# APPENDIX 07 Land, Soils & Geology



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



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# **Cloghroe Housing Development – Site Investigation Interpretative Report**

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Client:	BMOR
Client's Representative:	MHL & Associates Ltd
Report Date:	16 <sup>th</sup> December 2020
Report No.:	OCB20-087

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OCB Geotechnical Unit 1 Carrigogna Midleton Co. Cork

### Job Name: Cloghroe Job Number: 20-087

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# 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 The amendments revised the Standard to remove text superseded by BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and EN ISO 14689-1:2003 and refers to the relevant standard for each affected subclause.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 ٠ 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
Р	Nominal 100mm diameter undisturbed
В	Bulk disturbed sample
D	Small disturbed sample
W	Water sample
ES / EW	Soil sample for environmental testing /
SPT	Standard penetration test using a split
SPT (C)	Standard penetration test using 60-deg
x,x/x,x,x,x	Blows per increment during the standa drive (150mm) and the remaining four The length achieved is stated (mm) for
N=X	SPT blow count 'N' given by the summa (300mm)
N=X/Z	Incomplete standard penetration test v represent the total blows for the given
V VR	Shear vane test (borehole) Hand vane t V: undisturbed vane shear strength
<u>dd/mm/yy: 1.0</u> dd/mm/yy: dry	Date & water level at the borehole dept and the start of the following shift
Abbreviations relati	ng to rock core – reference Clause 44.4
TCR (%)	Total Core Recovery: Ratio of rock/soil core run.
SCR (%)	Solid Core Recovery: Ratio of solid core uninterrupted by natural discontinuitie the core axis between natural fractures
RQD (%)	Rock Quality Designation: Ratio of total length of core run.
FI	Fracture Index: Number of natural disc intensity of fracturing.
NI	Non-Intact: Used where the rock mater gravel size particles.
AZCL	Assessed zone of core loss: The estima
DIF	Drilling induced fracture: A fracture of

Report No.:	

**Document Control Sheet** 

Project title: **Cloghroe Housing Development** 

Client:

BMOR

OCB20-087

Client's Representative: MHL & Associates Ltd.

Revision	Status	Report prepared by:	Report reviewed by:	Report approved by:	Issue date
001	Draft Interim Factual	Ian Holley	Glen Byrne	Michael O'Connell	15 <sup>th</sup> December 2020
002	Draft Interp	Ian Holley	Glen Byrne	Michael O'Connell	16 <sup>th</sup> 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 2<sup>nd</sup> 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 ٠ 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

### Job Name: Cloghroe Job Number: 20-087

d open tube sample d piston sample

/ Water sample for environmental testing

spoon sampler (small disturbed sample obtained)

gree solid cone

ard penetration test. The initial two values relate to the seating r to the 75mm increments of the test length.

any test increment less than 75mm

ation of the blows 'X' required to drive the full test length

where the full test length was not achieved. The blows 'X' test length 'Z' (mm)

test (trial pit) Shear strength stated in kPa VR: remoulded vane shear strength

th at the end of shift

### 4.4 of BS 5930: 1999

l core recovered (both solid and non-intact) to the total length of

e to the total length of core run. Solid core has a full diameter, es, but not necessarily a full circumference and is measured along

al length of solid core pieces greater than 100mm to the total

continuities per metre over an indicated length of core of similar

rial was recovered fragmented, for example as fine to coarse

ted depth range where core was not recovered.

f non-geological origin brought about by the rock coring.





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.

# **Cloghroe Housing Development**

### AUTHORITY 1

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.



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**

Fouteen 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 ion 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 3.2x10<sup>-6</sup> 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.

### LABORATORY WORK 5

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:

- 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.

soil classification: moisture content measurement, Atterberg Limit tests and particle size



### 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.
- Fluvioglacial 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	Easting	Northing	Depth	CBR value	CBR value
Location			(m BGL)	at 2.5mm	at 5mm
				penetration	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 that 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.

### Job Name: Cloghroe Job Number: 20-087



### 8 **REFERENCES**

BS EN 1997-1: 2007. *Eurocode 7 - Geotechnical design - Part 1 General Rules*. British Standards Institution, London.

BS EN 1997-2: 2007. *Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing*. British Standards Institution, London.

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BS EN 12457-2: 2002 Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction).

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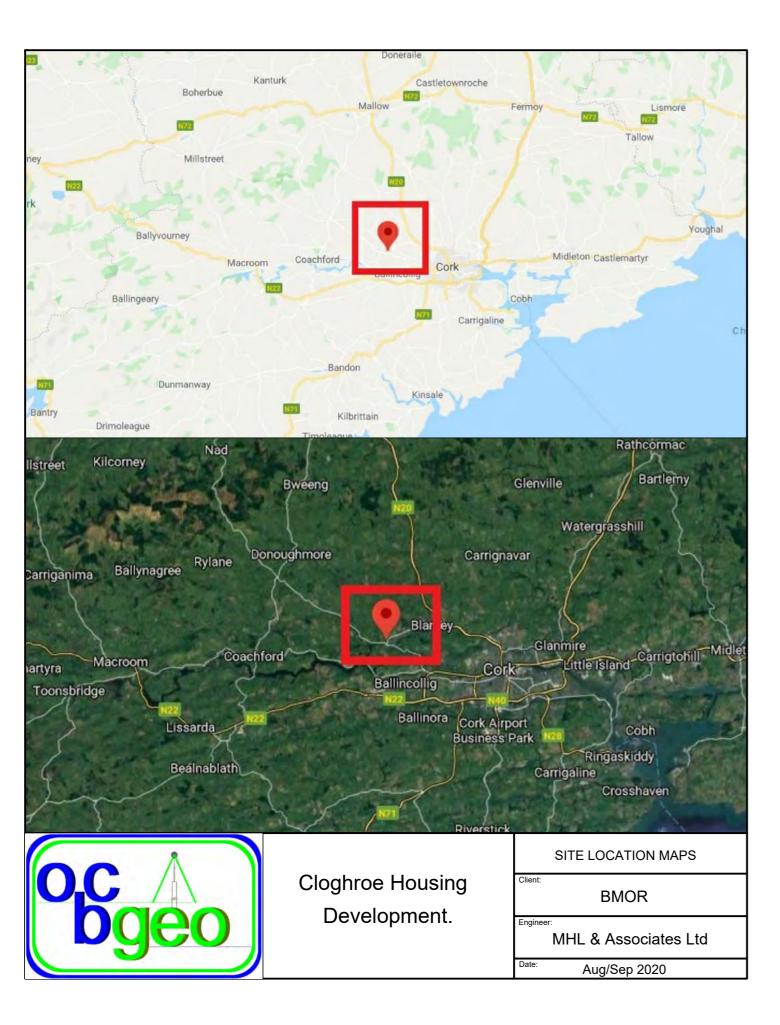
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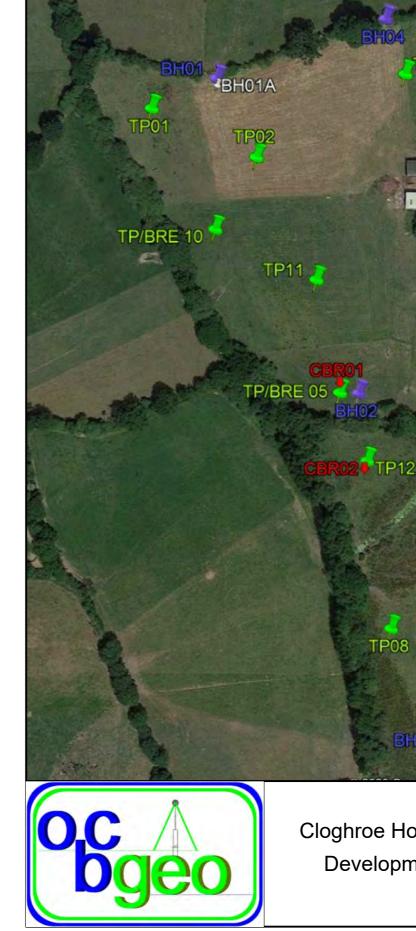
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Appendix A Site and Expl

# **Site and Exploratory Hole Location Plans**





TP03	
TP04	
EH05 TP14	TP/BRE 06
TP13 CERCS	TP07
HO3	BHOG
	Exploratory Hole Locations
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nent.	Engineer: MHL & Associates Ltd
	Aug/Sep 2020

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		N=21 (4,8/5,5,6,5)       A7.14       2.00       Medium dense brown slightly silty very sandy GRAVEL with medium cobble consist of red, purple and green sandstone and siltstone, and uccasional quartz.       1.0         S0 (7,11/50 for 60mm)       47.14       2.00       Very dense brown slightly silty very sandy GRAVEL with high cobble consist of red, purple and green sandstone and siltstone, and uccasional quartz.       1.0         S0 (7,11/50 for 60mm)       45.84       3.30       Very dense brown slightly clayey slightly silty very sandy GRAVEL with low cobles consist of red, purple and green sandstone and siltstone, and uccasional quartz.       2.0         S0 (8,18/50 for 75mm)       50 (50 for 0mm/50       45.84       3.30       So dent dent dent dent dent dent dent dent								
.20 - 1.65			Image         Field Records         Level (mDD)         Depth (m) (mkchess)         Legend (0.10)         Description         Backfill           V         49.04         (0.10)         (0.10)         Image         Construction         Backfill         0							
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					F					
								$\pm$		
emarks										
								.g to (m)	Time (min	Ros
										<u> </u>
		ad at 2	30m upon encounter	ing virtua	l refusal		3.50 2.00 3.20	3.30		01

# Appendix B Borehole Logs

		•			Project	: No.:	Project	t Name:	Bo	reho	e No
	<b>D.C</b>	$\mathbb{A}$			20-087		Cloghro	oe Housing Development		BHC	1A
	ba	er	)		Coordi	nates:	Client:		, c	heet	1 of
	<u>-9</u>				55725	8.49 E	BMOR		$\vdash$	neet	TUL
/lethod:					E7400	4 41 N	Client's	s Representative:	Sca	ale:	1:50
able Percus	sion	_			574834	4.41 N	MHL &	Associates Ltd	Dr	iller:	AA
lant:						d Level:	Dates:		$\vdash$		
ilcon	Sample /	Casing	Water		49.13 Level	3 mOD Depth (m)		02/09/2020 -		gger:	MN
(m)	Tests	Depth	Depth (m)	Field Records	(mOD)	(Thickness)		Description	Wate	Back	fill
Depth (m) 110 - 1.20 1.10 - 1.20 1.10 - 1.20 1.20 - 2.00 .20 - 2.00 .20 - 2.00 .20 - 1.21 1.00 - 3.00 1.00 - 3.00 1.00 - 3.00 1.00 - 2.32 1.00 - 4.00 1.00 - 4.00 1.00 - 4.50 1.00 - 4.50 1.00 - 4.50 1.00 - 4.50 1.00 - 4.50 1.00 - 4.50 1.00 - 4.50		Depth	Depth (m) 5 5 fi 1 1 ( ( 5 5 5 1 1 1 5 1 1 5 5 1 5 5 5 5	Field Records 50 (50 for 10mm/50 or 0mm) 59 (7,9/59 for 170mm) 4=45 7,7/11,13,10,11) N=55 9,11/11,10,15,19) 50 (50 for 0mm/50 or 0mm)				Description           TOPSOIL           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.           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.           Driller records possible boulder at 1.2m.           Driller records possible boulder at 2.3m.           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.           Driller records possible boulder at 3.7m.           Very 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.           Driller records possible boulder at 3.7m.           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.           Driller records possible boulder at 4.5m. <td>Mater</td> <td>Back</td> <td>fill        </td>	Mater	Back	fill
						- - - - - - - - -					9.0
emarks								Water Added Water S From (m) To (m) Struck at (m) Casing			
								1.20 4.50	(m)		
								Casing Details Chise	lling	Details	
								To (m) Diam (mm) From (m)	To (n	n) Ti	me (hh:r
				m upon encounterii				4.50 200 1.20 1.70	1.30 1.80		00:40 00:30

				Project		Project	
				20-087		Cloghro	oe Ho
l	nge	O	J	Coordi		Client:	
Mothad			/	55733	6.88 E	BMOR	Per
Method: Cable Percus	sion			57465	2.45 N	Client's	
Plant:				Group	d Level:	Dates:	A320
Pilcon					5 mOD	Dates:	
Depth	Sample / Casin Dept	h Depth	Field Records	Level	Depth (m)	Legend	
(m)	Tests (m)	(m)		(mOD)	(Thickness)		TOPS
0.20 - 1.20 0.20 - 1.20	B1 D2			29.14	(0.20) 0.20	×	Light
0.20 1.20						×	Grave
					(1.00)	×	
					F	×	
1.20 - 1.80	B3			28.14	1.20	x	Stiff Ł
1.20 - 1.80 1.20 - 1.65	D4 SPT (C)		N=29 (0,1/4,7,9,9)		- (0.60)	<u>~~~</u> ~	conte subar
1.80 - 3.00	N=29 B5			27.54	1.80	0 <u>×</u> 0	Subai
1.80 - 3.00	D6			27.54	- 1.80	<u>~~~</u> ~~~	Firm is fine
2.00 - 2.45	SPT (C) N=13		N=13 (2,2/4,3,3,3)		ŀ	x × 0	are a
					(1.20)	x 0.	
					F	<u>× × × × × × × × × × × × × × × × × × × </u>	
3.00 - 4.00	B7			26.34	- 3.00	<u>x %</u> 0.	
3.00 - 4.00	D8			20.34		x 0 X 0	Stiff o Sand
3.00 - 3.45	SPT (C) N=16		N=16 (3,4/4,4,4,4)		(1.00)	<u>x ° × °</u>	Cobb
					- (1.00)	x × 0	
					-	x × 0	
4.00 - 5.00 4.00 - 5.00	B9 D10			25.34	- 4.00	а С О	Medi
4.00 - 4.45	SPT (C) N=24		N=24 (5,5/5,5,8,6)		[	0×0.0	cobbl Grave
	N-24				- (1.00)	0×0.0	subar
					Ē.	0.00	
5.00 - 6.00 5.00 - 6.00	B11 D12			24.34	- 5.00	0,00	Dens
5.00 - 5.45	SPT (C)		N=35 (6,10/8,9,8,10)		ł	0×0 0×0	conte are su
	N=35				(1.00)	0×0 0×0	
					-	0×0 0×0	
6.00 - 7.00	B13			23.34	6.00		Very
6.00 - 7.00 6.00 - 6.45	D14 SPT (C)		N=54		-		coars
	N=54		(12,17/12,12,17,13)		Ē		
					-	 	
7.00 - 8.00	B15				- (2.00)	- - -	
7.00 - 8.00 7.00 - 7.45	D16 SPT (C)		N=65		[	- - -	
	N=65		(10,10/14,19,16,16)		-	- - -	
					Ē	- - -	
8.00 - 9.00	B17			21.34	8.00	، <u>م</u>	
8.00 - 9.00	D18			-1.54	-	0×0.	Very cobbl
8.00 - 8.45	SPT (C) N=54		N=54 (9,13/13,12,15,14)		- - (1.00)	0 <u>~</u> 0	Grave subar
					- (1.00)	0×0.	subar
0.00 0.70	D10			20.24		0×0.	
9.00 - 9.70 9.00 - 9.70	B19 D20			20.34	- 9.00 -	0.×0.	Very cobbl
9.00 - 9.45	SPT (C) N=54		N=54 (11,12/12,12,15,15)		(0.70)	0×0.	Cobb
9.60 - 9.74	SPT (C)		50 (43 for	19.64	- - - 9.70	0×0.	
			135mm/50 for 0mm)	19.04	9.70		
Remarks							
Cable Percuss	ion terminated	at 9.7	Om upon encounteri	ng virtua	n retusal.		

