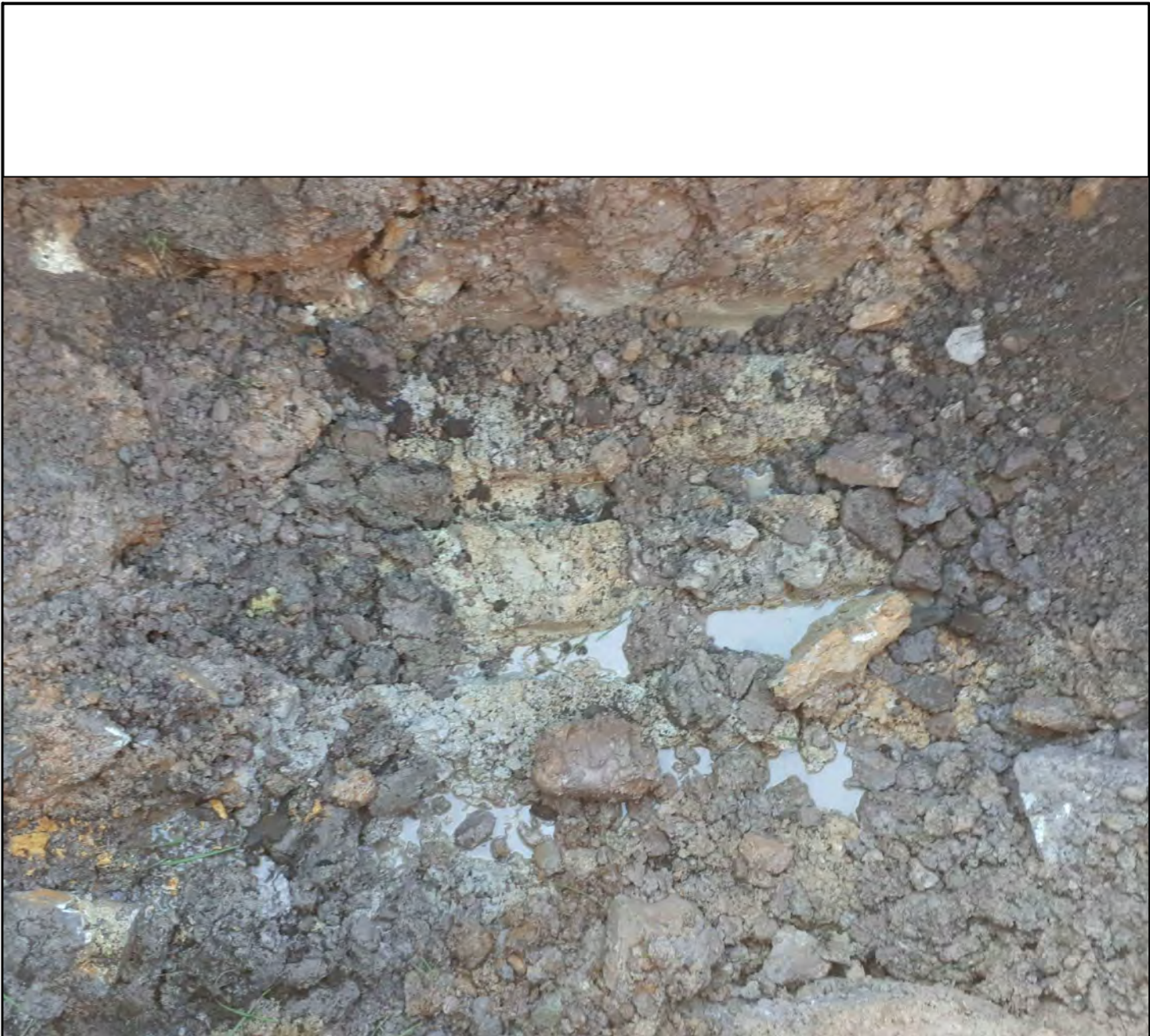
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T.PIT12
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	T.PIT12
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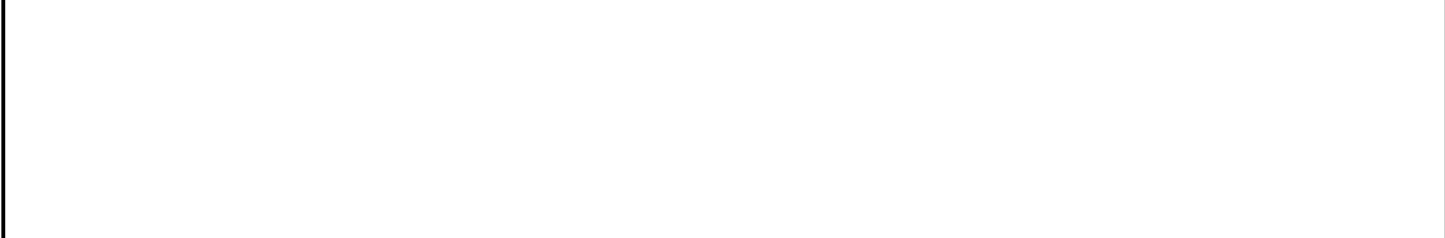
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T.PIT13
Trial Pit Photographs
Client: BMOR
Engineer: MHL & Associates Ltd
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T.PIT13
Trial Pit Photographs
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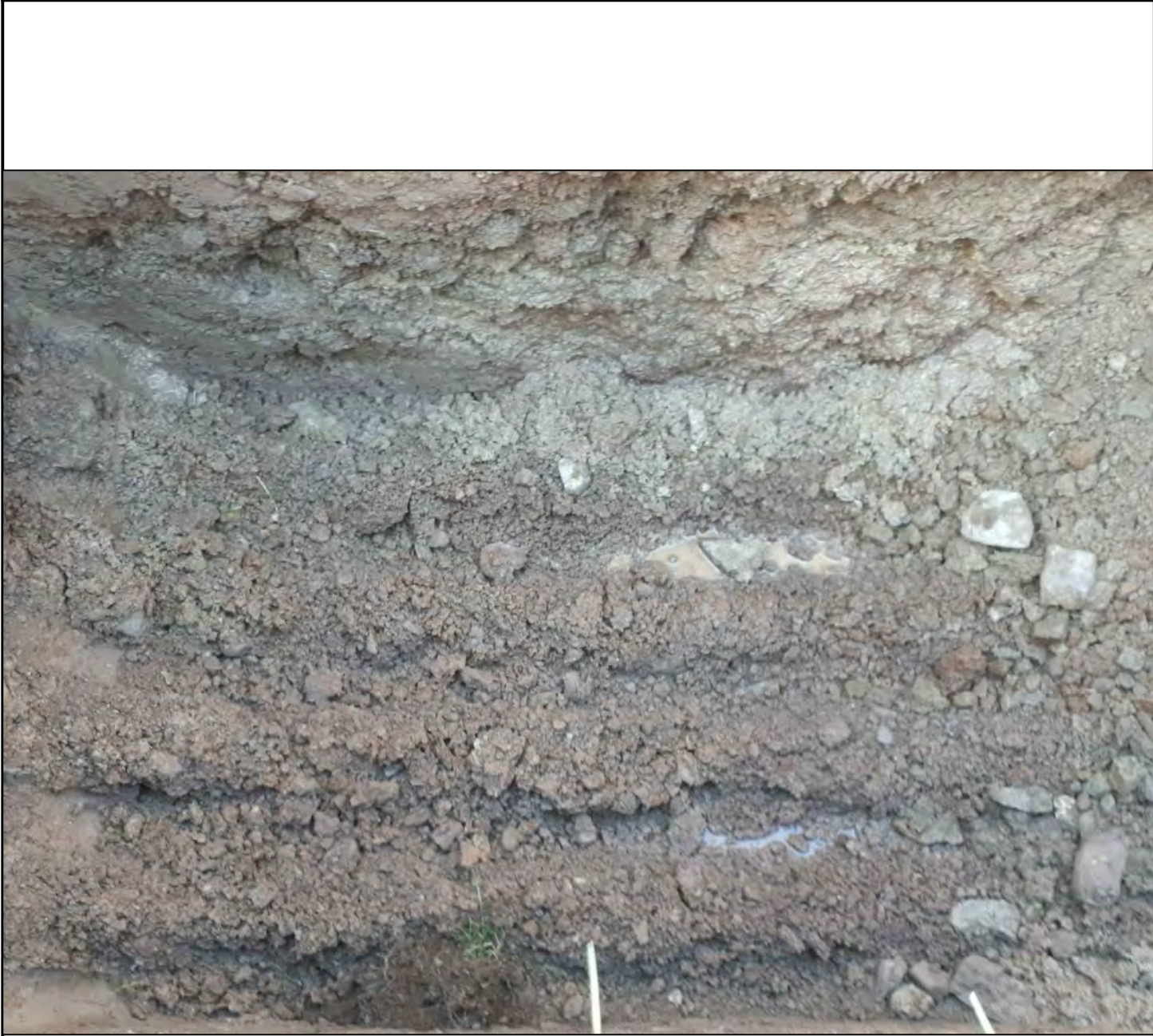
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Appendix E