ame:					Во	reh	ole	No	).: 
Housing Development						В	H0	2	
					s	hee	t 1	of	1
epresentative:					Sca	ale:	1	:50	)
sociates Ltd					Dri	iller	: A	A	
03/09/2020 - 07/09/	/2020				<u> </u>	gge			
					fe	_			_
Description	n				Water	ва	:kfil	1	
PSOIL		CI AV	reatists						1 1
ht brown slightly gravelly slightly sandy v avel is fine to coarse, angular to subangu								0.5	
								1.0	.
ff brown slightly sandy silty very gravelly ntent. Sand is fine to coarse. Gravel is fin bangular. Cobbles are angular to subangu	e to coars							1.5	
m brown slightly sandy silty gravelly CLA	Y with lov	v cobble c	ontent. S	and	1				
ine to coarse. Gravel is fine to coarse, an angular to subangular.	igular to s	ubangula	r. Cobbles	5				2.0	1111
							÷	÷	-
ff dark brown slightly sandy silty gravelly				nt.	1		÷	* 3.0 *	) –
nd is fine to coarse. Gravel is fine to coar bbles are angular to subangular.	se, angula	ar to suba	ngular.					•	1 1
						• •	÷	3.5	
								•	
								° 4.0	
edium Dense brown slightly silty sandy w				ium			•	*	, -
bble content and low small boulder cont avel is fine to coarse, angular to subangu				e			÷	•	-
bangular.					┢╼		÷	. 4.5	; _
						Ŷ	•	•	
					Þ			* * 5.0	
nse dark grey slightly silty clayey very sa ntent. Sand is fine to coarse. Gravel is fin								•	
subangular.		ic, subuli		bies				•	-
							÷	° 5.5	;
							-	•	-
n. Dense derk grou slightly sloven vers se		IFI Cand	ia fina ta				÷	° 6.0	)
ry Dense dark grey slightly clayey very sa arse. Gravel is angular to subangular.	Indy GRAV	/EL. Sanu	is line to				÷	•	-
						Ŷ	•	•	-
								° 6.5	;
							Ţ.	÷	-
								° 7.0	,
							•	•	
							÷	。* • 7.5	; _
							<b>I</b>	•	
							÷	*	_
ry Dense dark grey slightly clayey very sa	ndy GRA	/EL with n	nedium		1		÷	8.0	,
bble content and low small boulder cont							Ļ.	•	
avel is angular to subangular. Cobbles an pangular.	u noniaei	s are angi	uidi lÜ					8.5	; –
							Ť.	•	-
				_			•	•	
ry Dense dark grey slightly clayey very sa							÷	。 。 。	'
bble content. Sand is fine to coarse. Grav bbles are angular to subangular.	ei is angu	iar to sub	angular.				÷	•	
- 0							L.	。 9.5	;
End of borehole at	9.700m				1	<u>ا ق ا</u>	<u> </u>	*	
								1	_
	Water	Added	W	ater S	l trike	- Ge	nera		_
	From (m)	To (m)	Struck at (m) 4.90	Casing 4.9	to (m)		min) F		
	1.20	4.90	4.90	4.9	50	20		4.5	
	Casing	Details		Chise	lling	Deta	ils		_
		Diam (mm) 200	From (m) 9.60		To (n 9.70	n)	Time	e (hh:r 01:00	nm)
	5.75	200							

				Project		-	t Name:	во			No.:
				20-087		<u> </u>	oe Housing Development	-	в	103	
l	uge	O	J	Coordi		Client: BMOR		S	heet	:1 c	of 1
Method:	<u></u>			557364			s Representative:	Sca	ale:	1:!	50
Cable Percus	sion			574434	4.04 N		Associates Ltd	-	iller:		
Plant:					Level:	Dates:		-	-		
Pilcon			1		) mOD		10/09/2020 - 11/09/2020	_	gger	: IH	
Depth (m)	Sample / Casi Dep Tests (m	ng Water th Depth ) (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Bac	cfill	
0.10 - 1.20 0.10 - 1.20	B1 D2			24.38	- (0: <u>1</u> 0) -		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,				
					(1.10)	× ×	subangular.				0.5
1.20 - 2.00 1.20 - 2.00 1.20 - 1.65	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.				1.5
2.00 - 2.60 2.00 - 2.60 2.00 - 2.45	B5 D6 SPT (C)		N=16 (3,3/3,5,4,4)		- (1.40) 				· · · · ·		2.0
3.00 - 4.00	N=16 B7			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.				2.5 3.0 ·
3.00 - 4.00 3.00 - 3.45	D8 SPT (C) N=22		N=22 (2,5/4,7,6,5)		- - (1.40) -						3.5
4.00 - 4.70 4.00 - 4.70 4.00 - 4.45	B9 D10 SPT (C) N=5		N=5 (0,1/0,1,2,2)	20.48	4.00 (0.70)		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.	_			4.0
4.70 - 6.00 4.70 - 6.00 5.00 - 5.45	B11 D12 SPT (C) N=9		N=9 (1,2/2,2,3,2)	19.78	4.70	0 × 4	Loose purple / brown clayey SAND. Sand is fine to coarse.				5.0
6.00 - 7.00	B13			18.48	(1.30) - - - - - - - - - - - - - - - - - - -		Loose to Medium Dense purple / brown slightly silty very gravelly SAND.				6.0
6.00 - 7.00 6.00 - 6.45	D14 SPT (C) N=10		N=10 (2,5/3,3,2,2)		- - (1.00)		Gravel is fine to coarse, subangular to subrounded. Sand is fine to coarse.				6.5
7.00 - 8.00 7.00 - 8.00 7.00 - 7.45	B15 D16 SPT (C) N=17		N=17 (3,4/6,4,3,4)	17.48	- 7.00 - 7.00 	ו × × 	Medium Dense reddish brown slightly clayey SAND. Sand is fine to coarse.	_			7.0
7.50 8.00 - 9.00 8.00 - 9.00	U21 B17 D18			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.	_			8.0
8.00 - 8.45	SPT (C) N=17		N=17 (4,4/4,4,5,4)		- (1.00)		Cobbles are subangular to subrounded.				8.5
9.00 - 9.50 9.00 - 9.50 9.00 - 9.45 9.50 - 9.95	B19 D20 SPT (C) N=31 SPT (C)		N=31 (7,8/5,9,9,8) N=38	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.				9.0
	N=38		(8,11/9,10,10,9)	1455							
				14.54	9.95		End of borehole at 9.950m				
Remarks							Water Added Water : From (m) To (m) Struck at (m) Casin				se to
							0.60	ig to (m) 2.60	Time (m 20 20		0.50 1.20
											a-61
							To (m) Diam (mm) From (m)	elling To (n	Detail n)	ls Time (ŀ	hh:n
							9.95 200	-			_

(		*			Project	No.:	Project	t Name:	Bo	rehole	No.
C	<b>).C</b>	$\mathbb{A}$			20-087		Cloghr	oe Housing Development		BHO	4
	ba	e	$\mathbf{O}$		Coordi	nates:	Client:		۰ ۲	heet 1	of 1
	~9			<b>J</b>	55735	5.60 E	BMOR			neet	. 01 1
Method:					1		Client'	s Representative:	Sca	ale:	1:50
Cable Percus	sion				57486	8.44 N	MHL &	Associates Ltd		iller: /	
Plant:					Ground	Level:	Dates:			ner: /	
Pilcon					47.76	5 mOD		27/08/2020 - 31/08/2020	Log	gger:	MN
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfi	ill
(m) 0.00 - 1.20	B1	(m)	(m)		(IIIOD)	(Thickness)	<u>x _ 0</u>	Brown slightly sandy gravelly very silty CLAY with low cobble content and	>		
0.00 - 1.20	D2					-	~~ × o.	occasional rootlets, moist. Sand fine to coarse. Gravel fine to coarse, angular to subrounded. Cobbles mostly subangular. Gravel and cobbles			
						(1.20)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	consist of red, purple and green sandstone and siltstone, and occasional			0.5
						- (1.20)	<u>~~~</u> ~	quartz.			
						[					1.0
1.20 - 2.00	вз				46.56	- 1.20	X				1.0
1.20 - 2.00	D4				10100		• × • •	Medium dense brown slightly clayey slightly silty very sandy GRAVEL with low cobble content. Sand fine to coarse. Gravel fine to coarse, angular to			
1.20 - 1.65	SPT (C) N=14			N=14 (3,4/2,5,4,3)		(0.80)	م× م×	subangular. Cobbles mostly subangular. Gravel and cobbles consist of red,			1.5
	11-14						• × • • • •	Purple and green sandstone and siltstone, and occasional quartz.			
2.00 - 3.00	В5				45.76	- 2.00	• X • • • X •	Medium dense brown slightly silty very sandy GRAVEL with medium	-		2.0
2.00 - 3.00 2.00 - 2.45	D6 SPT (C)			N=24 (5,5/5,7,6,6)			۰×. ۲	cobble content. Sand fine to coarse. Gravel fine to coarse, angular to			
2.40	N=24	2.00	0.80	27-08-2020		(1.00)	• ~ × • • • × •	subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green sandstone and siltstone, and occasional quartz.			2.5
						(1.00)	• × • • • ×	איז			2.5
						-	• × • • • • •	- - 2			
3.00 - 4.00 3.00 - 4.00	B7 D8				44.76	- 3.00	• × • • • • •	Very Dense to Dense brown slightly silty very sandy GRAVEL with medium,	1		3.0
3.00 - 3.24	SPT (C)			70 (4,12/70 for		-	° X °	ocally high, cobble content and a trace of slightly sandy gravelly silty clay pockets. Sand fine to coarse. Gravel fine to coarse, angular to subangular.			
				90mm)		-	• X • •	Cobbles mostly subangular. Gravel and cobbles consist of red, purple and			3.5
						-	م × مح	green sandstone and siltstone, occasional red conglomeratic sandstone,			
4.00 - 5.00	В9					(2.00)	• × • • • •	and occasional quartz. Driller records possible boulder at 3.0m.			4.0
4.00 - 5.00 4.00 - 5.00	D10					(2.00)	• × • • • •	-			4.0
4.00 - 4.45	SPT (C) N=47			N=47		-	• × • • • • • •	- 9			
	IN-47	4.00	2.90	(3,5/11,12,11,13) 28-08-2020		-	• × • • • • • •				4.5
						-	• × • • • • •	- - 9			
5.00 - 6.20	B11				42.76	- 5.00	*a X: > a X = 0	Very dense brown slightly clayey slightly silty sandy GRAVEL with high	-		5.0
5.00 - 6.20 5.00 - 5.45	D12 SPT (C)			N=48			م × م م × م	cobble content and a trace of slightly sandy gravelly silty clay pockets.			
5.00 - 5.45	N=48			(4,5/9,12,14,13)		-	a a X o	Sand fine to coarse. Gravel fine to coarse, angular to subangular. Cobbles mostly subangular. Gravel and cobbles consist of red, purple and green			5.5
						(1.20)		sandstone and siltstone, and occasional quartz.			
						-	a X				
6.00 - 6.20	SPT (C)			50 (6,9/50 for 50mm)		-	م× م×				6.0
6.20 - 6.20	SPT (C)			50 (50 for 0mm/50	41.56	- 6.20		Driller records possible boulder at 6.2m. End of borehole at 6.200m	1		
		6.20		for 0mm) 31-08-2020							6.5
						-					
						- 					7.0
						-					
						-					
											7.5
						-					
						-					8.0
						-					
						-					8.5
						-					
						[					9.0
						-					
						-					9.5
						-					
		<u> </u>	<b> </b>			-			$\square$	<u> </u>	$\perp$
omarke			1					Water Added Water 5	Strike	- Genera	al
emarks								From (m)         To (m)         Struck at (m)         Casing           1.20         6.20			
									ľ		
										Details	
								To (m)         Diam (mm)         From (m)           6.20         200         3.00	To (m		01:00
able Percussi	on termina	ited a	at 6.2	0m upon encounter	ing virtua	I refusal.		6.20	6.20		01:00