CBR Test Data



Cloghroe Housing
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T.PIT14
Trial Pit Photographs
Client: BMOR
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CBR TEST DATA

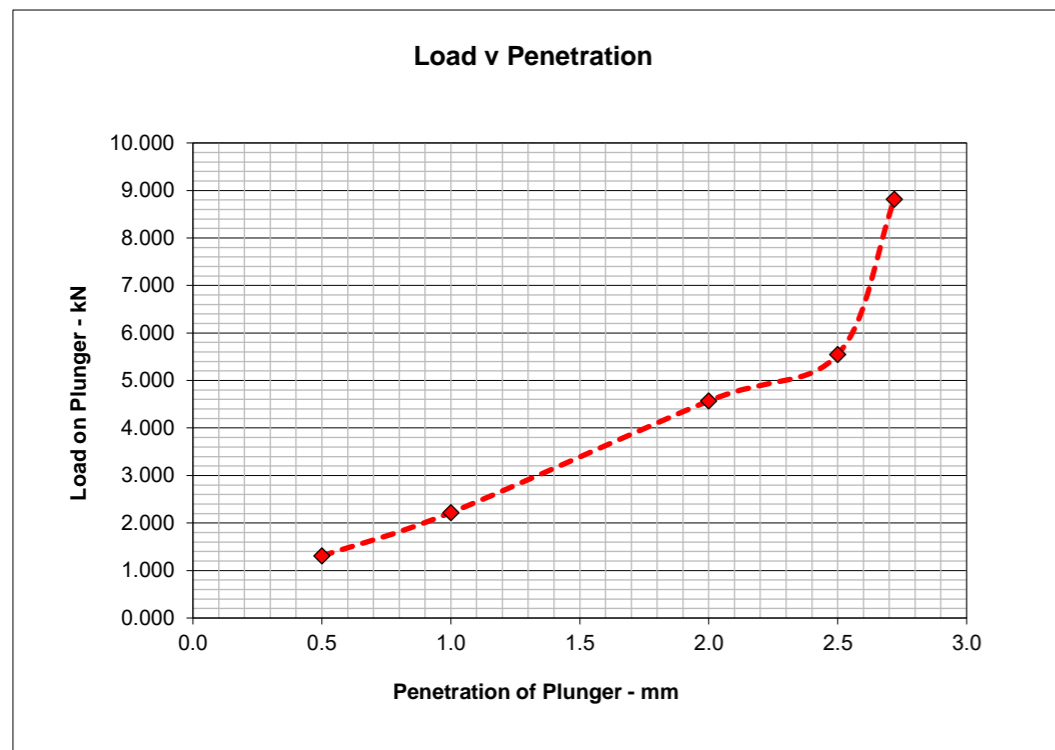
OCB Geotechnical Ltd

Project Name	Cloghroe Housing Development	Date	17/09/20
Project No.	20-087	Operator	GOC
Test Location	CBR1	Depth	0.385m

Penetration (mm)	Standard load (kg)	$I_{2.5} = \frac{\text{Load at 2.5mm penetration}}{1370} \times 100$
2.5	1370	
5	2055	
7.5	2630	
10	3180	
12.5	3600	

Penetration (mm)	Standard load (kg)	$I_{5} = \frac{\text{Load at 5mm penetration}}{2055} \times 100$
2.5	1370	
5	2055	
7.5	2630	
10	3180	
12.5	3600	

Penetration (mm)	Load Reading (Divisions)	Load Reading (kN)	Standard Load (Kg)	Load (Kg)	CBR (%)
0.5	40.0	1.305		133	
1	68.0	2.219		226	
2	140.0	4.569		466	
2.5	170.0	5.548	1370	566	41.30
3	270.0	8.812		899	



CBR TEST DATA

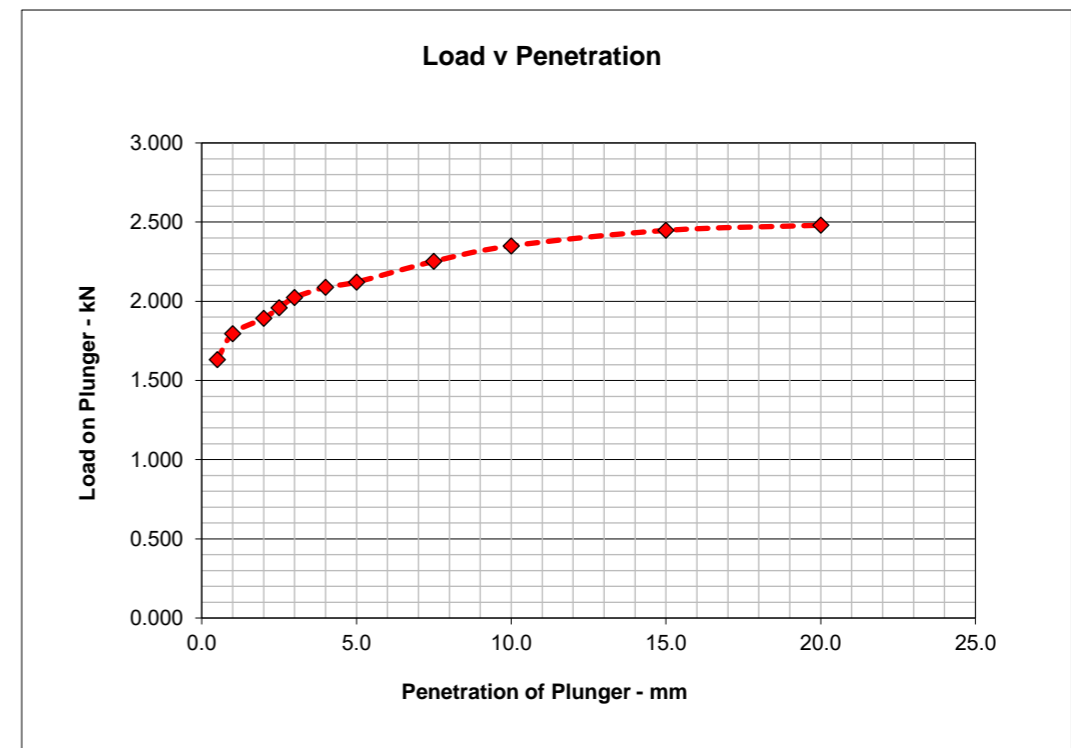
OCB Geotechnical Ltd

Project Name	Cloghroe Housing Development	Date	17/09/20
Project No.	20-087	Operator	GOC
Test Location	CBR2	Depth	0.385m

Penetration (mm)	Standard load (kg)	$I_{2.5} = \frac{\text{Load at 2.5mm penetration}}{1370} \times 100$
2.5	1370	
5	2055	
7.5	2630	
10	3180	
12.5	3600	

Penetration (mm)	Standard load (kg)	$I_{5} = \frac{\text{Load at 5mm penetration}}{2055} \times 100$
2.5	1370	
5	2055	
7.5	2630	
10	3180	
12.5	3600	

Penetration (mm)	Load Reading (Divisions)	Load Reading (kN)	Standard Load (Kg)	Load (Kg)	CBR (%)
0.5	50.0	1.632		166	
1	55.0	1.795		183	
2	58.0	1.893		193	
2.5	60.0	1.958	1370	200	14.58
3	62.0	2.024		206	
4	64.0	2.089		213	
5	65.0	2.121	2055	216	10.53
7.5	69.0	2.252		230	
10	72.0	2.350		240	
15	75.0	2.448		250	
20	76.0	2.480		253	



CBR TEST DATA

OCB Geotechnical Ltd

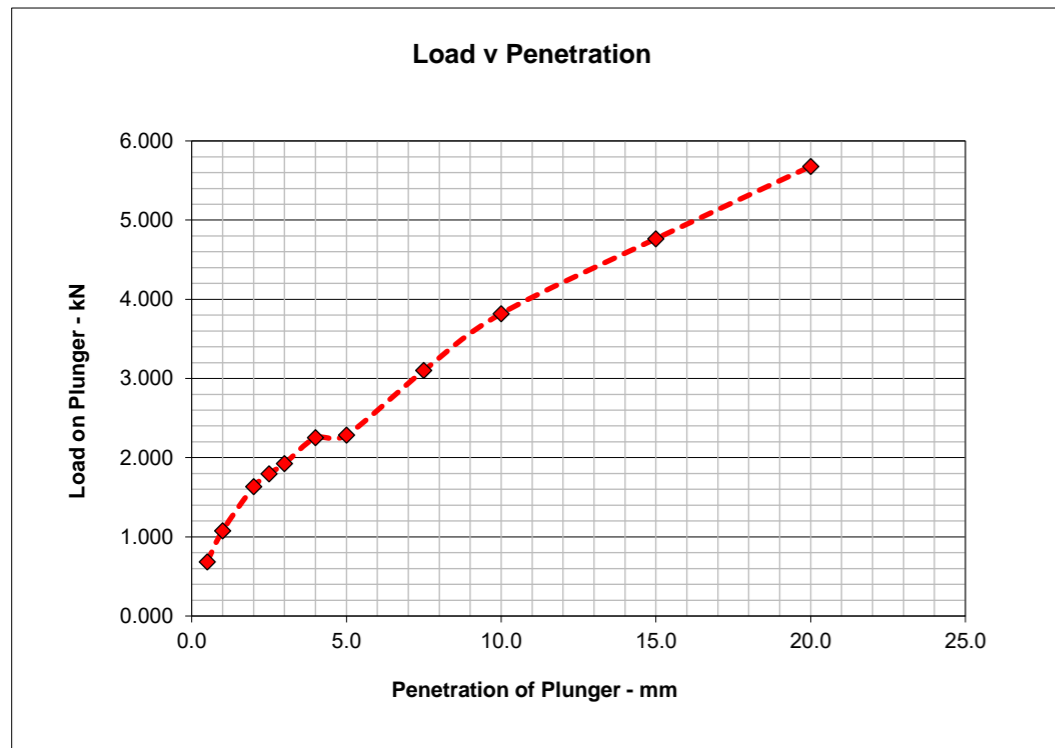
Project Name	Cloghroe Housing Development	Date	18/09/20
Project No.	20-087	Operator	GOC
Test Location	CBR3	Depth	0.385m

Penetration (mm)	Standard load (kg)	$I_{2.5} = \frac{\text{Load at 2.5mm penetration}}{1370} \times 100$
2.5	1370	
5	2055	$I_5 = \frac{\text{Load at 5mm penetration}}{2055} \times 100$
7.5	2630	
10	3180	
12.5	3600	

Penetration (mm)	Load Reading (Divisions)	Load Reading (kN)	Standard Load (Kg)	Load (Kg)	CBR (%)
0.5	21.0	0.685		70	
1	33.0	1.077		110	
2	50.0	1.632		166	
2.5	55.0	1.795	1370	183	13.36
3	59.0	1.926		196	
4	69.0	2.252		230	
5	70.0	2.285	2055	233	11.34
7.5	95.0	3.101		316	
10	117.0	3.819		389	
15	146.0	4.765		486	
20	174.0	5.679		579	

Appendix F

Infiltration Test Data



INFILTRATION TEST DATA

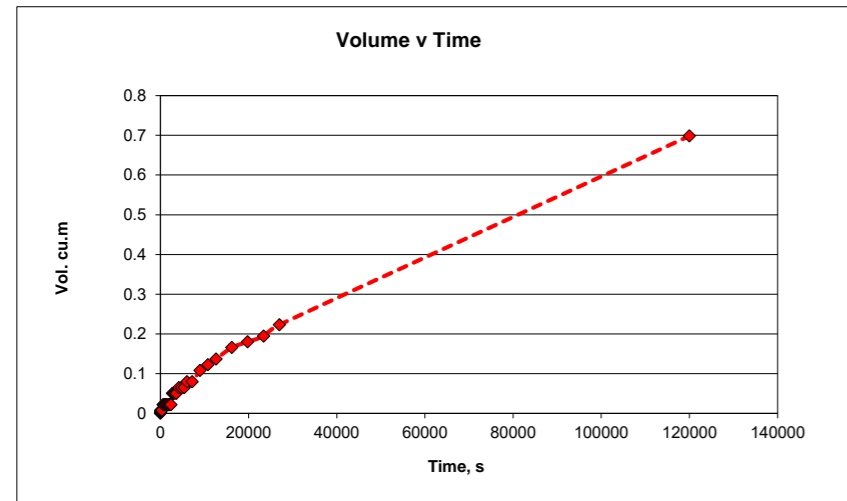
OCB Geotechnical Ltd

Project Name	Cloghroe Housing Development		Date	25/09/20	
Project No.	20-087		Location	TP05	
Easting	557325.98	Northing	574653.08	Level	29.42

length, m 2.4 b, m (wid 1.2 depth, m 1.7
 l_base, m 1.2 d_eff, m 0.645
 l_eff, m 1.8

Time, min	Measure	Time, sec	depth	Fall, m	Volume
0	0.645	0	1.055	0	0
0.5	0.647	30	1.053	0.002	0.00288
0.75	0.648	45	1.052	0.003	0.00432
1	0.649	60	1.051	0.004	0.00576
2	0.65	120	1.05	0.005	0.0072
3	0.65	180	1.05	0.005	0.0072
4	0.65	240	1.05	0.005	0.0072
5	0.65	300	1.05	0.005	0.0072
10	0.66	600	1.04	0.015	0.0216
15	0.66	900	1.04	0.015	0.0216
20	0.660	1200	1.040	0.015	0.0216
25	0.660	1500	1.040	0.015	0.0216
30	0.660	1800	1.040	0.015	0.0216
35	0.66	2100	1.04	0.015	0.0216
40	0.660	2400	1.040	0.015	0.0216
45	0.680	2700	1.020	0.035	0.0504
50	0.68	3000	1.02	0.035	0.0504
55	0.680	3300	1.020	0.035	0.0504
60	0.680	3600	1.020	0.035	0.0504
70	0.690	4200	1.010	0.045	0.0648
80	0.690	4800	1.010	0.045	0.0648
90	0.690	5400	1.010	0.045	0.0648
100	0.700	6000	1.000	0.055	0.0792
120	0.7	7200	1.000	0.055	0.0792
150	0.72	9000	0.980	0.075	0.108
180	0.73	10800	0.970	0.085	0.1224
210	0.74	12600	0.960	0.095	0.1368
270	0.76	16200	0.940	0.115	0.1656
330	0.77	19800	0.930	0.125	0.18
390	0.78	23400	0.920	0.135	0.1944
450	0.8	27000	0.900	0.155	0.2232
2000	1.13	120000	0.570	0.485	0.6984

Area 1.44 m²
 50% Area_eff, a_{p50} 3.375 m²
 $V_{p75-25 \text{ theory}}$ volume 0.6966 m³
 V_{p75-25} volume 1.2384
 t_{p75-25} time 114000 s
Infiltration Coefficient f 3.2E-06 ms⁻¹



NOTES:
 Last datapoint extrapolated from available data to facilitate an estimated Infiltration Coefficient calculation

INFILTRATION TEST DATA

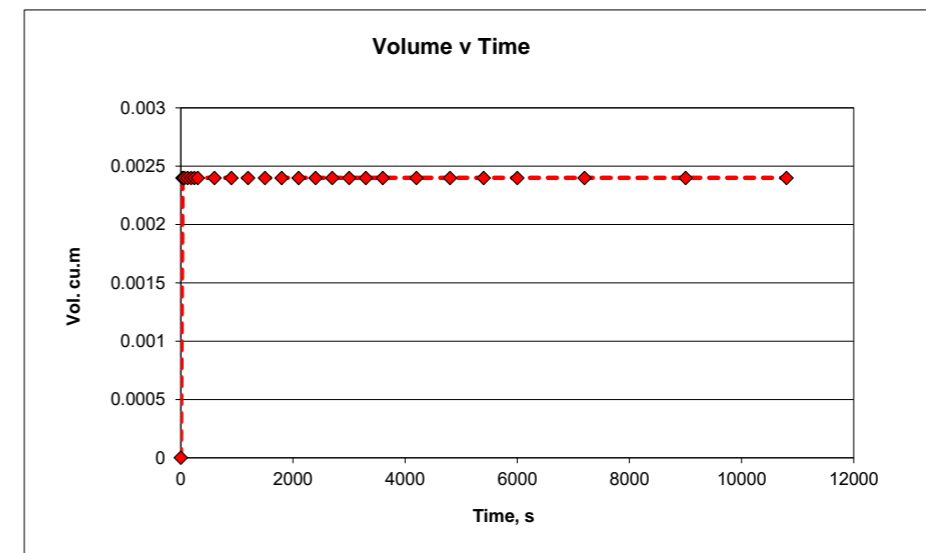
OCB Geotechnical Ltd

Project Name	Cloghroe Housing Development		Date	25/09/20	
Project No.	20-087		Location	TP06	
Easting	557475.99	Northing	574634.01	Level	28.804

length, m 2.3 b, m (wid 1.2 depth, m 1.5
 l_base, m 2 d_eff, m 0.7
 l_eff, m 2.15