	or	$\Lambda$			Project 20-087		-	<b>t Name:</b> pe Housing Development	60	rehole BH05	
	<b>M</b>				Coordi		Client:		-		
	Uy	CI		J	557429		BMOR		S	heet 1	of 1
Method:							Client'	s Representative:	Sca	ale: 1	:50
Cable Perc	cussion				57467	7.97 N	MHL &	Associates Ltd	Dri	iller: A	
Plant:					Ground	Level:	Dates:		$\vdash$	-	
Pilcon		-				1 mOD		09/09/2020 - 10/09/2020		gger:	4
Depth (m)	Sample , Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water	Backfill	1
0.10 - 1.20 0.10 - 1.20	B1 D2				30.64	(0: <u>1</u> 0)	×	TOPSOIL Light brown (light grey and yellow mottling) slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to			
						(1.10)	× × 	subrounded.			0.5
						-	×				1.0
L.20 - 2.00 L.20 - 2.00	B3 D4				29.54	- 1.20	×	Stiff light brown (light grey and yellow mottling) slightly sandy gravelly	1		
L.20 - 1.65	SPT (C)			N=18 (1,3/4,4,5,5)		- (0.80)	×	CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.			1.5
	N=18					-	×				
2.00 - 2.30	B5				28.74	- 2.00	×	Stiff yellowish brown slightly sandy slightly silty gravelly CLAY. Sand is fine	-		2.0
2.00 - 2.30 2.00 - 2.45	D6 SPT (C)			N=20 (4,7/5,4,5,6)	28.44	(0.30) - 2.30	×	to coarse. Gravel is fine to coarse, subangular. Stiff light brown slightly silty sandy very gravelly CLAY with medium cobble	Ŀ		
2.30 - 4.00	N=20 B7					-	<u>x</u> _	content. Sand is fine to coarse. Gravel is fine to coarse, angular to	ľ		2.5
2.30 - 4.00	D8					-	<u>x</u> <u>x</u>	subangular. Cobbles are angular to subangular.			
3.00 - 3.45	SPT (C)			N=29 (6,4/7,7,6,9)		- (1 70)	<u>x</u>				3.0
	N=29					(1.70)	<u>x</u>				
						-	x				3.5
						-	<u>x o</u>				
1.00 - 5.00	B9				26.74	4.00	0.000	Stiff light grey slightly sandy very gravelly CLAY with low cobble content.			4.0
4.00 - 5.00 4.00 - 4.45	D10 SPT (C)			N=30 (5,7/9,7,6,8)		-		Sand is fine to coarse. Gravel is fine to coarse, angular to subangular.			
	N=30					- (1.00)					4.5
						-					
5.00 - 6.00	B11				25.74	- 5.00		Dense light brown slightly silty clayey very sandy GRAVEL with low cobble	-		5.0
5.00 - 6.00 5.00 - 5.45	D12 SPT (C)			N=46		-	$\overset{\circ}{\overset{\circ}{\overset{\circ}}}$	content. Sand is fine to coarse. Gravel is fine to coarse, angular to			
	N=46			(8,11/14,10,10,12)		-		subangular. Cobbles are angular.			5.5
						-	0.0				
6.00 - 7.00	B13					- (2.00)	0.00 0				6.0
6.00 - 7.00 6.00 - 6.45	D14 SPT (C)			N=42		-	0×0				
	N=42			(9,11/10,9,9,14)		-	0×0 0				6.5
						-	$\overline{0}^{\times 0}_{0}$				
7.00 - 8.00	B15				23.74	- 7.00	$\dot{O}_{\dot{A}}^{\dot{A}}$	Very Dense light brown slightly silty clayey very sandy GRAVEL with			7.0
7.00 - 8.00 7.00 - 7.45	D16 SPT (C)			N=50		-	<u>0_</u> ×0	medium cobble and low small boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular.			
	N=50			(10,12/12,12,11,15)		(1.00)	$\tilde{O}^{0}_{X}$				7.5
						-	$\tilde{O}^{0}_{\times}$				
8.00 - 9.00	B17				22.74	8.00	<u>0</u> 0	Very Dense light greyish brown slightly clayey sandy GRAVEL. Sand is fine			8.0
8.00 - 9.00 8.00 - 8.45	D18 SPT (C)			N=51		-		to coarse. Gravel is fine to coarse, angular to subangular.			
	N=51			(9,14/13,13,11,14)		- (1.00)					8.5
						-					
9.00 - 9.80	B19				21.74	9.00	×Q	Very Dense light greyish brown slightly clayey sandy GRAVEL with low	1		9.0
9.00 - 9.80 9.00 - 9.45	D20 SPT (C)			N=68		(0.90)		cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular. Cobbles are angular.			
	N=68			(12,12/12,17,20,19)		- (0.80)	$\mathcal{O}^{\times \mathcal{O}}$				9.5
9.80 - 9.81	SPT (C)			50 (50 for 10mm/50	20.94	9.80		End of borehole at 9.800m			
				for 0mm)		-			-		+
Remarks								Water Added Water S From (m) To (m) Btruck at (m) Casing		- General Time (min) R	
										20	0.6
									elling	Details	
								To (m)         Diam (mm)         From (m)           9.80         200         9.80	To (n 9.80		e (hh:r 01:00
able Percu	ussion termina	ated a	t 9.8	Om upon encounteri	ng virtua	I refusal.					

n Sample / Carling	ο		<b>nates:</b> 6.96 E	Cloghro Client: BMOR	pe Housing Development	s	BH06 heet 1	6
	D	55742				S	heet 1	
		-	6.96 E	BMOR				of
		57445						
		10/445		1	s Representative:	Sca	ale: 1	:5
Sample / Casing			N 0.50	MHL &	Associates Ltd	Dri	i <b>ller:</b> A	Ā
Sample / Casing			d Level:	Dates:		-		
Sample / Casing	Water		6 mOD		14/09/2020 - 15/09/2020	_	gger: N	/1N
Tests (m)	Water Depth (m) Field Records	Level (mOD)			Description	Water	Backfill	1
B1 D2		24.46	(0:10)		TOPSOIL Driller Described: Brown / grey slightly gravelly sandy CLAY.	-		
			-		Since Sections, Brown, Brey signey Bravely Sallay CEAL			
			(0.90)					0
			Ē					
B3		23.56	- 1.00		Driller Described: (Firm) Brown slightly gravelly sandy CLAY.			1
D4 SPT (C)	N=9 (2,1/2,3,2,2)							
N=9			- (0.80)					:
DE		22.70	1 00					
B5 D6		22.76	1.80	X	Driller Described: (Firm) Grey / Purple slightly gravelly silty sandy CLAY.			:
SPT (C)	N=11 (2,2/4,2,3,2	)	(0.60)					
N=11 B7		22.16	2.40		Deiller Deserihade (Madium Deserit) Control			
D8			-		Driller Described: (Medium Dense) Sandy GRAVEL			
			E					
B9			F					
D10 SPT (C)	N=16 (2,2/3,3,5.5	)	(1.60)					
N=16			-					
			-					
D11		20.50	-					
B11 D12		20.56	4.00		Driller Described: (Medium Dense) Silty sandy gravelly CLAY.			
SPT (C)	N=18 (3,3/4,5,5,4	)	(0.60)					
N=18 B13		19.96	4.60		Deiller Dessribed: (M-disse Desset: 2			
D14			-		Driller Described: (Medium Dense to Dense) Very sandy GRAVEL.			
SPT (C)	N=28 (3,5/5,5,8,1	0)	F					1
N=28			ŀ					
			ŀ					
			-					
B15			(2.40)					
B15 D16			Ē					
SPT (C) N=45	N=45		ŀ					
-4J	(2,//0,14,13,10)		-					
			E					
B17		17.56	7.00		Driller Described: (Dense to Verv dense) Slightly silty verv sandy CLAY	_		
D18 SPT (C)	N=48		-	×				
N=48	(5,9/11,9,15,13)		-	×				
			-	×				
B10			[	×				
D20			ŀ	×				
SPT (C) N=55	N=55 (7.7/10.14.14.17)		÷ .	×				
			- (3.00)	×				
			Ē					
B21			F					1
D22 SPT (C)	N=58		ŀ	×				
N=58			ŀ	× · · ·				1
			-	×				
		14.56	10.00	×				
		14.50	- 10.00		Continued on Next Page Water Added Water	er Strika	- General	1
					From (m) To (m) Struck at (m) C	asing to (m)	Time (min) R	
					2.40 4.60	2.40	20 20	
								-
					To (m) Diam (mm) From (m) 10.00 200	To (n	n) Time	(h
	D4 SPT (C) N=9 B5 D6 SPT (C) N=11 B7 D8 B9 D10 SPT (C) N=16 B11 D12 SPT (C) N=18 B13 D14 SPT (C) N=28 B15 D16 SPT (C) N=28 B15 D16 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=45 B17 D18 SPT (C) N=55 B21 D22 SPT (C) N=58 SPT (C) SPT (C) N=58 SPT (C) SPT (C) N=58 SPT (C) SPT (C)	D4 SPT (C) N=9 B5 D6 SPT (C) N=11 B7 D8 B9 D10 SPT (C) N=16 (2,2/3,3,5,5) N=16 N=16 (2,2/3,3,5,5) N=16 N=18 (3,3/4,5,5,4) N=18 (3,3/4,5,5,4) N=18 (3,3/4,5,5,4) N=18 (3,3/4,5,5,4) N=28 (3,5/5,5,8,1) N=28 (3,5/5,5,8,1) N=28 (3,5/5,5,8,1) N=28 (3,5/5,5,8,1) N=28 (3,5/5,5,8,1) N=45 (2,7/8,14,13,10) B17 D18 SPT (C) N=45 (2,7/8,14,13,10) B17 D18 SPT (C) N=48 (5,9/11,9,15,13) B19 D20 SPT (C) N=55 N=55 N=55 N=58 (6,8/11,13,18,16)	D4 SPT (C) N=9 B5 D6 SPT (C) N=11 B7 D8 B9 D10 SPT (C) N=16 B11 D12 SPT (C) N=16 N=16 (2,2/3,3,5,5) N=16 N=18 (3,3/4,5,5,4) N=18 (3,3/4,5,5,4) N=18 (3,3/4,5,5,4) N=28 (3,5/5,5,8,10) N=28 (3,5/5,5,8,10) N=55 (7,7/10,14,14,17) B17 D18 (3,7/4) N=55 (7,7/10,14,14,17) B17 D18 (3,7/4) N=55 (7,7/10,14,14,17) B17 D18 (3,7/4) N=55 (7,7/10,14,14,17) N=55 (7,7/10,14,14,17) D18 (3,7/4) D19 (3,7/4) D10 (3,7/4) D1	D4 SPT (C) N=9       N=9 (2,1/2,3,2,2)       (0.80)         B5 D6 SPT (C) N=11       N=11 (2,2/4,2,3,2)       22.76       1.80         B9 D10 SPT (C) N=16       N=11 (2,2/4,2,3,2)       22.16       4.00         B9 D10 SPT (C) N=16       N=16 (2,2/3,3,5,5)       20.56       4.00         B11 D12 SPT (C) N=18       N=18 (3,3/4,5,5,4)       19.96       4.60         B13 D14       N=28 (3,5/5,5,8,10)       19.96       4.60         B15 D16 SPT (C) N=28       N=45 (2,7/8,14,13,10)       17.56       7.00         B15 D16 SPT (C) N=45       N=48 (5,9/11,9,15,13)       17.56       7.00         B17 D18 SPT (C) N=55       N=55 (7,7/10,14,14,17)       14.56       10.00         B21 D22 SPT (C) N=58       N=58 (6,8/11,13,18,16)       14.56       10.00	D4 SPT (C) N=10 B15 D10 SPT (C) N=16 B17 D18 B17 D18 B17 D18 B17 D18 B17 D18 B17 D18 B17 D18 SPT (C) N=28 B17 D14 SPT (C) N=28 B17 D18 SPT (C) N=28 B17 D18 SPT (C) N=48 (3,5/5,5,8,10) B17 D18 SPT (C) N=48 (3,5/5,5,8,10) B17 D18 SPT (C) N=48 (2,7/8,14,13,10) B17 D18 SPT (C) N=55 SPT (C) SPT (C) S	D4 N=9       N=9 (2,1/2,3,2,2,)       22,76       1.80       Differ Described: (Firm) Brown sightly gravelity sandy CLA.         B5 D6 D7 PFT (C) D7 PFT (C) D7 PFT (C)       N=11 (2,2/4,2,3,2)       22,76       1.80       Differ Described: (Firm) Grey / Purple sightly gravelity sinty sandy CLA.         B7 D7 D7 PFT (C)       N=11 (2,2/4,2,3,2)       22,16       2.40       Differ Described: (Medium Dense) Sandy GRAVEL         B8 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7	Def end         N=9 (2,1/2,3,2,2)         Def end         Def end <thdef end<="" th="">         Def end         Def end</thdef>	Del Prof. (N=89         N=9 (2,1/2,2,2,2)         22,76         1.80         Differ Described: (Firm) Grey / Purple slightly gravely sindy CLAX.           85 06 (c) 97 (C) 97 (C) 98 (c) 98 (c) 98 (c) 98 (c) 98 (c) 98 (c) 99 (c) 91 (c) 98 (c) 99 (c) 91 (c) 91 (c) 92 (c) 91 (c) 91 (c) 92 (c) 91 (

					Project	t No.:	Project	Name:	BC	orehol	e No
	<b>)(</b>	$\wedge$	Ì		20-087		1	e Housing Development		BH	
	ha				Coordi		Client:				
L	-y			J	55742		BMOR		_	Sheet	2 of 2
lethod:			_	•	1	0.50 2		Representative:	Sc	ale:	1:50
able Percus	sion				57445			Associates Ltd			
ant:					Groun		Dates:		D	riller:	AA
lcon						6 mOD	Dutes.	14/09/2020 - 15/09/2020	Lo	gger:	MN
Depth	Sample /	Casing V Depth D (m)	Water Depth (m)	Field Records	Level	Depth (m)	Legend	Description	Water		
(m) 0.00 - 10.45	Tests SPT (C)	(m)		N=59	(mOD)	(Thickness)	Legenu	End of borehole at 10.000m	×a Va	Dack	"
0.00 - 10.45	N=59			(8,10/14,11,17,17)		Ē					
						-					10.5
						-					
						-					
						Ē					11.0
						-					
						-					11.5
						F					
						F					12.0
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						ŀ					
						 -					19.0
						-					
						E					19.5
						ŀ					
						-					
morte								Water Added	Water Strike	e - Gene	ral
marks									m) Casing to (m) 2.40		
								4.60	2.40	20	2.0
								Casing Details	Chiselling		
								To (m) Diam (mm) From (	m) To (	m) (Ti	ne (hh:r

Appendix C

**Trial Pit Logs** 

6			Projec			t Name:			Tri		No.:
C			20-087			oe Housing Development				TP	01
	uge			inates:	Client: BMOR				5	sheet	1 of 1
Method:			55721	8.29 E		s Representative:				ale:	1:20
Excavation			57481	8.78 N	1	Associates Ltd			-		
Plant:			Groun	d Level:	Date:				Dr	iver:	IW
Kobelco E135	SSR		42.4	1 mOD	28/09/	2020			Lo	gger:	MN
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend		Description		Water		
(m) 0.40 - 0.90 0.40 - 0.90 1.50 - 2.00 1.50 - 2.00	B1 D2 B3 D4		42.01	(Thickness)	핵 강핵	TOPSOIL: Soft dark brown sligh low cobble content and frequer Firm light brown becoming redo gravelly very silty CLAY with low Sand is fine to coarse. Gravel is Cobbles and boulders are most	tly sandy slightly g It rootlets, moist. Jish brown (little o cobble and small fine to coarse, sub	range mottling) sand boulder content, mo angular to subround	h ly ist.		0.5
2.00 - 2.40 2.00 - 2.40 2.50 - 3.00 2.50 - 3.00	B5 D6 B7 D8	Water seepage from 2.4m, no rise after 20 minutes.	40.41	- 2.00 - (0.40) - 2.40		Brown slightly clayey gravelly ve moist becoming wet. Sand is fin subangular to subrounded. Cob sandstone, siltstone and some of Very stiff reddish brown slightly with low cobble content, moist. coarse, subangular. Cobbles are occasional quartz.	e to coarse. Grave bles are subangula quartz. gravelly slightly sa Sand is fine to coa	I is fine to coarse, ar to subrounded, andy to sandy CLAY / arse. Gravel is fine to	SILT		2.0 -
			39.41	- (0.60) 			f trial pit at 3.000m	1			3.0 -
				-							3.5
Romarks	1								Stabilit		
Remarks							Water	Strikes:	Stabilit Slight s		7
							Struck at (m):	Remarks:	JUBILS	paiiiiig	>
							2.40	Water seepage from 2.4m, no rise after	Width	:	1.30
								20 minutes.			3.90
									Length	:	3.9

			Project 20-087		Project Cloghro	
	bgeo			inates:	Client:	
	<u> </u>		55727	9.02 E	BMOR	
Method:			57478	9.96 N	Client's	
Excavation					MHL &	Ass
Plant: Kobelco E13	SCD			d Level:	Date:	າດາ
Depth	Sample / Tests	Field Records	Level	3 mOD Depth (m)	28/09/	202
(m)		Tield Netorus	(mOD)	(Thickness)		то
				- (0.30)		free
				(0.50)		
			42.93	0.30		Ora
				(0.20)	× × ×	осс
0.50 - 1.00	B1		42.73	- 0.50	× × ×	sub qua
0.50 - 1.00	D2				×°*	Bro
				ŀ		mo sub
				-		qua
				-		
				-		
				-		
				-		
				-		
				(1.90)		
1.50 - 2.00	В3			- (1.90)		
1.50 - 2.00	D4			-		
				-	о <sub>х</sub> о × о ×	
				-		
				-	о <sub>х</sub> о × о ×	
				-	о <sub>х</sub> о × о ×	
				-	о <sub>х</sub> о × о ×	
				Ł	$\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}}}}}$	
				F	Ŏx Ô × ð ×	
				-	Ŏx Ô × ð ×	
			40.83	- 2.40	$\hat{O} \times \hat{O} \times \hat{O}$	Dar
				-	$\mathcal{O}_{\times}^{\times}\mathcal{O}_{\times}^{\times}$	con sub
2.60 - 3.10 2.60 - 3.10	B5 D6			-	$\mathcal{O}_{\times}^{\times}\mathcal{O}_{\times}^{\times}$	and
				-	Ŏx × ĸ	
				ŀ	Ŏx × ĸ	
					ð XO	
				- (1.20)	$\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}{\overset{\circ}}$	
				-	$\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}{\overset{\circ}}{\overset{\circ}{\circ$	
				F	$0 \times 0$	
				F	ð×70°	
				F	ŎXO	
				ļ	ŎXO	
			39.63	- 3.60	Ôx°0°	
				-		
				-		
				ŀ		
D						
Remarks						

a <b>me:</b> Housing Development				Tria	al Pit TP	No.: 02
				S		1 of 1
epresentative:				Sca	ale:	1:20
sociates Ltd					ver:	
20					ger:	
20	Description			Water	55011	
PSOIL: Soft dark brown slight	-	ery silty CLAY with		Ŵ		
quent rootlets, moist.						-
						_
ange brown slightly silty very casional rootlets, moist. Sand						_
pangular. Cobbles are subang artz.						0.5
own silty very gravelly SAND v bist. Sand is fine to coarse. Gr			ent,			_
prounded. Cobbles are suban artz.			nal			_
di tz.						_
						_
						1.0
						_
						_
						1.5
						_
						_
						_
						_
						2.0
						_
rk brown silty very gravelly S/	AND with low cobb	le and small boulder	r			_
ntent, moist t wet. Sand is fin bangular to subrounded. Cob	e to coarse. Gravel	is fine to coarse,				2.5 —
d occasional quartz.	bies are subuliguid	, sundstone, sinston	ic .			_
						-
						_
						3.0
						_
						_
						_
						_
						3.5 —
End o	f trial pit at 3.600m					_
						_
	Water	Strikes:	Stat		<b>/:</b> balling	
	Struck at (m):	Remarks:	Silgr	it SP	aiing	
		None Encountered	Wio	dth:		1.30
			Len	gth	:	3.80

1			Projec	t No.:	Project	Name:			Tri	ial Pi	t No.:
	<b>∆, ⊃,O</b>		20-087	,	Cloghr	e Housing Development				TP	03
	Dae		Co-ord	inates:	Client:				9	Sheet	1 of 1
			55736	6.05 E	BMOR						
Method:			57483	7.00 N	1	Representative:			Sc	ale:	1:20
Excavation						Associates Ltd			Dr	viver:	TW
Plant:	2500			d Level:	Date:	2020				agor	MN
Kobelco E1 Depth			Level	4 mOD Depth (m)	28/09/						
(m)	Sample / Tests	Field Records		(Thickness)	Legend		escription		Water		
0.60 - 1.10 0.60 - 1.10 1.60 - 2.10 1.60 - 2.10	B1 D2 B3 D4		43.94	(0.30) (0.30) (0.30) (0.30) (0.60) (1.70)	· 강객· 상책· 상책· 상책· 상책· 상책· 상책· 상책· 상책· 상책· 상책	TOPSOIL: Soft dark brown slightly i cobble content and frequent rootle Firm light greyish brown sandy gra content and occasional rootlets, m to coarse, subangular. Cobbles are occasional quartz. Firm becoming stiff orange brown gravelly very silty CLAY with low to boulder content, moist. Sand is fin subangular. Cobbles and boulders occasional quartz.	ets, moist. avelly very silty C ooist. Sand is fin subangular, sar and light greyisi medium cobble te to coarse. Gra	CLAY with low cobble e to coarse. Gravel is adstone, siltstone and h brown mottled san e content nd low sma vel is fine to coarse,	fine J dy II		05 · 10 - 15 ·
2.50 - 3.00 2.50 - 3.00	85 D6	Water seepage from 2.8m, no rise after 20	41.94	- 2.30		Brown silty very gravelly SAND wit Sand is fine to coarse. Gravel is fin are subangular, siltstone, sandstor	e to coarse, mos	stly subangular. Cobb	les	<u>r</u>	2.0 -
		minutes.	41.24	- 3.00	×*°×° ×°						
			71.29	-		End of tr	ial pit at 3.000m				3.0 -
Remarks							Water	Strikes:	Stabilit		
							Struck at (m):	Remarks:	Slight s	pallin	3
						F	2.80	Water seepage from			4.8-
								2.8m, no rise after 20 minutes.	Width	:	1.30
									Length		4.40

G	<b>∆ 3</b> .C		Project 20-087		Project Cloghro	
				inates:	Client:	
l	Dge		55739		BMOR	
Method:		_	1		Client's	s Re
Excavation			57472	9.00 N	MHL &	Ass
Plant:			1	d Level:	Date:	
Kobelco E13	5SR			6 mOD	25/09/	2020
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)		
				- (0.30)		TOF san
0.40 - 0.90 0.40 - 0.90	B1 D2		37.66	- 0.30 -		dec
				- (0.60) -		sub
0.90 - 1.15 0.90 - 1.15	B3 D4		37.06	- - - 0.90		Ligh San
			36.81	(0.25)		Stiff
1.30 - 1.80 1.30 - 1.80 2.40 - 2.90 2.40 - 2.90	85 D6 87 88	Water seepage from 2.5m, slight pooling after 20 minutes.	35.56	(1.25) (1.25) (0.60) (0.60)		Yell me coa are

ame:				Tria	al Pit	No.:
Housing Development					TP	04
				S	heet	1 of 1
				~	л.	1.20
epresentative:				Sca	ale:	1:20
sociates Ltd			ŀ			
JULIAICS LLU				Dri	ver:	TW
00				100	gger:	MAN
20				LOE	ger:	IVIIN
				e		
	Description			Water		
PSOIL / SUBSOIL: Soft dark b	rown bocoming are	wich brown clightly		-		
ndy silty CLAY with occasional	i gravel and rootlet	S.				-
						_
m light greyish brown and or	ange brown mottle	d slightly sandy slightly slightly sandy slightly sandy slightly slightly sandy slightly slight	ntly			_
avelly silty CLAY with low cobl	ble content and oco	casional partially				_
cayed rootlets, moist. Sand is						
bangular to subrounded. Cob						0.5
	bies are subaliguia					
						_
						-
						-
ht brown clayey silty sandy G	RAVEL with mediu	m cobble content	noist			_
nd is fine to coarse. Gravel is						10
						1.0
						_
ff orange brown mottled light	t brownish grey slig	shtly sandy slightly				_
avelly silty CLAY with low cobl	ble content, moist.					
						_
						_
						1.5
						-
						-
						_
						_
						2.0
						_
						_
	1. 1. 1. 11.					-
llowish brown slightly clayey						
edium to high cobble and sma				▼		2.5 —
arse. Gravel is fine to coarse,			ers			
e subangular, sandstone, silts	tone and occasiona	al quartz.				_
						_
						_
						3.0
End o	f trial pit at 3.000m					3.0
						_
						_
						-
						-
						3.5 —
						_
						_
						_
						_
	Water	Strikes:	Stab	ility	<b>/</b> :	
	water	Serine 3.				in
	Struck at (m):	Remarks:	-		balling	1[]
			grave	3		
	2.50	Water seepage from			_	
		2.5m, slight pooling	Wid	th:		1.30
		after 20 minutes.		-		
			Leng	gth:		4.70
		1				

			Project			Name:			Tria	al Pit No.:
			20-087	inates:	Cloghro	be Housing Development				TP05
l	ngel	<b>)</b>	55732		BMOR				S	heet 1 of 1
Method:		<b></b>	1			s Representative:			Sca	le: 1:20
Excavation			57465	3.08 N		Associates Ltd				ver: TW
Plant:	500			d Level:	Date:				-	
Kobelco E13: Depth			29.42	2 mOD Depth (m)	24/09/	2020 I				ger: MN
(m)	Sample / Tests	Field Records	(mOD)	(Thickness)	Legend		Description	and the state of the state	Water	
(m) 0.30 - 0.80 0.30 - 0.80	B1 D2 B3 D4	Steady inflow from 1.65m, rose from base to 1.65m depth after 20 minutes.	29.17 28.62 27.72	(0.25) 0.25 (0.55) 0.80 (0.90) 1.70		TOPSOIL: Soft dark brown slight frequent rootlets, moist. Firm light greyish brown with a slightly gravelly slity CLAY with 1 coarse. Gravel is fine to coarse, subangular to subrounded, sand Brown with a little orange brow gravelly SAND with low cobble a coarse. Gravel is fine to coarse, boulders are mostly subangular End o	little orange brow low cobble content subangular to sub dstone, siltstone at m mottling slightly and small boulder subangular to sub	n mottling slightly sa t, moist. Sand is fine rounded. Cobbles ar nd occasional quartz clayey slightly silty v content. Sand is fine rounded. Cobbles an	ndy to e ery to	0.5 10- 15 20- 25
lemarks							Water Struck at (m): 1.65	Strikes: Remarks: Steady inflow from		below 0.8m
							1.05	1.65m, rose from	Width:	1.15
								base to 1.65m depth		

			20-087	,	Cloghro	<b>t Na</b> oe H
	DC A			inates:	Client:	
l	Dgeo	<u>_</u> ]			BMOR	
Method:		2	55/4/	5.99 E	Client's	
Excavation			57463	4.01 N	MHL &	
Plant:			C	d Lavali		ASS
Kobelco E13	55R			<b>d Level:</b> 0 mOD	Date: 25/09/	202
Depth			Level	Depth (m)		
(m)	Sample / Tests	Field Records	(mOD)			1
				E .		TOF free
				(0.25)		
			28.55	0.25		Sof
0.30 - 0.80 0.30 - 0.80	B1 D2				<u>x % 0</u>	
0.00				ŀ	<u>x</u> ~_o	sub qua
				(0.55)	x_0	que
					<u>x ^x o</u>	
				-	<u>x x o</u>	
			28.00	- 0.80	~ <u>×</u> 0	
			20.00	-	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Firr
				F	n n n n n n n n n n n n n n n n n n n	coa
1.00 - 1.50 1.00 - 1.50	B3 D4			F	P P P P P P P P P	sub
				t i	<u>~~~</u> ~~	2
				- (0.90)		
				(0.90)	<u>~~~</u>	
				-	<u>x 0 8</u>	
				-	<u>*0</u> ~8	
				t	×°°×°°°	
				-	×°°×°°	
			27.10	- 1.70		
				ł		
				-		
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				L		-
Remarks						