Time, min	Measure	Time, sec	depth	Fall, m	Volume
0	0.700	0	0.8	0	0
0.5	0.701	30	0.799	0.001	0.0024
0.75	0.701	45	0.799	0.001	0.0024
1	0.701	60	0.799	0.001	0.0024
2	0.701	120	0.799	0.001	0.0024
3	0.701	180	0.799	0.001	0.0024
4	0.701	240	0.799	0.001	0.0024
5	0.701	300	0.799	0.001	0.0024
10	0.701	600	0.799	0.001	0.0024
15	0.701	900	0.799	0.001	0.0024
20	0.701	1200	0.799	0.001	0.0024
25	0.701	1500	0.799	0.001	0.0024
30	0.701	1800	0.799	0.001	0.0024
35	0.701	2100	0.799	0.001	0.0024
40	0.701	2400	0.799	0.001	0.0024
45	0.701	2700	0.799	0.001	0.0024
50	0.701	3000	0.799	0.001	0.0024
55	0.701	3300	0.799	0.001	0.0024
60	0.701	3600	0.799	0.001	0.0024
70	0.701	4200	0.799	0.001	0.0024
80	0.701	4800	0.799	0.001	0.0024
90	0.701	5400	0.799	0.001	0.0024
100	0.701	6000	0.799	0.001	0.0024
120	0.701	7200	0.799	0.001	0.0024
150	0.701	9000	0.799	0.001	0.0024
180	0.701	10800	0.799	0.001	0.0024

Area 2.4 m²
 50% Area_eff, a_{p50} 4.745 m²
 $V_{p75-25 \text{ theory}}$ volume 0.903 m³
 V_{p75-25} volume
 t_{p75-25} time s
Infiltration Coefficient f ms⁻¹




NOTES:
 Water level did not fall sufficiently to calculate an Infiltration Coefficient

INDEX PROPERTIES - SUMMARY OF RESULTS

Hole No.	Sample			Soil Description	ρ	ρ_d	W	<425 μ m sieve	W _L	W _P	I _p	ρ_s	Remarks	
	No.	Depth (m)												type
		from	to											
BH01A	3	1.20	2.00	B			5.3							
BH03	3	1.20	2.00	B			11	58 s	22 a	13	9			
BH05	3	1.20	2.00	B			14	50 s	27 a	19	8			
TP07	3	0.70	1.20	B			15							
TP07	5	1.70	2.20	B			12	49 s	24 a	15	9			
TP10	3	1.10	1.45	B			8.8							
TP12	3	1.60	2.10	B			10	66 s	21 a	15	6			

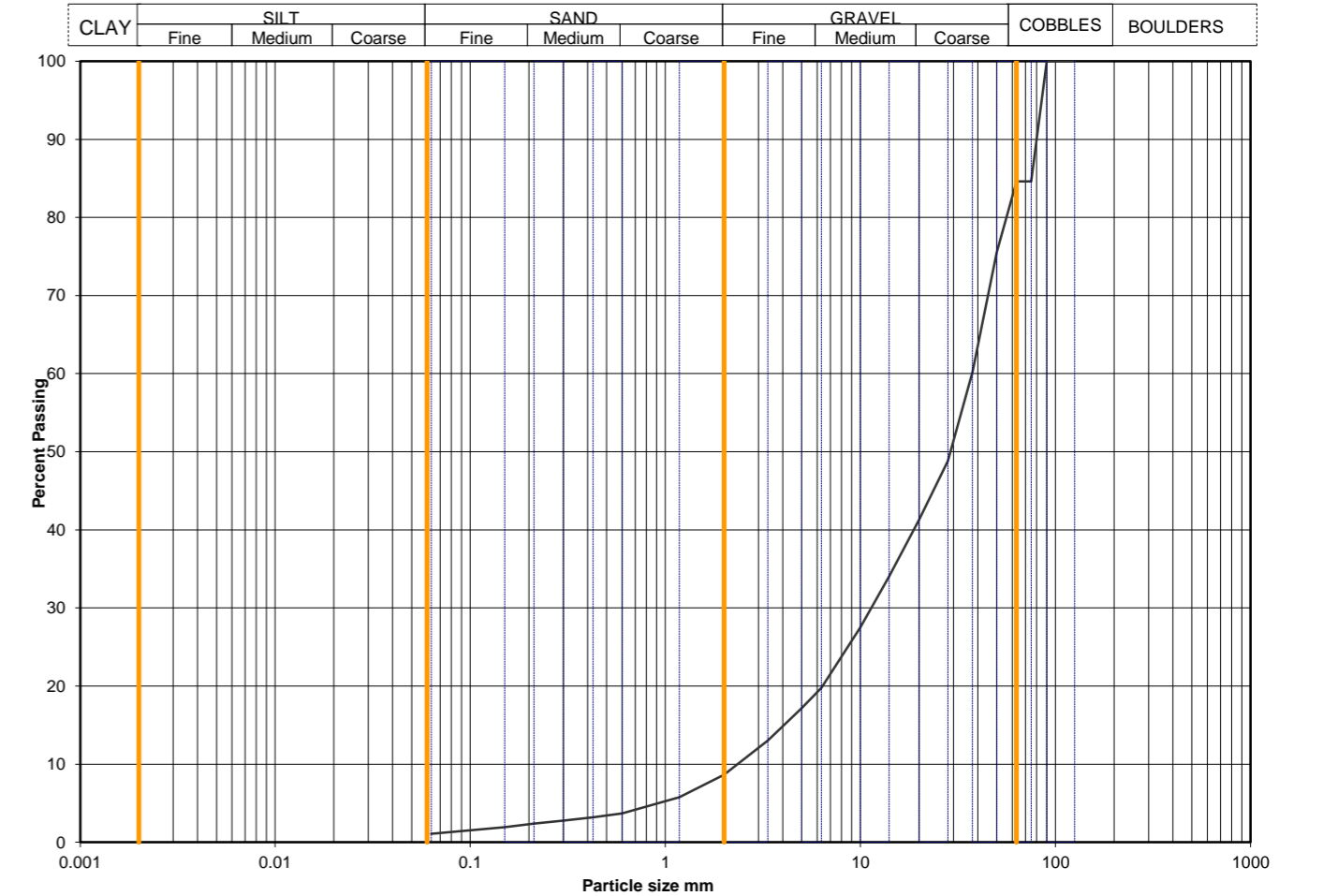
General notes: All above tests carried out to BS1377 : 1990 unless annotated otherwise. See Remarks for further details

Key : ρ bulk density, linear WL Liquid limit WP Plastic limit <425um preparation ρ_s particle density
 ρ_d dry density a 4 point cone test NP non - plastic n from natural soil -g = gas jar
w moisture content b 1 point cone test IP Plasticity Index s sieved specimen -p = small pyknometer
* test carried out to BS EN ISO 17892 h removed by hand

QA Ref SLR 1 Rev 2.95 Mar 17		Project No	N9486-20	Figure INDX
		Project Name	Cloghroe Housing Development	
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH01A
	SOCO2020111916	Sample Depth (m BGL)	1.20 - 2.00
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	85		
63	85		
50	76		
37.5	60		
28	49		
20	41		
14	34		
10	28		
6.3	20		
5.0	17		
3.35	13		
2.00	9		
1.18	6		
0.600	4		
0.425	3		
0.300	3		
0.212	2		
0.150	2		
0.063	1		

Dry mass of sample, kg: 5.4



Soil description	Reddish brown sandy GRAVEL with one cobble.	
Preparation / Pretreatment	Sieve: pre dried,	
Remarks		

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		15.3	0.0
	Gravel	76.0	89.7
	Sand	7.6	9.0
	Silt	silt+clay =	
	Clay	1.1	1.3