<b>ame:</b> Housing Development			1	Trial Pit TP	
				Sheet	1 of 1
epresentative:				Scale:	1:20
sociates Ltd				Driver:	TW
20			I	ogger:	MN
	Description			Water	
PSOIL: Soft dark greyish brov quent rootlets, moist.	vn sandy CLAY with	occasional gravel ar	nd		_
ft becoming light brownish gr ntent. Sand is fine to coarse. brounded. Cobbles are suban	Gravel is fine to co	arse, subangular to			_
artz.					0.5 —
m brown gravelly very silty ve w small boulder content, moi:					_
arse, subangular to subround bangular, sandstone.	ed. Cobbles and bo	oulders are mostly			1.0
					_
					1.5 —
End o	f trial pit at 1.700m				_
					2.0
					_
					_
					2.5 —
					_
					3.0
					_
					3.5 —
					_
					_
			Stabi	lity	
	Water Struck at (m):	Strikes: Remarks:	Slight	spalling	below
		None Encountered	0.8m		1 1 -
			Widt Leng		1.15 2.30
			-5118		

C			Project		-	t Name:	Tria	al Pit	No.:
			20-087		-	be Housing Development		TP	07
	<b>bge</b>			inates:	Client:		S	heet	1 of 1
Method:			55742	2.73 E	BMOR	s Representative:	500		1:20
Excavation			57456	7.01 N	1	Associates Ltd	56	ne:	1.20
Plant:			Ground	d Level:	Date:		Dri	ver:	TW
Kobelco E13	5SR			2 mOD	24/09/	2020	Log	gger:	MN
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	Description	Water		
(,			(	(0.15)		TOPSOIL / MADE GROUND: Soft greyish brown slightly gravelly sandy silty	-		
0.15 - 0.50	B1		25.67	0.15		clay with frequent rootlets, moist. MADE GROUND: Soft light brown slightly gravelly sandy very silty Clay with			
0.15 - 0.50	D2			-		low cobble and small boulder content and occasional rootlets, moist. Sand			
				(0.35)		is fine to coarse. Gravel is fine to coarse, angular to subrounded. Cobbles and boulders are subangular, sandstone, siltstone and occasional quartz.			
				-					
			25.32	- 0.50		FORMER TOPSOIL: Soft dark greyish brown slightly sandy slightly gravelly			0.5 -
				- (0.20)		silty CLAY with occasional partially decayed rootlets, moist.			
0.70 - 1.20 0.70 - 1.20	B3 B4		25.12	- 0.70		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.			
				-					1.0 -
				- (0.90)		STONE FIELD DRAIN - Along south side of TP (1.1m - 1.7m)			
				-					
				-					
				-					
				-					1.5 -
		Rapid water inflow from	24.22	1.60		Firm grey slightly sandy gravelly CLAY with low cobble content, moist to			
1.70 - 2.20	B5	west end of field drain at 1.6m. Rose to 0.45m after		-		wet. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded.			
1.70 - 2.20	D6	20 minutes.		-		Cobbles are subangular, sandstone, siltstone and occasional quartz.			
				- (0.60)					
				-					2.0 —
				-					
2.20 - 2.40	B7		23.62	- 2.20	<u>م کے ج</u> م	Firm to stiff light grey to grey and locally pale yellow slightly sandy gravelly	$\left  \right $		
2.20 - 2.40	D8			-	00000 80000	silty CLAY with low cobble and small boulder content, moist. Sand is fine to			
2.40 - 2.80	В9			-	<u>ko 20</u>	coarse. Gravel is fine to coarse, angular to subrounded. Cobbles are angular to subrounded, sandstone, siltstone, limestone and occasional			
2.40 - 2.80	D10			- (0.60)	10°50 10°50	quartz.			2.5 -
				-					
				-					
			23.02	- 2.80	-0°-10 -0~-8	End of trial pit at 2.800m			
				-					
				-					3.0 —
				-					
				-					
				-					
				-					
				-					3.5 -
				-					-
				-					
				-					
				_					
				-					
Remarks						Mater Statilizer	bility	/:	
						Stuck of the Samedan Sid	es co	llapsi	
						Struck at (m): Remarks: bel	ow g	round	dwater
							idth:		1.30
							ngth		4.70

	),C /\		Project		Cloghro	t Nam
	had			inates:	Client:	
	bye		55735		BMOR	
Method:			1		Client's	s Rep
Excavation			57451	3.10 N	MHL &	
Plant:			Ground	d Level:	Date:	
Kobelco E135	5SR		25.3	0 mOD	24/09/	2020
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend	
				- (0.20)		TOPS frequ
0.20 - 0.70	B1		25.10	0.20		Possi
0.20 - 0.70	D2			-		brow
				-		conte coars
				- (0.50)		suba
				-		
			24.60	0.70		Stiff r
		Rapid water inflow from		-		mois
		0.8m, rose to 0.6m after 20 minutes.		-	**** *****	are s coars
1.00 - 1.50	B3	20 minutes.		-	**** *****	suba Pos
1.00 - 1.50	D4				**** ******	slai
				- (1.00)	**** ******	
				[ (1.00)	**** ******	
				-	XXXX	
				-		
				-		
				-		
			23.60	- 1.70		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				l		
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	1	1	1	L	1	1
						<u> </u>

ame:				Trial Pi	t No.:
Housing Development				Т	P08
				Shee	t 1 of 1
epresentative:				Scale:	1:20
sociates Ltd				Driver:	TW
20				Logger	: MN
	Description			Water	
PSOIL: Soft dark brown slight equent rootlets, moist.	ly sandy slightly gr	avelly silty CLAY with		>	_
ssible MADE GROUND: Firm I					_
own slightly sandy slightly gra ntent and occasional rootlets arse. Gravel is fine to coarse,	, moist becoming v	vet. Sand is fine to	oble		_
bangular to subrounded, sand	-		.		0.5
				•	_
ff reddish brown sandy grave bist. Sand is fine to coarse. Gr e subangular, sandstone, silts	avel is fine to coars	se, subangular. Cobb	les l	Z	_
arse. Gravel is fine to coarse, bangular to subrounded, sand Possible former STONE FIELD	dstone, siltstone ar	nd occasional quartz			1.0
slabs of purple siltstone.					_
					_
					_
					_
					1.5 —
					_
End o	f trial pit at 1.700m				_
Liuo	1 (1) at pit at 1.70011				_
					_
					2.0
					_
					_
					_
					_
					2.5 —
					_
					3.0
					_
					_
					_
					3.5 —
					_
					_
					_
					_
			C + . 1		
	Water	Strikes:	Stabi Sides	i <b>lity:</b> s collaps	ing
	Struck at (m):	Remarks:	Jues	, conaps	····ю
	0.80	Rapid water inflow from 0.8m, rose to	Wid	th:	1.60
		0.6m after 20 minutes.	Leng		4.50

6	Å		Project			t Name:			Ti	rial Pi	t No.:
	<b>)C</b> /\\		20-087			oe Housing Development				TF	P09
	Dge			inates:	Client:					Sheet	: 1 of 1
Method:			55741	2.16 E	BMOR	s Representative:					1.20
Excavation			57444	4.10 N	1	Associates Ltd			50	cale:	1:20
Plant:			Ground	d Level:	Date:				D	river:	TW
Kobelco E135	5SR			2 mOD	24/09/	2020			Lo	ogger	: MN
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)			Description		Water		
			24.22	- (0.20) - 0.20	R - 0	TOPSOIL / SUBSOIL: Soft dark b sandy slightly gravelly silty CLAY Firm becoming stiff light greyish slightly sandy slightly gravelly si occasional partially decayed roo	with frequent room to brown with a littl ilty CLAY with low of	e orange brown mot cobble content and			-
0.60 - 1.10 0.60 - 1.10	B1 D2			(1.20)		is fine to coarse, subangular to subrounded, sandstone, siltstor	subrounded. Cobb	les are subangular to			0.5 -
1.70 - 2.20 1.70 - 2.20	83 D4		23.02	- 1.40		Purplish brown silty fine SAND silt and slightly gravelly fine to r			andy		- 15 - - - -
				- (1.30) 					2		2.0
2.70 - 3.20 2.70 - 3.20	B5 D6	Rapid water inflow from 2.7m, rose to 2.6m after	21.72	- 2.70 -	×0 ×0 × × × × × × × × × × × × ×	Brown slightly silty very sandy ( is fine to coarse. Gravel is fine to subangular, sandstone, siltstone	o coarse, subangul	ar. Cobbles are	Sand	z	-
		20 minutes.		- - (0.50) - -							3.0 —
			21.22	- 3.20 -	'n×.v.	end o	f trial pit at 3.200m	1			
				- - - - - -							3.5 -
				-							
Remarks	1	1	1	1	1		Water	Strikes:	Stabili		
							Struck at (m):	Remarks:	Sides o	collaps	ing
							2.70	Rapid water inflow from 2.7m, rose to 2.6m after 20	Width		2.60
								minutes.	Lengt	n:	4.40

· · · · · · · · · · · · · · · · · · ·	*		Project	t No.:	Project	
	bge		20-087	,	Cloghro	
	DOe		Co-ord	inates:	Client:	
			55725	4.03 E	BMOR	
Method:			57474	9.06 N	Client's	
Excavation					MHL &	Ass
Plant: Kobelco E13	SSR		1	<b>d Level:</b> 1 mOD	Date: 25/09/	202
Depth			Level	Depth (m)		
(m)	Sample / Tests	Field Records	(mOD)	(Thickness)		TO
				(0.25)		roo
				(0.25)		
			36.46	0.25		Fir
				ŀ	<u>x ~ ~ ~</u> ~	l gra
				L	α ∝	3
0.60 - 1.10	B1			Ł	0 <u></u>	
0.60 - 1.10	D2			(0.85)	0 <u>× 0</u>	
					α <u></u> , 	
				-	0 <u></u>	
				-		
				-		
1.10 - 1.45 1.10 - 1.45	B3 D4		35.61	1.10	<del>م من</del> و	Gre
				(0.35)		mo
				(0.33)		-
1.45 - 1.70	В5		35.26	1.45		-
1.45 - 1.70	D6	Steady water inflow from		ŀ	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Firr CL/
		1.45m, rose to 1.6m after		(0.25)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
		20 minutes.	35.01	1.70	<u>۳۵٬۳۵</u> ۰	╞
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a <b>me:</b> Housing Development				Tria	al Pit TP	No.: 10
				S	heet	1 of 1
epresentative:				Sca	le:	1:20
sociates Ltd				Dri	ver:	TW
20				Log	ger:	MN
	Description			Water		
PSOIL: Soft dark brown slight otlets, moist.	ly and slightly grav	elly CLAY with frequ	ent			_
						_
m light greyish brown with a avelly sandy very silty CLAY wi	ith low cobble cont					_
own partially decayed rootlet	s, moist.					-
						0.5
						_
						_
						_
						1.0
eyish brown slightly sandy ve bist becoming wet.	ry gravelly CLAY wi	th low cobble conte	nt,			_
						_
				Z		_
m to stiff light brownish grey AY with medium cobble conte				_		1.5 —
						_
End o	f trial pit at 1.700m					_
						_
						2.0
						_
						_
						_
						2.5 —
						_
						_
						_
						3.0
						_
						-
						_
						3.5 —
						_
						-
						_
	Water	Strikes:	Stab			
	Struck at (m):	Remarks:	Sligh 1.0m		alling	below
	1.45	Steady water inflow from 1.45m, rose to	Wic	lth:		1.15
		1.6m after 20 minutes.	Len	gth:		2.20

6			Project			t Name:			Tr		t No.:
C			20-087		-	oe Housing Development				TP	P11
l	ngeo		Co-ord		Client: BMOR					Sheet	: 1 of 1
Method:		1	55731	3.U/ E		s Representative:			Sc	ale:	1:20
Excavation			57471	9.01 N	1	Associates Ltd					
Plant:			Ground	d Level:	Date:					river:	IW
Kobelco E135	5SR			3 mOD	25/09/	2020				ogger	: MN
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)			Description		Water		
			37.58	(0.25) - 0.25 - (0.15)		TOPSOIL: Soft dark brown slightly frequent rootlets, moist. Firm light greyish brown slightly s cobble content and occasional ro	sandy slightly gravotlets, moist. Sar	velly silty CLAY with long to coarse.	w		
0.50 - 1.00 0.50 - 1.00	B1 D2		37.43	- 0.40 - - - - - - (0.70)		Gravel is fine to coarse, subangul siltstone and occasional quartz. Stiff brown / orange and light gre with low cobble content, moist. S coarse, subangular to subrounde siltstone and occasional quartz.	y mottled sandy Sand is fine to coa	gravelly very silty CLA arse. Gravel is fine to	¥		0.5 -
			36.73	- - - - - - - - - - - - - - - - - - -		Brown clayey silty sandy GRAVEL moist. Sand is fine to coarse. Grav					1.0
			36.53	- 1.30		Stiff orange brown and light grey silty CLAY with low cobble conter fine to coarse, subangular. Cobble and occasional quartz.	to grey mottled s nt, moist. Sand is	slightly sandy gravelly fine to coarse. Gravel	is		1.5
1.60 - 2.10 1.60 - 2.10	B3 D4			- - - - - - - - - - - - - - -							2.0 -
2.30 - 2.80 2.30 - 2.80	B5 D6			- - - - - - -							2.5
2.80 - 3.30 2.80 - 3.30	B7 D8		35.03	- 2.80 (0.50)		Very stiff light grey mottled orang silty CLAY, moist. Sand is fine to co subangular. Cobbles are subangu quartz.	oarse. Gravel is fi	ne to coarse, angular	to		3.0 -
			34.53	- - - 3.30		End of	trial pit at 3.300m				
				-							3.5
						•					
Remarks						-	Water Struck at (m):	Strikes: Remarks: None Encountered	Stabilit Good		
									Width Length		1.20 4.20

			Project		Project	
	OC A		20-087		Cloghro	
l	bge			inates:	Client:	
Method:			55734	1.78 E	BMOR Client's	
Excavation			57461	2.44 N	MHL &	
Plant:			Groun	d Level:	Date:	
Kobelco E13	35SR		1	3 mOD	24/09/	20
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)		
(,				(0.25)		T g
			27.18	0.25		F
0.70 - 1.20 0.70 - 1.20	81 D2			(1.15)		
1.60 - 2.10 1.60 - 2.10	83 D4		26.03	- 1.40 		S
				(1.10)		
2.50 - 2.70 2.50 - 2.70	в5 D6		24.93	- 2.50		E
2.70 - 3.10 2.70 - 3.10	В7 D8	Steady water inflow from 2.8m, no rise after 20 minutes.		- - (0.60) -	0 0 0 0 0 0 0 0 0 0	t
		innuces.	24.33	- 3.10		

				Trial	Dit No	
<b>ame:</b> Housing Development					Pit No TP12	.:
					eet 1 of	f 1
epresentative:				Scale	<b>e:</b> 1:2	0
sociates Ltd				Drive	er: TW	/
20			ī	ogg	er: MN	٧
	Description			Water		
PSOIL: Soft dark brown becon avelly silty CLAY with frequent		n slightly sandy sligh				
	rooticts, moist.					
m becoming stiff light brown	ish grey with a little	e orange brown mot	tling			_
ghtly sandy slightly gravelly ve casional rootlets, moist. Sand	is fine to coarse.	Gravel is fine to coars				_
gular to subrounded. Cobbles	s are angular to sub	prounded.			0.	5 —
						_
						_
						_
						_
					1.	0
						_
						_
ff purplish brown slightly san	dy slightly gravelly	CLAY with low cobbl	e			_
ntent, moist. Sand is fine to c brounded. Cobbles are angula	oarse. Gravel is fine				1.	5 —
						-
						-
						_
					2	
					2.	_
						_
						_
						_
own slightly clayey slightly sil					2.	5 —
ntent and with a thin dark pa per surfaces, moist becoming	g wet. Sand is fine t	o coarse. Gravel is fi	ine			_
coarse, angular to subrounde	ed. Cobbles are ang	gular to subrounded.		-		_
			-	-		
					3.	0
End o	f trial pit at 3.100m					_
2.10 0						_
						_
						-
					3.	5 —
						_
						_
	Water	Strikes:	Stabi	-		
	Struck at (m):	Remarks:	Sides belov		ipsing m	
	2.80	Steady water inflow from 2.8m, no rise	Widt	th:	1.20	0
		after 20 minutes.	Leng	th:	5.50	0

(			Project	No.:	Project	Name:			Tri	al Pit	No.:
	<b>D.C</b>		20-087		Cloghr	pe Housing Development				ТР	13
	bde		Co-ord	inates:	Client:					hee+	1 of 1
	- 30		55741	2.03 E	BMOR					ncel	TOLT
Method:					Client'	s Representative:			Sc	ale:	1:20
Excavation			57450	9.00 N	MHL &	Associates Ltd			Dr	iver:	τw
Plant:				d Level:	Date:				-		
Kobelco E13	5SR	1		9 mOD	24/09/	2020				gger:	MN
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m) (Thickness)	Legend		Description		Water		
				-		TOPSOIL: Soft dark brown slight frequent rootlets, moist.	ly sandy slightly g	avelly silty CLAY with	1		
				- (0.20)		nequent rootiets, moist.					
			25.39	- 0.20		Possible MADE GROUND: Firm I					
				-		brown slightly sandy slightly gra content and occasional rootlets,			ble		
				-		coarse. Gravel is fine to coarse, subangular to subrounded, sand	angular to subrou	nded. Cobbles are			
0.50 - 1.00	B1			-		subangular to subrounded, sand	istorie, sittstorie a	iu occasionai quartz.			0.5
0.50 - 1.00	D2										
				-							
				-							
				-							
				- (1.50)							1.0 -
				-							
				-							
				-							
				_							
				-							
				-							1.5
				-							
1.70 - 2.20 1.70 - 2.20	B3 D4		23.89	- 1.70		Brown slightly gravelly silty to ve					
1.70 - 2.20				-	**************************************	occasional interbeds of slightly g Sand is fine to medium. Gravel i					
					×.°×°×	Cobbles are angular to subangu					
				_	×.°×° × × *	quartz.					2.0 -
				-	וו×						
				-	וו×						
				-	וו×						
				-	×. × ×						
		Seepage from 2.5m, no		- (1.50)	**************************************				T		2.5
		rise after 20 minutes.		-	×ו ×						2.3
2 70 2 55				-	×.~ו ×						
2.70 - 3.20 2.70 - 3.20	B5 D6			-	×.~ו.×						
				-	×.•ו.×						
				-	×.~ו`.×						
				-	×. × × ×. × ×						3.0 -
					× × ×						
			22.39	3.20	X						
				-		End of	f trial pit at 3.300m				
				-							
				-							3.5
				-							
				-							
				-							
				-							
				-							
									<u></u>		
Remarks							Water	Strikes:	Stabilit		w 1 7-
							Struck at (m):	Remarks:	Spalling	nelo	w 1./r
							2.50	Seepage from 2.5m, no rise after 20	Width		1.20
								minutes.			
									Length	:	5.20

· · · · · · · · · · · · · · · · · · ·	*		Projec		Project		1	Pit No.:
C	<b>)C</b>		20-08	7	Cloghro	be Housing Development		TP14
	<b>h</b> do		Co-ord	linates:	Client:			
l	vyc			E	BMOR		She	et 1 of
Vethod:				E	1	s Representative:	Scale	<b>:</b> 1:20
xcavation				Ν	1	Associates Ltd		
Plant:			Group	d Level:	Date:		Drive	er: ⊺W
<b>iant:</b> lobelco E135	5SR		Groun	d Level: mOD	Date: 25/09/	2020	Logg	er: MN
Depth			Level	Depth (m)				
(m)	Sample / Tes	its Field Records	(mOD)	(Thickness)	Legend	Description TOPSOIL: Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets, moist.	Water	
				- 0.20		Firm becoming stiff greyish brown becoming orange brown mottled slightly gravelly to gravelly sandy very silty CLAY with low cobble content, moist.		
0.50 - 1.00 0.50 - 1.00	B1 D2			- (1.00)				0.5
				- - - - -				1.0
1.30 - 1.80 1.30 - 1.80	B3 D4			1.20	×	Brown with a little orange brown mottling slightly clayey slightly silty very sandy GRAVEL with low cobble content, moist to wet.		
		Water seepage from 1.4m, no rise after 20 minutes.		- (0.70)				1.5
				-	× × · · · · · · · · · · · · · · · · · ·			
				- 1.90		End of trial pit at 1.900m		2.0
				- - -				
				- - -				_
				-				2.5
				-				
				-  -				3.0
				- - -				
				-				3.5
				- - -				
				- - -				
Remarks					1		bility:	
						Struck at (m):         Remarks:         Slig	ht spal	ling belo
						1.40 Water seepage from 1.4m, no rise after W	idth:	1.20
						20 minutes.		1.20





Appendix D

**Trial Pit Photographs** 

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







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





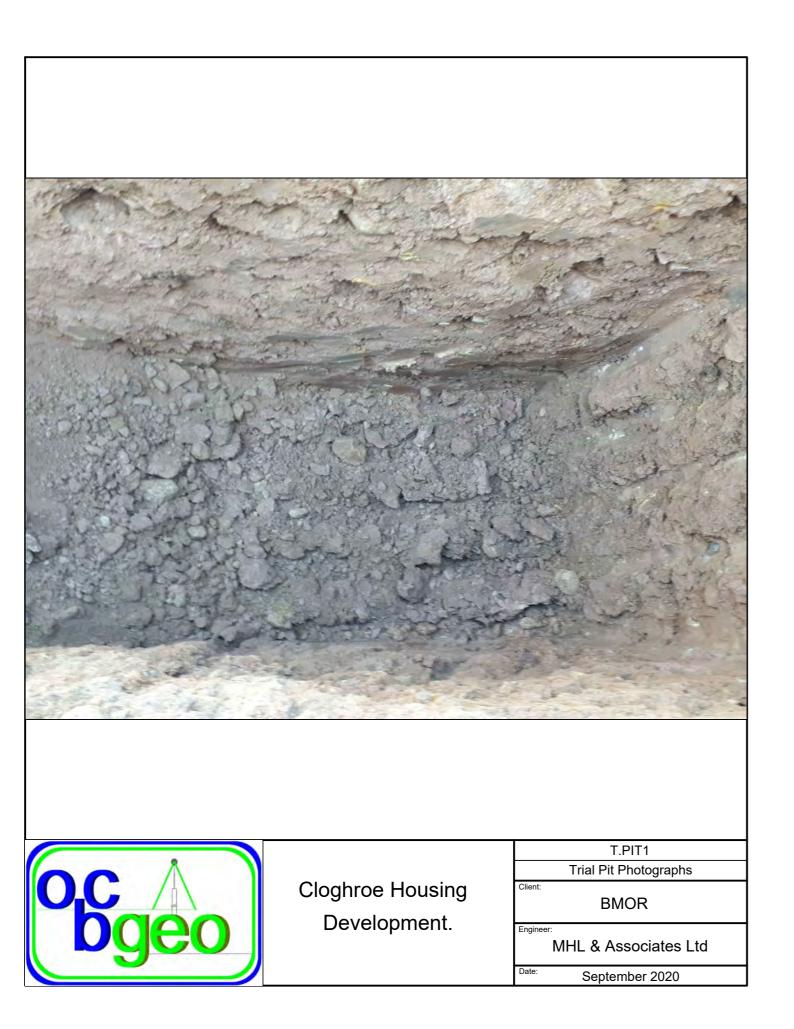


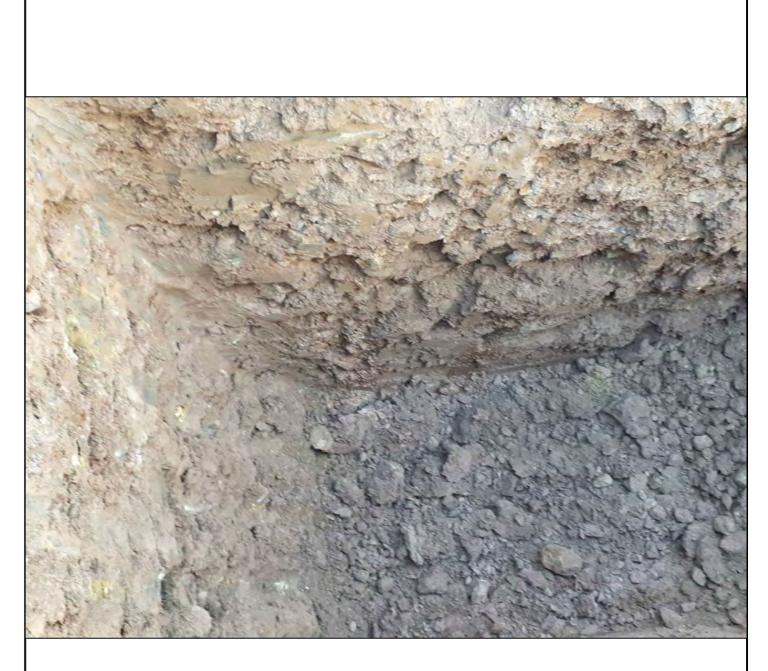
	T.PIT1
	Trial Pit Photographs
ousing	Client: BMOR
ment.	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020





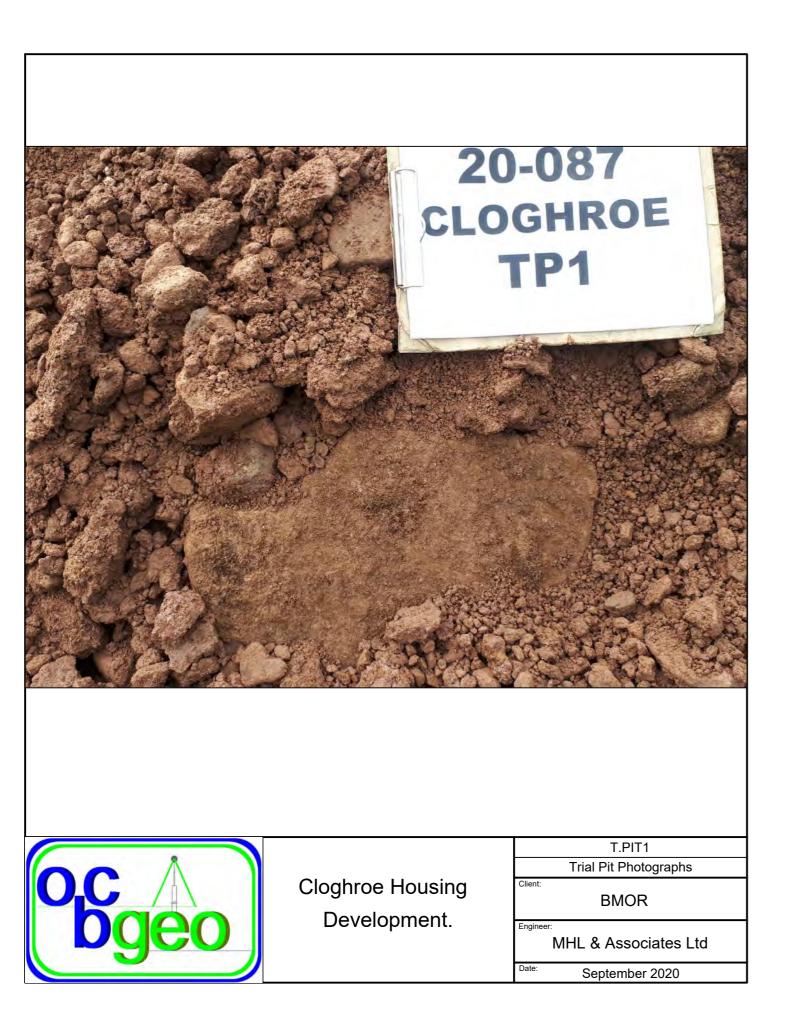
	T.PIT1
ousing	Trial Pit Photographs
	Client: BMOR
nent.	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







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







	T.PIT2
	Trial Pit Photographs
ousing	Client: BMOR
ment.	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







	T.PIT2
ousing	Trial Pit Photographs
	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020