*<60mm values to aid description only

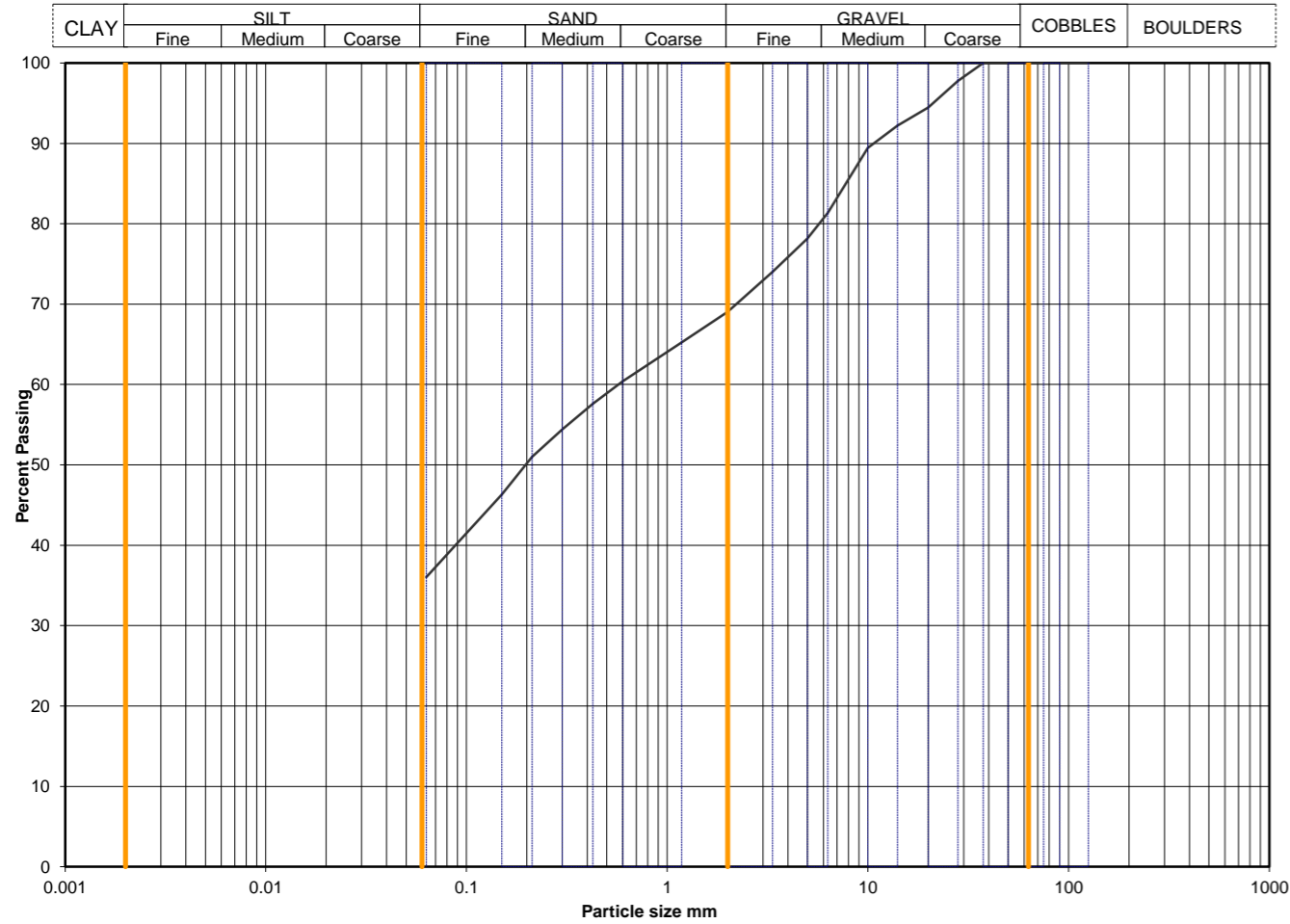
Uniformity Coefficient	D60 / D10	16
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref SLR 2,9 Rev 2.22 Jul 17			Project No	N9486-20	Figure PSD
			Project Name	Cloghroe Housing Development	
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH03
	SOCO2020111917	Sample Depth (m BGL)	1.20 - 2.00
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	94		
14	92		
10	89		
6.3	81		
5.0	78		
3.35	74		
2.00	69		
1.18	65		
0.600	60		
0.425	58		
0.300	54		
0.212	51		
0.150	46		
0.063	36		

Soil description	Brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	31.0	31.0
	Sand	33.0	33.0
	Silt	silt+clay =	
	Clay	36.0	36.0

Uniformity Coefficient	D60 / D10	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
1.8

QA Ref
SLR 2,9
Rev 2.22
Jul 17



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Project Name Cloghroe Housing Development

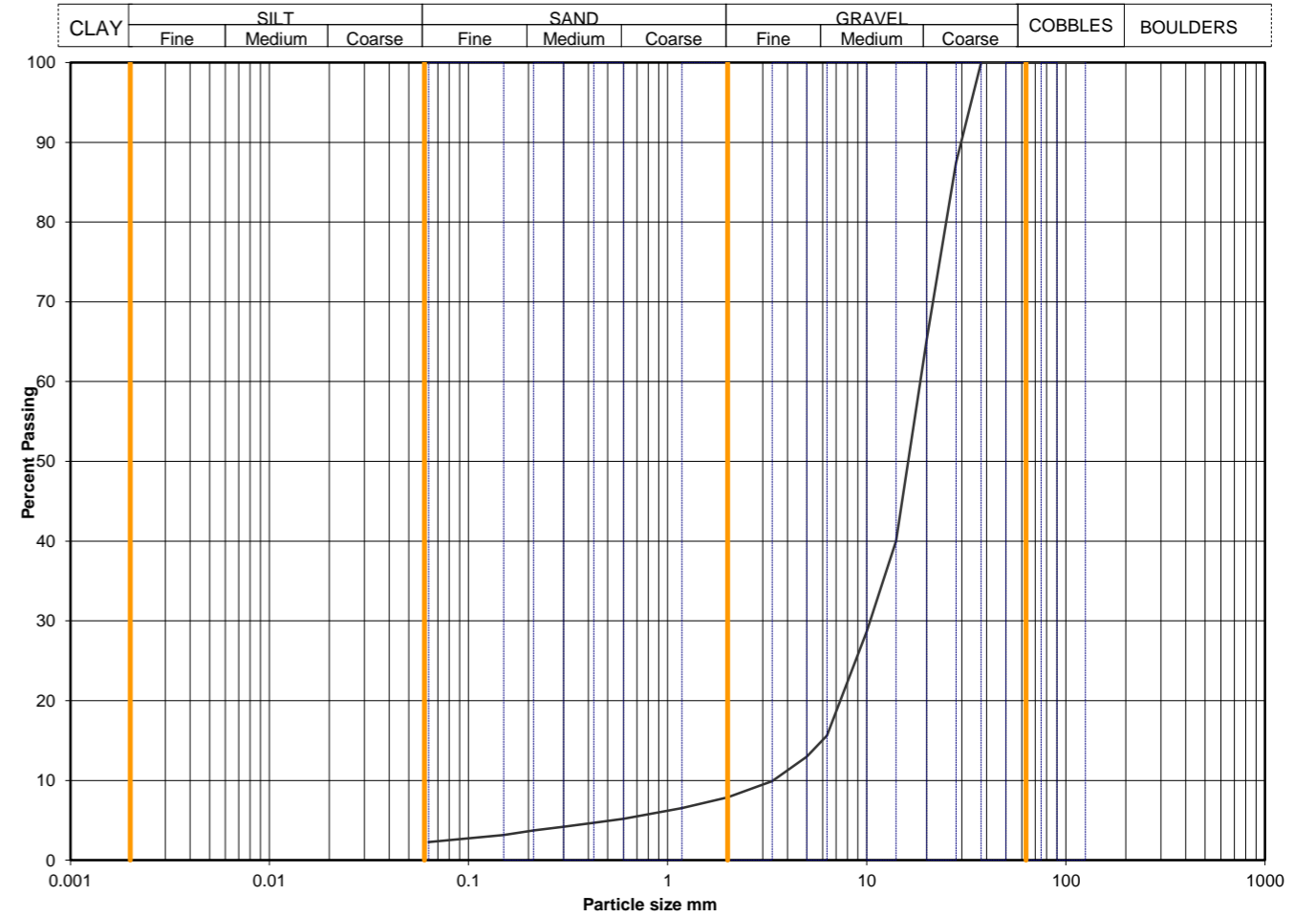
Figure
PSD

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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH03
	SOCO2020111918	Sample Depth (m BGL)	3.00 - 4.00
		Sample Type and No	B7
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	87		
20	65		
14	40		
10	29		
6.3	16		
5.0	13		
3.35	10		
2.00	8		
1.18	7		
0.600	5		
0.425	5		
0.300	4		
0.212	4		
0.150	3		
0.063	2		

Soil description	Reddish brown sandy GRAVEL.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	92.1	92.1
	Sand	5.6	5.6
	Silt	silt+clay =	
	Clay	2.3	2.3

Uniformity Coefficient	D60 / D10	6
------------------------	-----------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
3.9