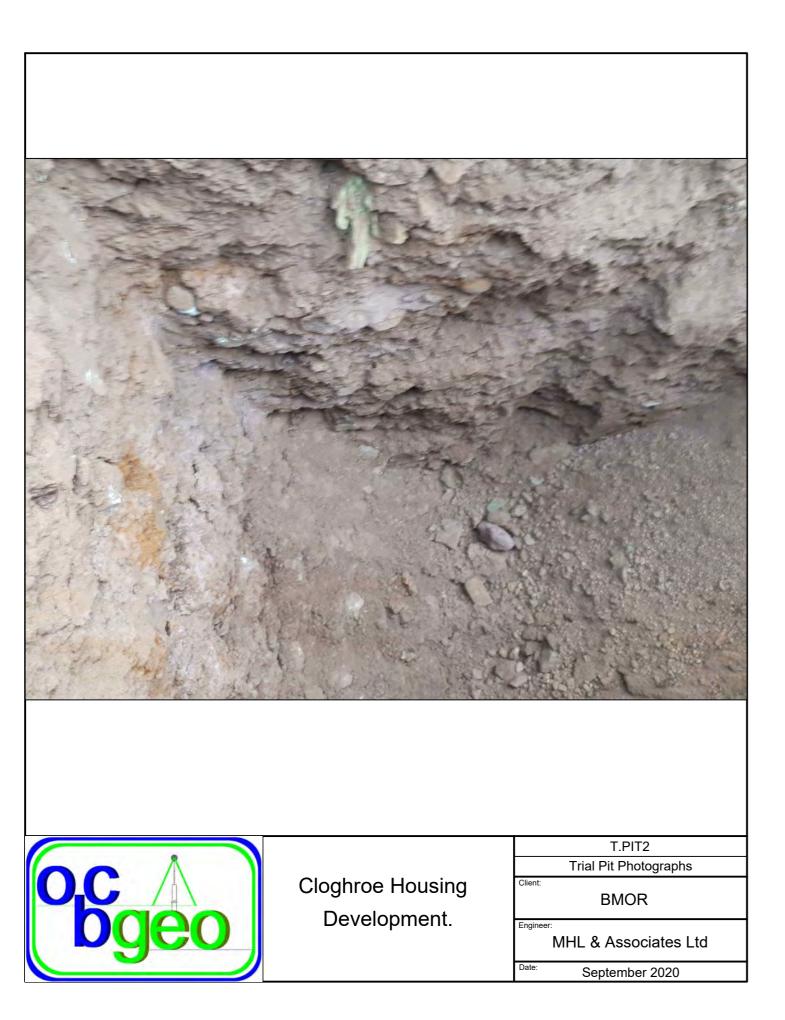
	T.PIT2
	Trial Pit Photographs
ousing ment.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020







ousing ment.	T.PIT2
	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







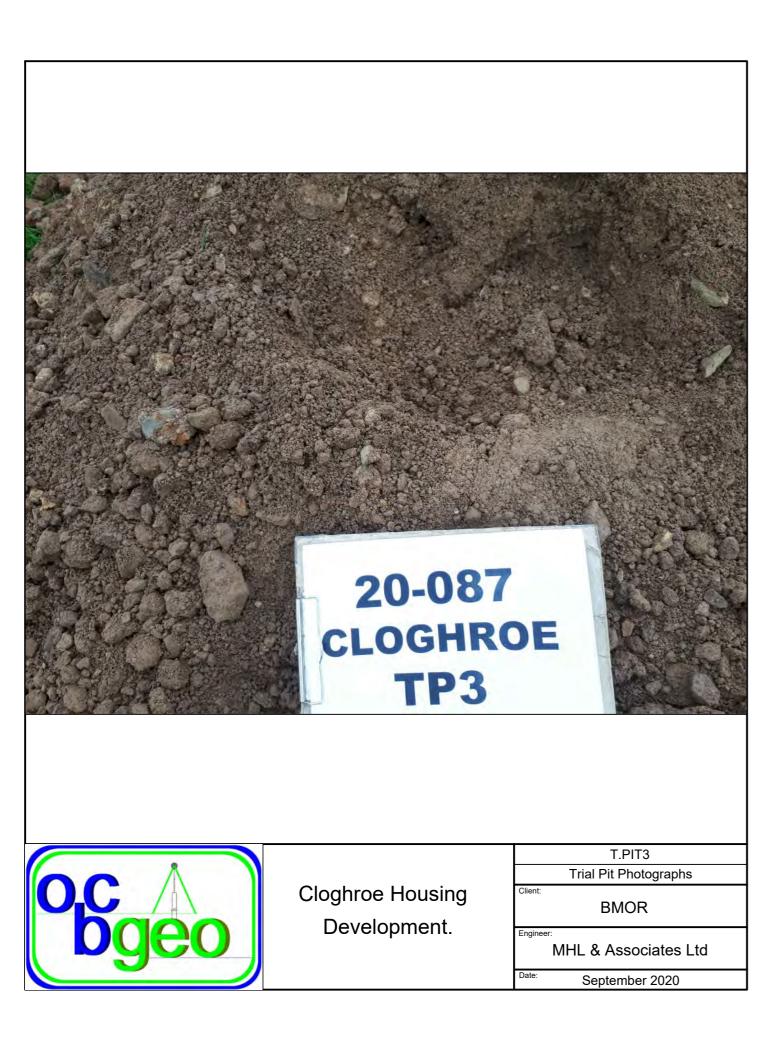
ousing nent.	T.PIT2
	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







ousing nent.	T.PIT3
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







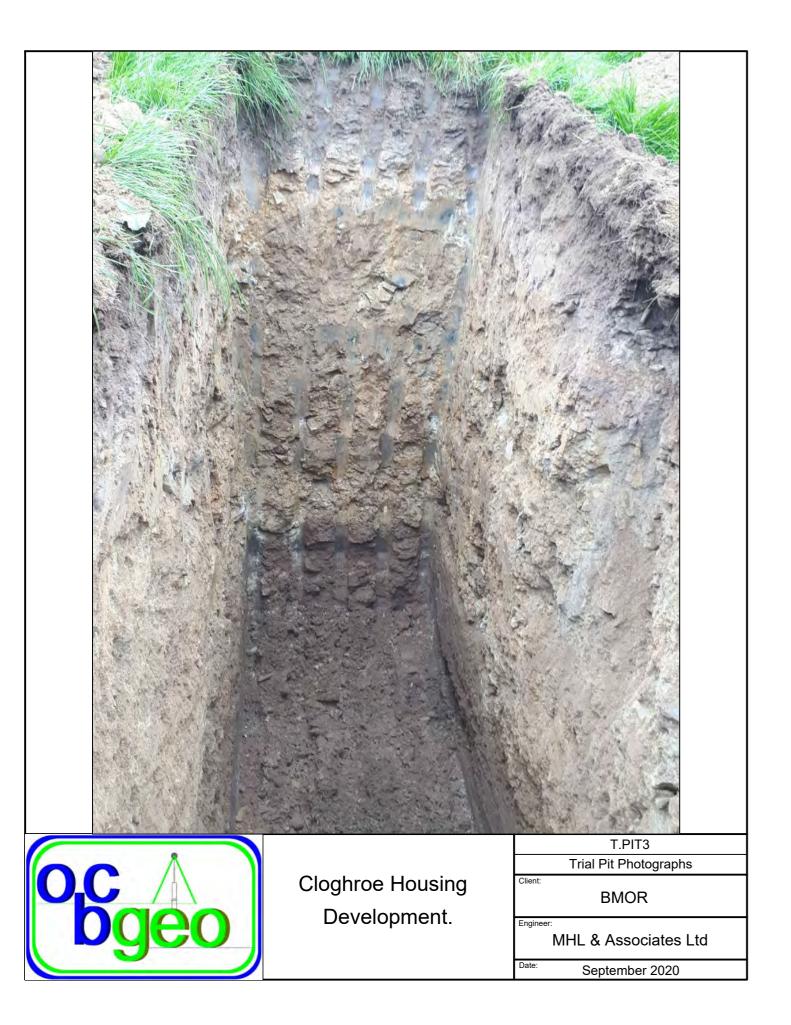
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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

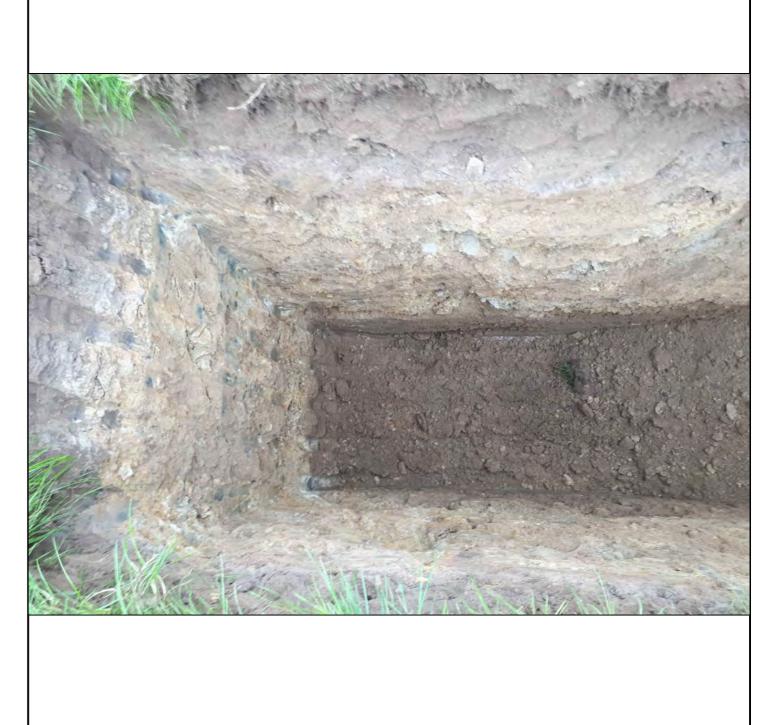






ousing ment.	T.PIT3
	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020





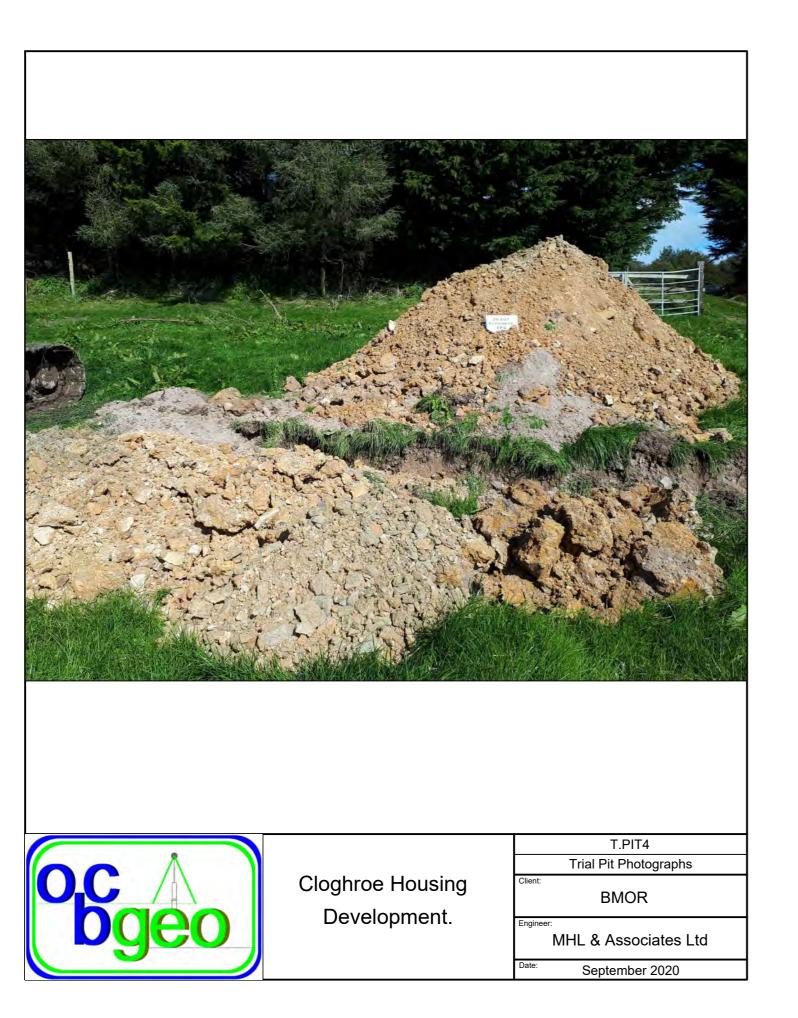


ousing nent.	T.PIT3
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020





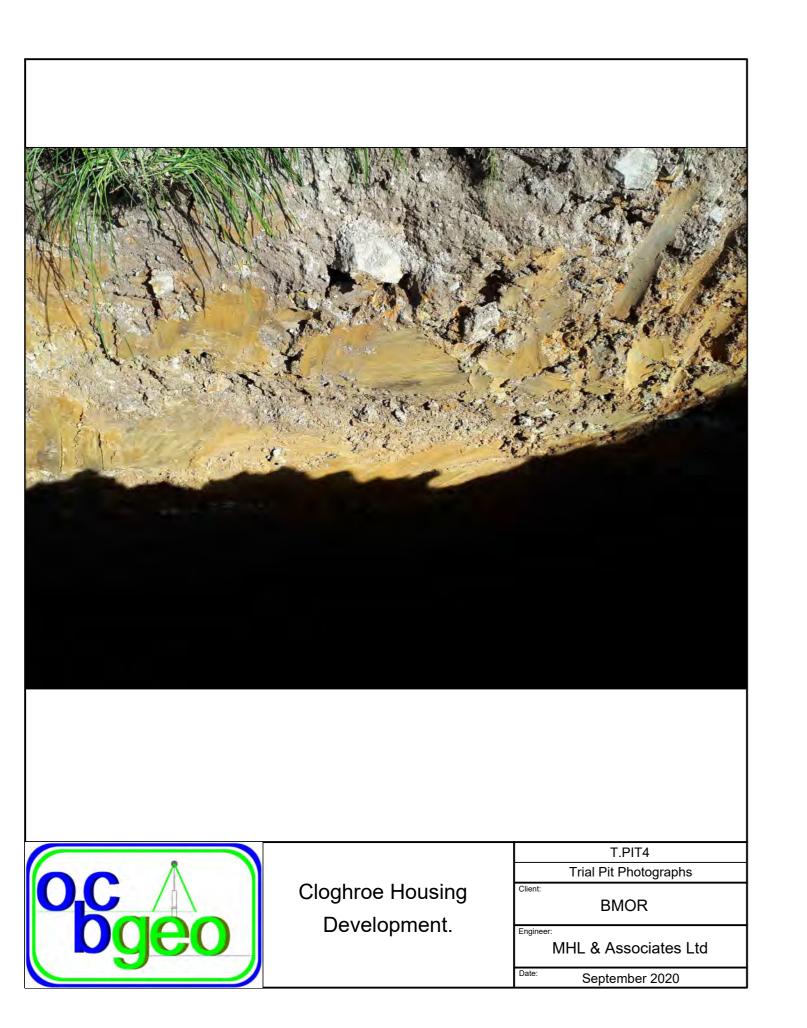
ousing nent.	T.PIT3
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020