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

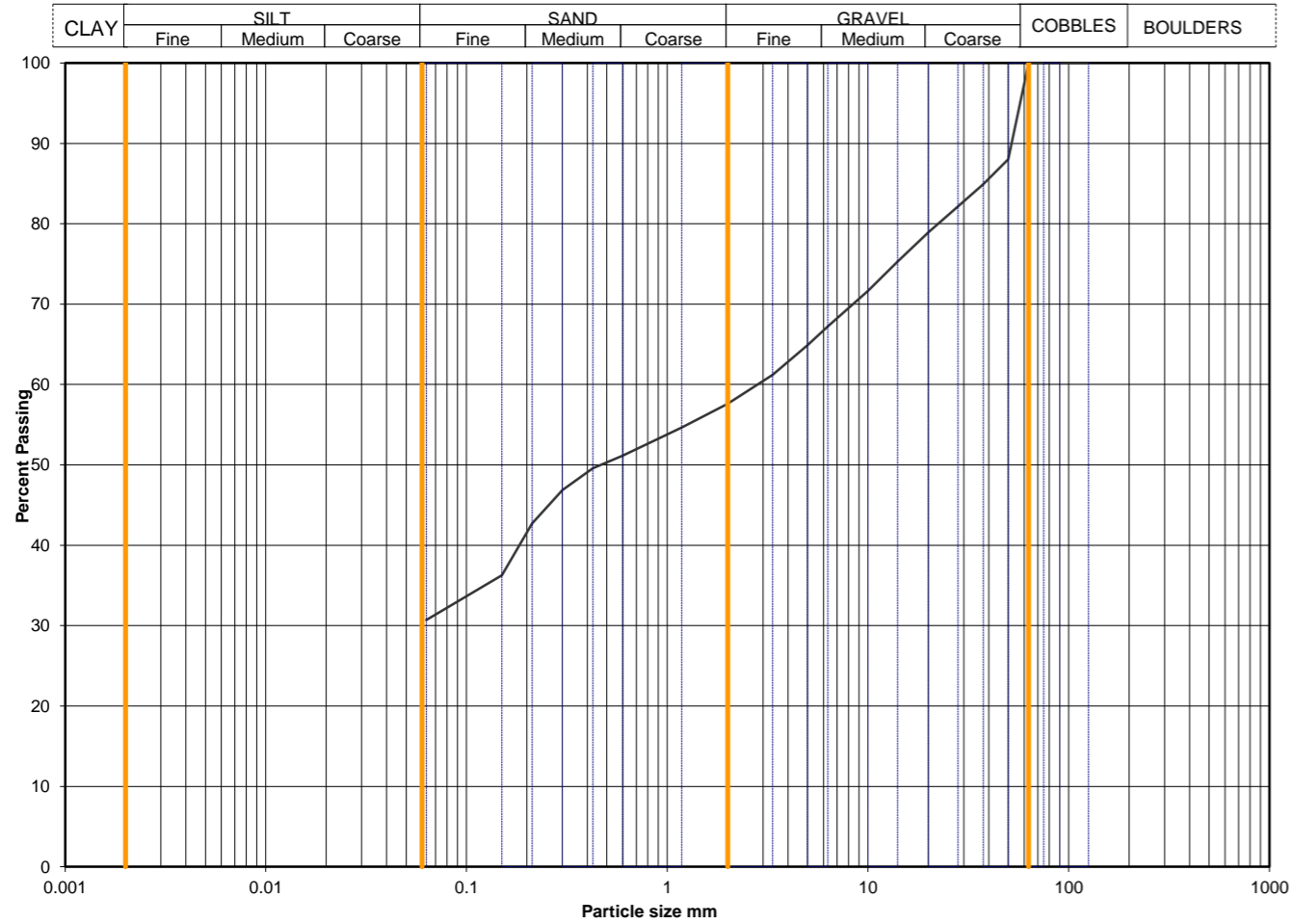
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH05
	SOCO2020111919	Sample Depth (m BGL)	1.20 - 2.00
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	88		
37.5	85		
28	82		
20	79		
14	75		
10	72		
6.3	67		
5.0	65		
3.35	61		
2.00	58		
1.18	55		
0.600	51		
0.425	50		
0.300	47		
0.212	43		
0.150	36		
0.063	31		

Soil description	Brown mottled grey slightly sandy gravelly CLAY.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	42.4	42.4
	Sand	26.9	26.9
	Silt	silt+clay =	
	Clay	30.7	30.7

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
------------------------	-----------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
3.0

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

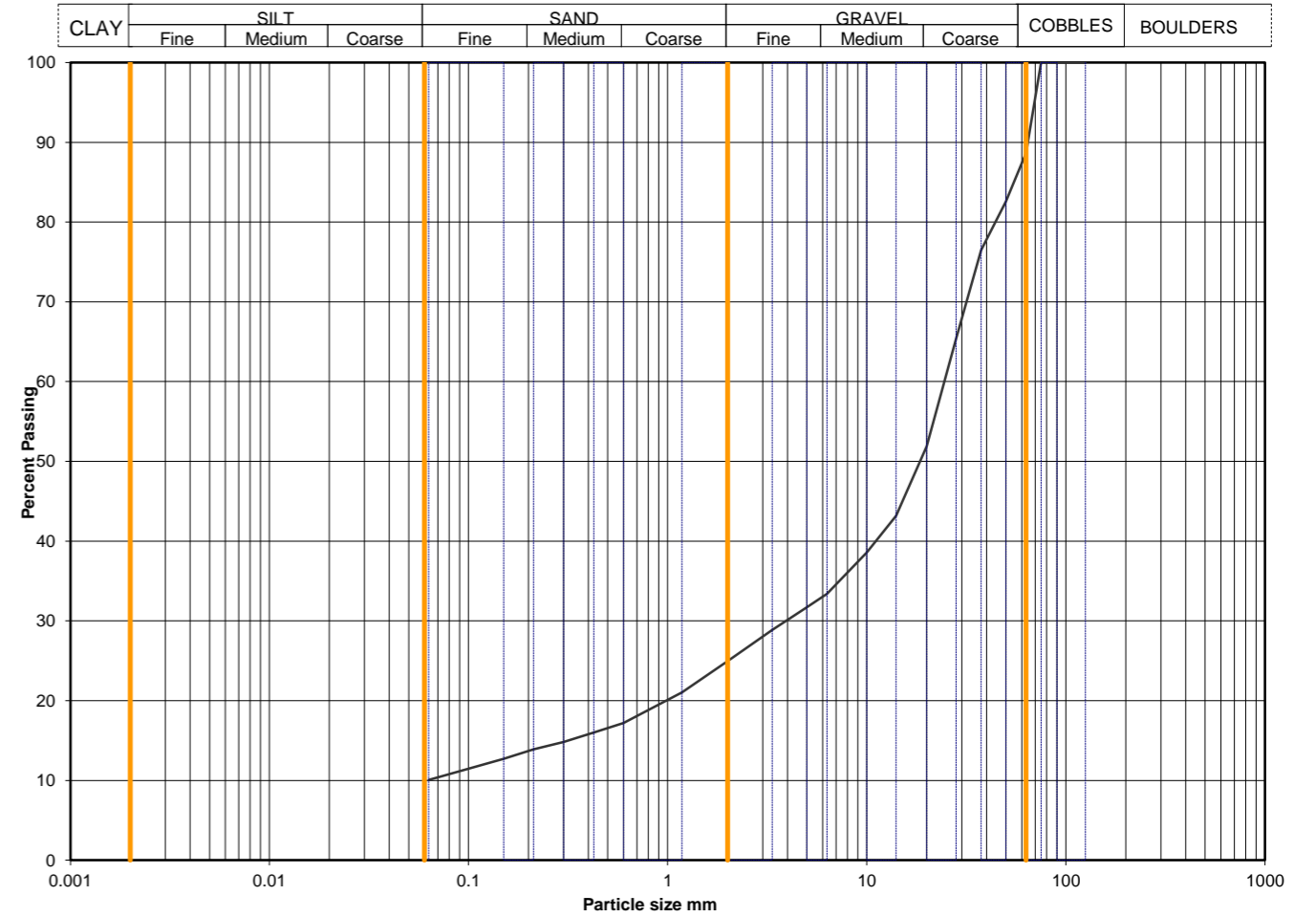
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	BH05
	SOCO2020111920	Sample Depth (m BGL)	4.00 - 5.00
		Sample Type and No	D10
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	89		
50	83		
37.5	76		
28	65		
20	52		
14	43		
10	39		
6.3	33		
5.0	32		
3.35	29		
2.00	25		
1.18	21		
0.600	17		
0.425	16		
0.300	15		
0.212	14		
0.150	13		
0.063	10		

Soil description	Grey slightly sandy very gravelly CLAY with one cobble.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		11.3	0.0
	Gravel	63.7	71.8
	Sand	14.9	16.8
	Silt	silt+clay =	
	Clay	10.1	11.4

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
------------------------	-----------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
4.1

QA Ref
SLR 2,9
Rev 2.22
Jul 17



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Project Name Cloghroe Housing Development

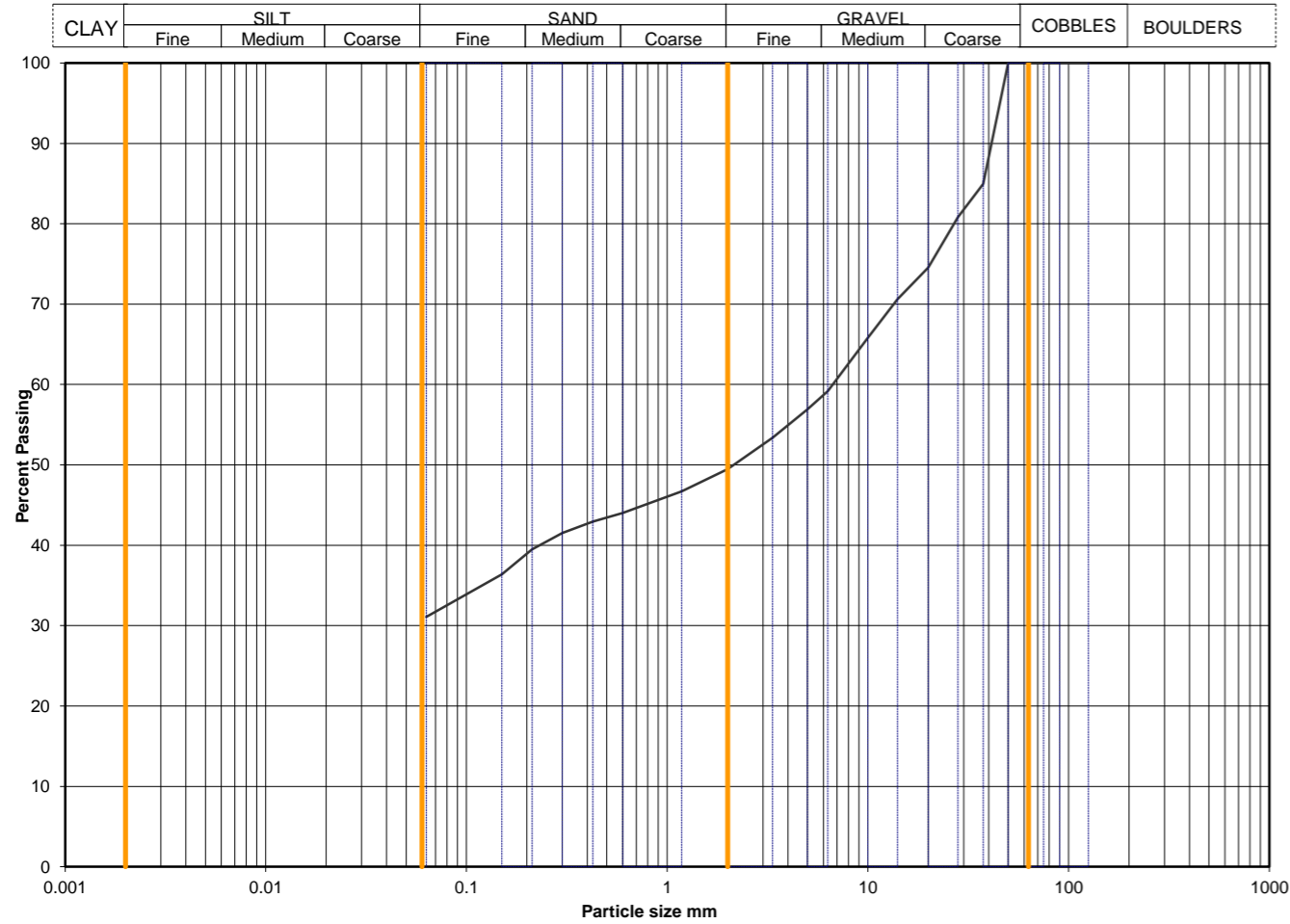
Figure
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	TP07
	SOCO2020111921	Sample Depth (m BGL)	0.70 - 1.20
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	85		
28	81		
20	75		
14	71		
10	66		
6.3	59		
5.0	57		
3.35	53		
2.00	49		
1.18	47		
0.600	44		
0.425	43		
0.300	42		
0.212	40		
0.150	36		
0.063	31		

Soil description	Grey slightly gravelly sandy CLAY.
Preparation / Pretreatment	Sieve: pre dried,
Remarks	

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	50.5	50.5
	Sand	18.4	18.4
	Silt	silt+clay =	
	Clay	31.1	31.1

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
------------------------	-----------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
2.8

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

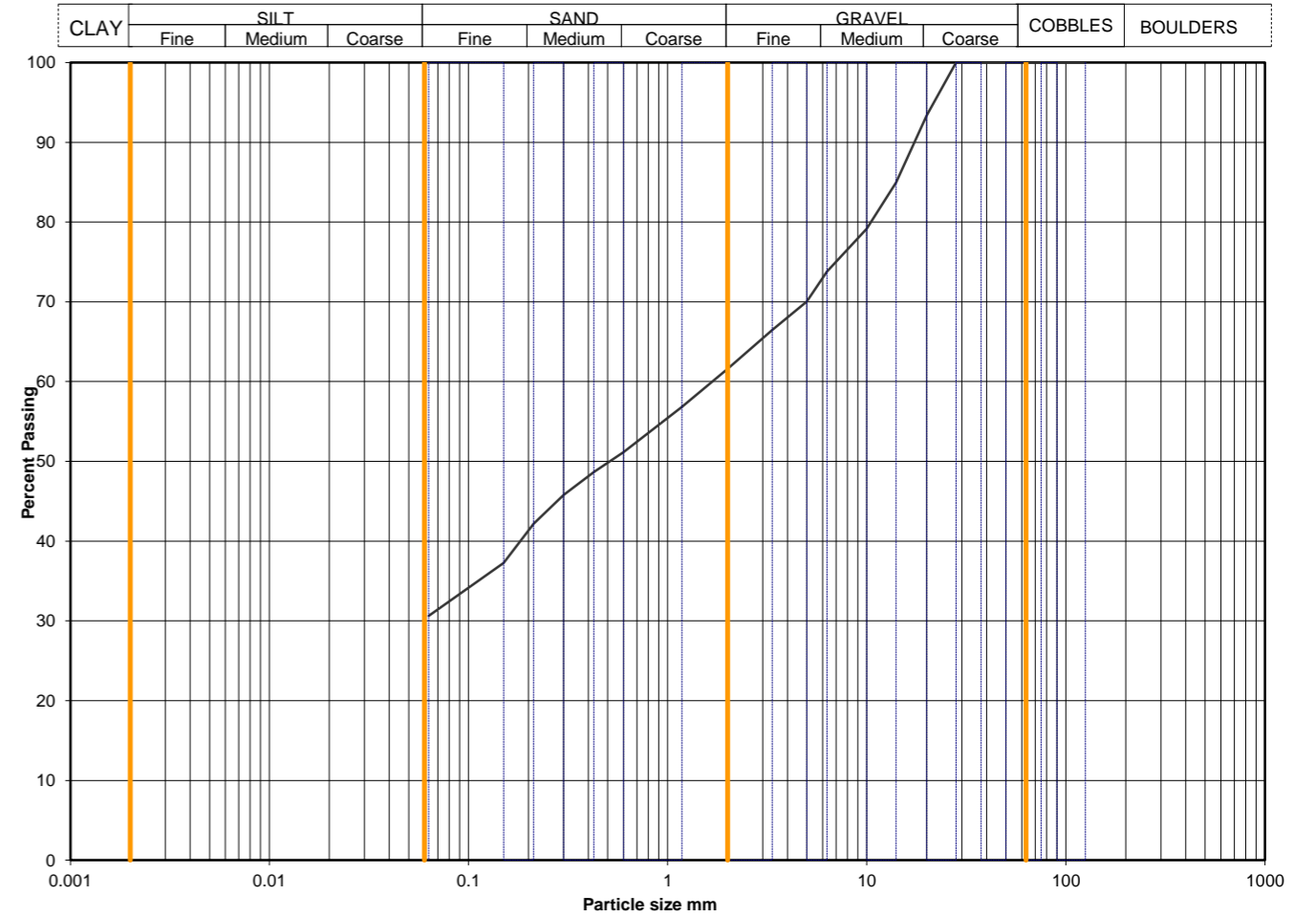
Figure
PSD

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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	TP07
	SOCO2020111922	Sample Depth (m BGL)	1.70 - 2.20
		Sample Type and No	B5
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	85		
10	79		
6.3	74		
5.0	70		
3.35	66		
2.00	62		
1.18	57		
0.600	51		
0.425	49		
0.300	46		
0.212	42		
0.150	37		
0.063	31		

Soil description	Brown mottled grey slightly sandy gravelly CLAY.
Preparation / Pretreatment	Sieve: pre dried,
Remarks	

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	38.5	38.5
	Sand	30.9	30.9
	Silt	silt+clay =	
	Clay	30.6	30.6

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
------------------------	-----------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
1.9

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

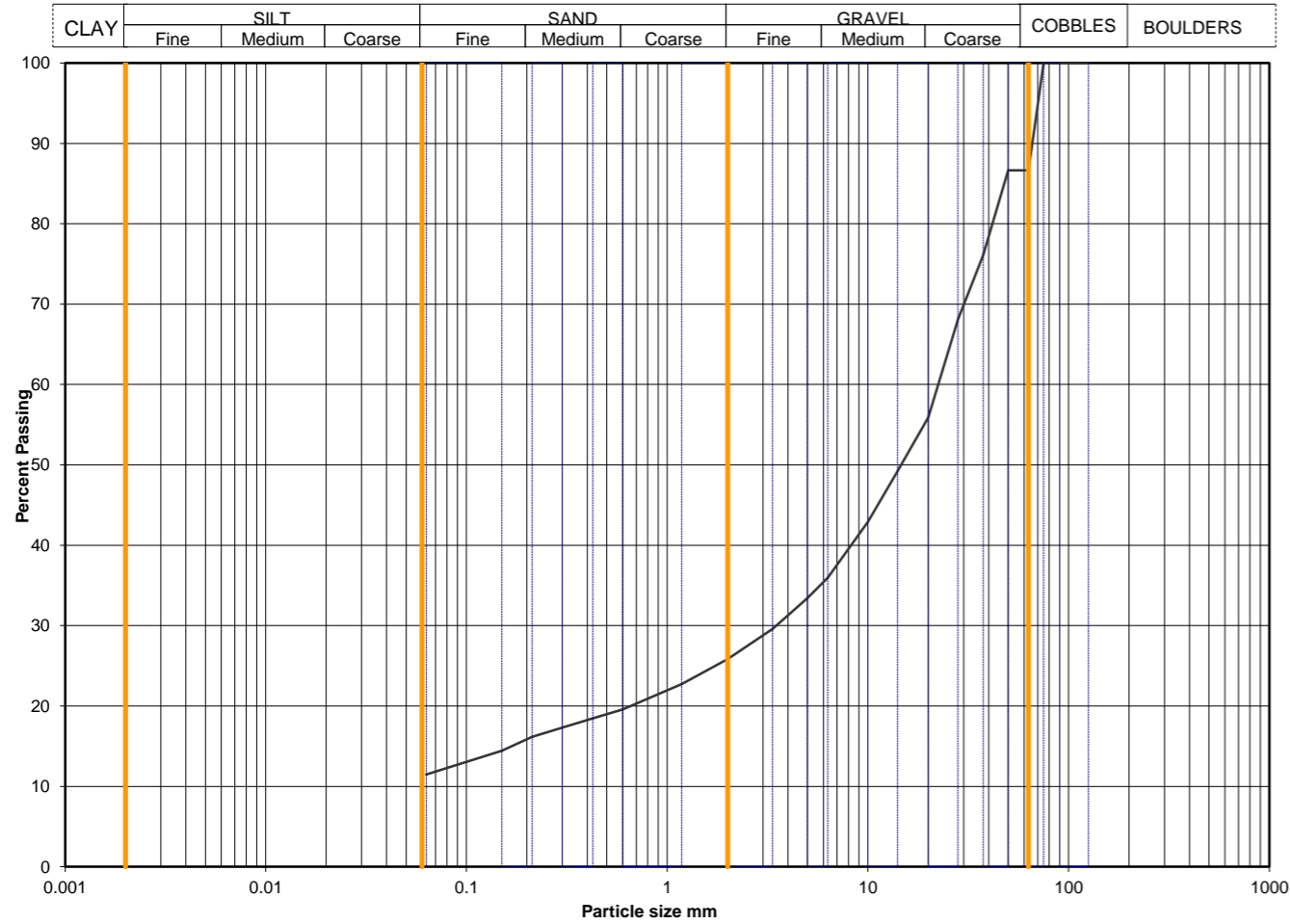
Figure
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	TP10
	SOCO2020111923	Sample Depth (m BGL)	1.10 - 1.45
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	87		
50	87		
37.5	76		
28	68		
20	56		
14	49		
10	43		
6.3	36		
5.0	33		
3.35	30		
2.00	26		
1.18	23		
0.600	20		
0.425	18		
0.300	17		
0.212	16		
0.150	14		
0.063	11		

Soil description	Brown slightly sandy very gravelly CLAY with one cobble.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		13.4	0.0
	Gravel	60.8	70.2
	Sand	14.3	16.5
	Silt	silt+clay =	
	Clay	11.5	13.3

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
------------------------	-----------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
3.2

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

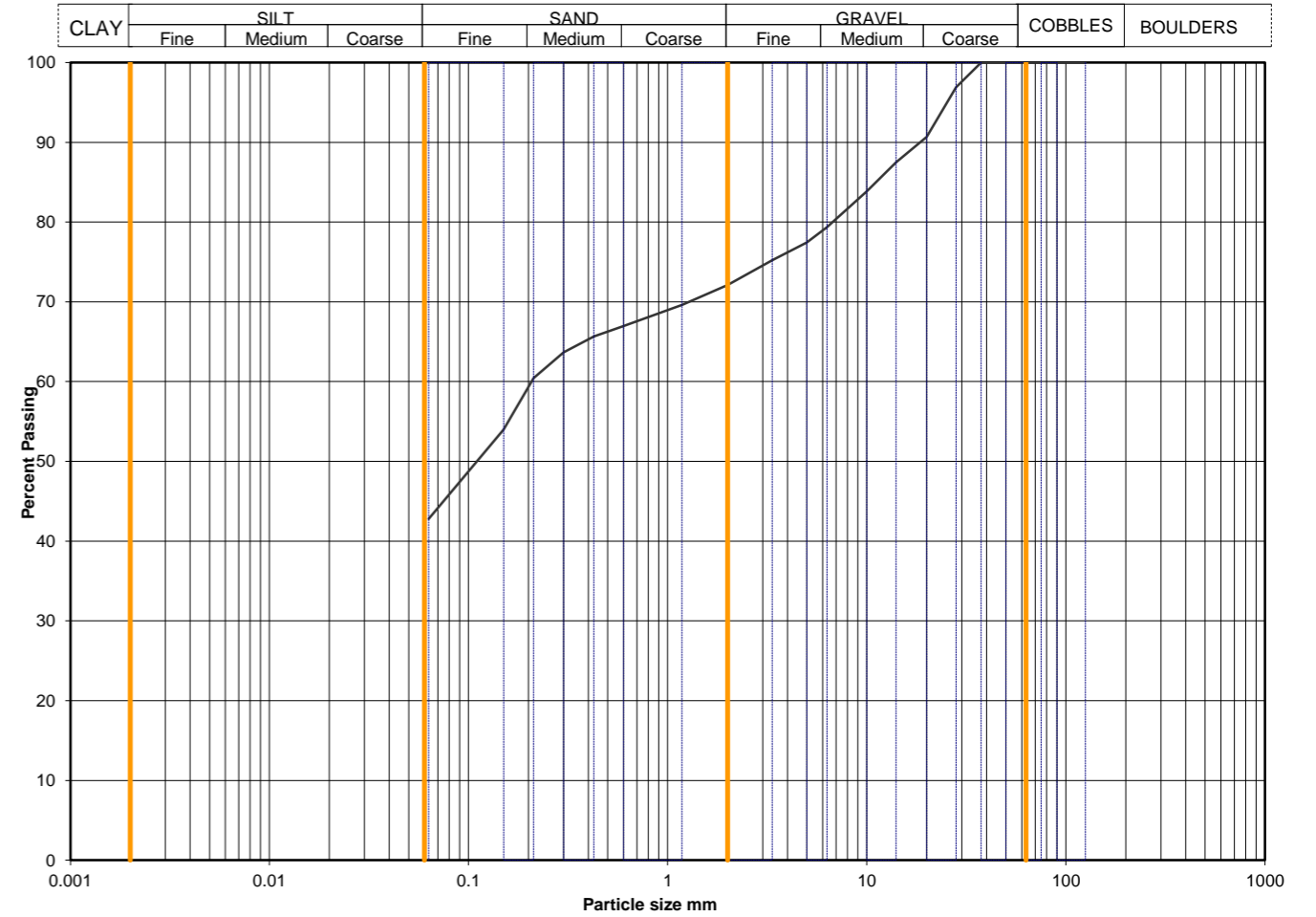
Figure
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Particle Size Distribution Analysis

Sample Details:	SAMPLE ID:	Hole No	TP12
	SOCO2020111924	Sample Depth (m BGL)	1.60 - 2.10
		Sample Type and No	B3
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	91		
14	87		
10	84		
6.3	79		
5.0	77		
3.35	75		
2.00	72		
1.18	70		
0.600	67		
0.425	66		
0.300	64		
0.212	60		
0.150	54		
0.063	43		

Soil description	Brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			

Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0.0	0.0
	Gravel	27.9	27.9
	Sand	29.3	29.3
	Silt	silt+clay =	
	Clay	42.8	42.8

*<60mm values to aid description only

Uniformity Coefficient	D60 / D10	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

Dry mass of sample, kg
2.1

QA Ref
SLR 2,9
Rev 2.22
Jul 17



Project No N9486-20
Project Name Cloghroe Housing Development

Figure
PSD

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

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Summary of Chemical Analysis Soil Samples

Our Ref 20-25064
Client Ref N9486-20
Contract Title Cloghroe

Certificate Number 20-25064

Issued: 14-Dec-20

Client Socotec - Geotechnical Lab
Askern Road
Doncaster
DN6 8DG

Lab No	1773299	1773300	1773301	1773302	1773303
Sample ID	BH01A	BH03	BH05	TP07	TP12
Depth	1.20	1.20	1.20	0.70	1.60
Other ID	D4	D4	D4		
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Inorganics									
pH	DETSC 2008#		pH	7.9	6.7	7.4	7.1	6.1	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	18	40	11	< 10	

Our Reference 20-25064

Client Reference N9486-20

Order No (not supplied)

Contract Title Cloghroe

Description 5 Soil samples.

Date Received 08-Dec-20

Date Started 08-Dec-20

Date Completed 14-Dec-20

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Information in Support of the Analytical Results

Our Ref 20-25064

Client Ref N9486-20

Contract Cloghroe

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	inappropriate container for tests
1773299	BH01A 1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1773300	BH03 1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1773301	BH05 1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1773302	TP07 0.70 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
1773303	TP12 1.60 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report