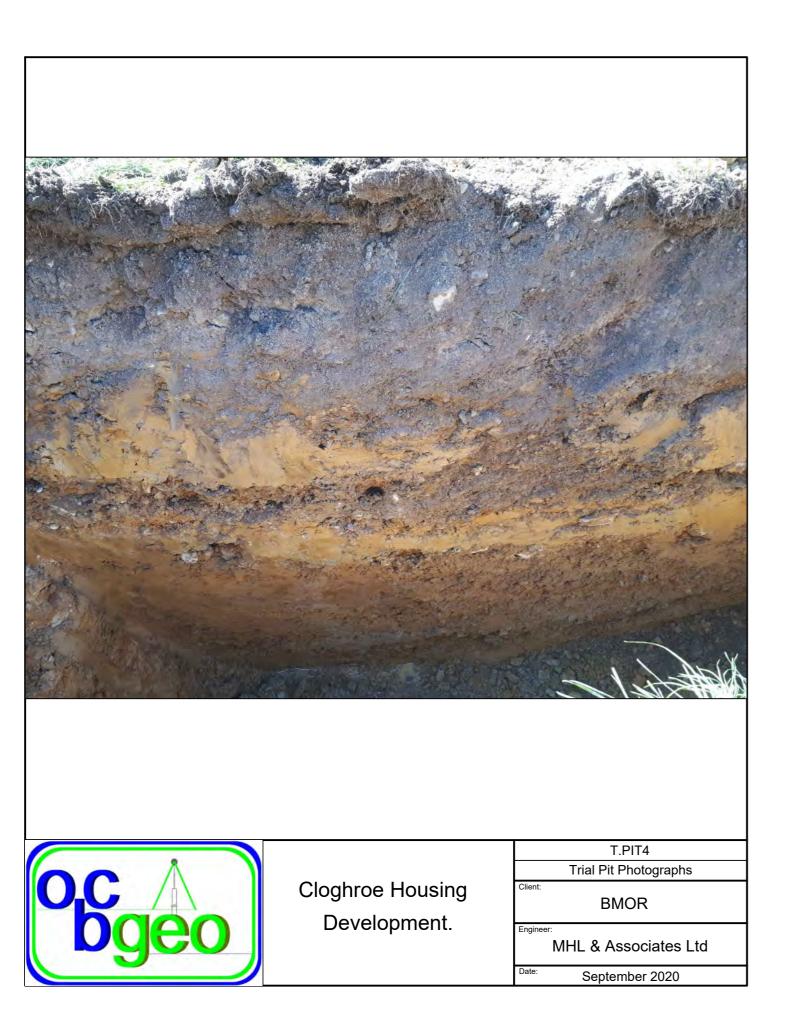


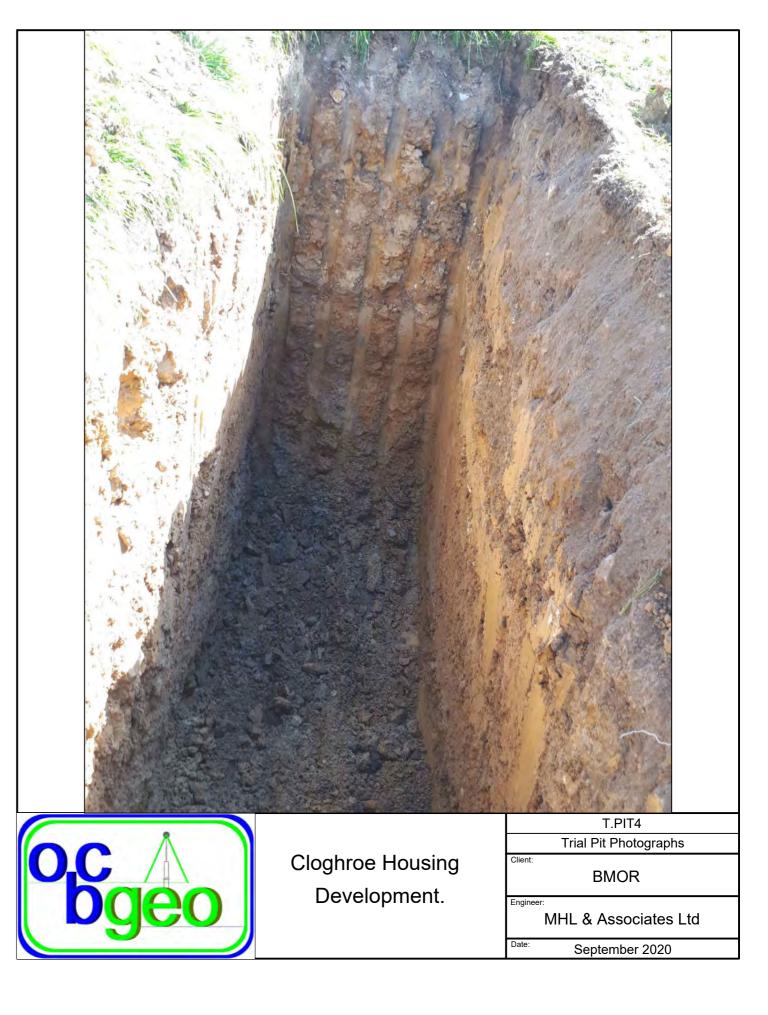
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	Trial Pit Photographs
ousing ment.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020

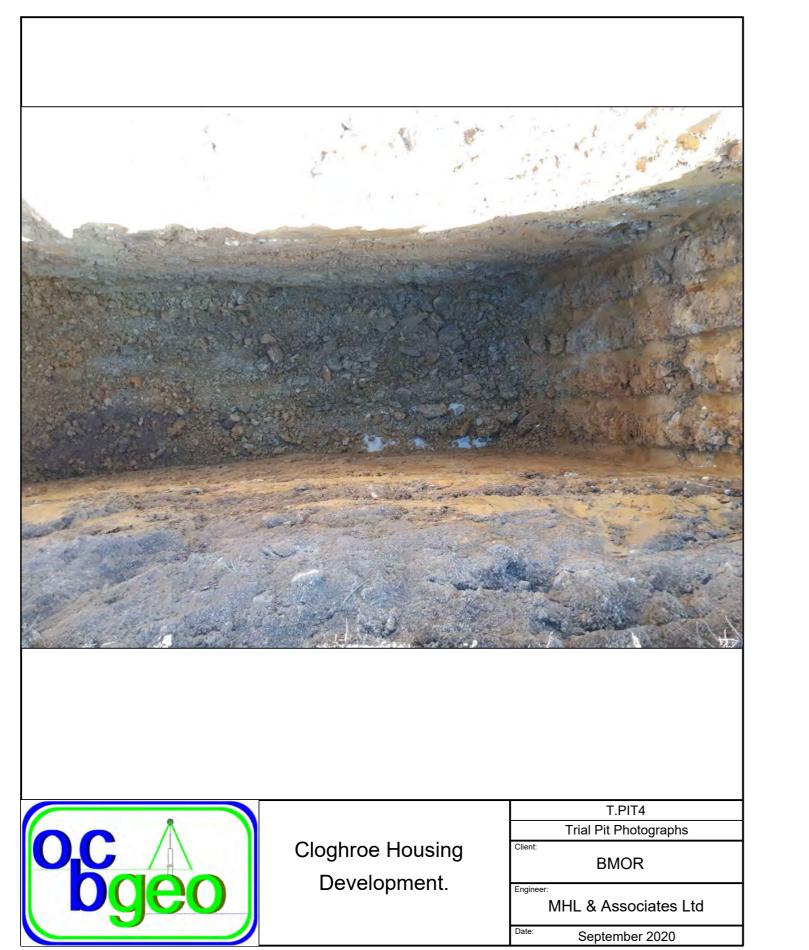




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121	
	······································
	trail a
	T.PIT4 Trial Pit Photographs
ousing	Client: BMOR
ment.	Engineer: MHL & Associates Ltd
	Date: September 2020



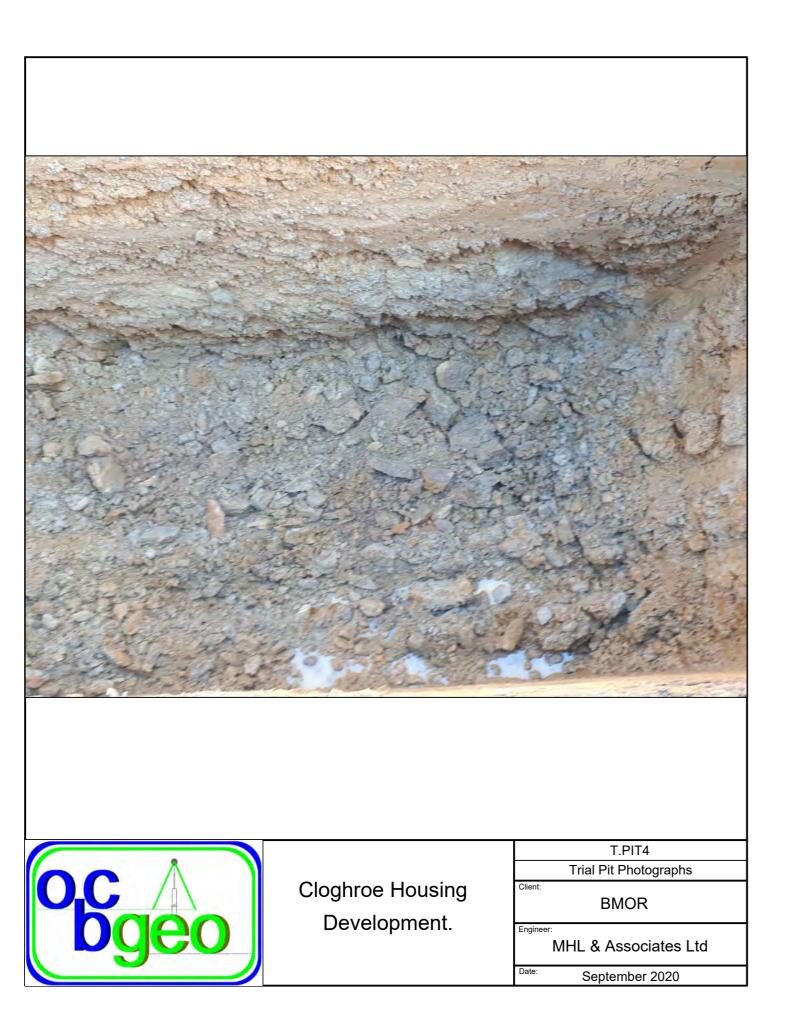








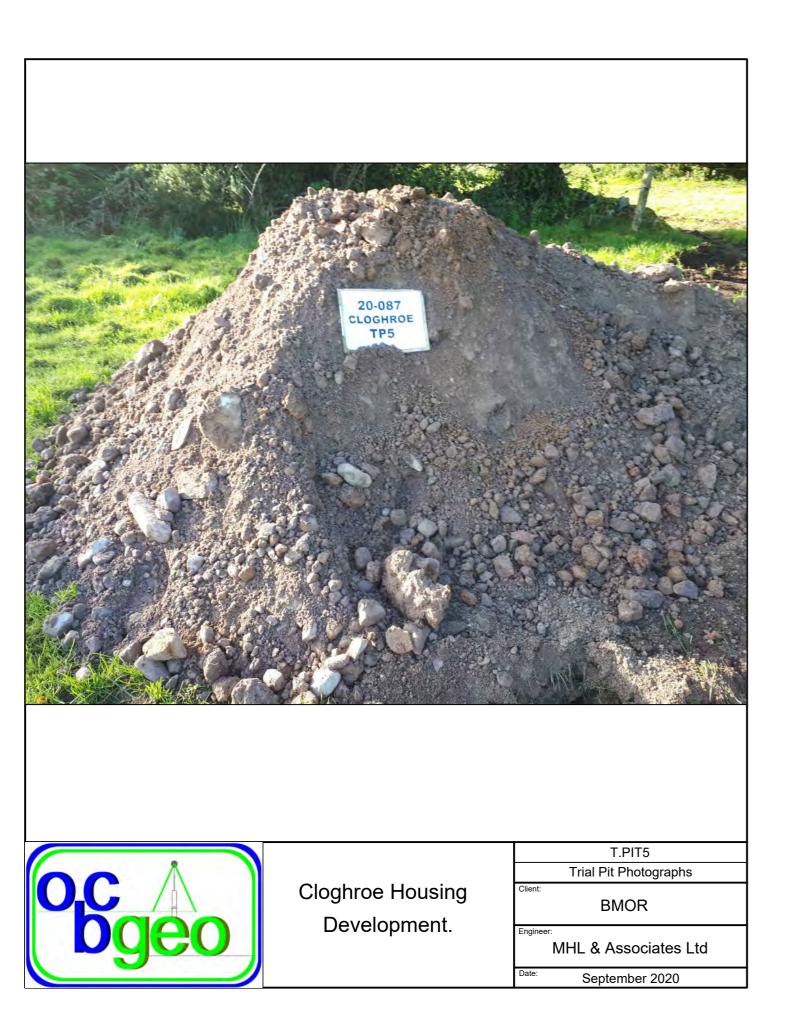
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	Trial Pit Photographs
	Client:
	Engineer: MHL & Associates Ltd
	Date: September 2020







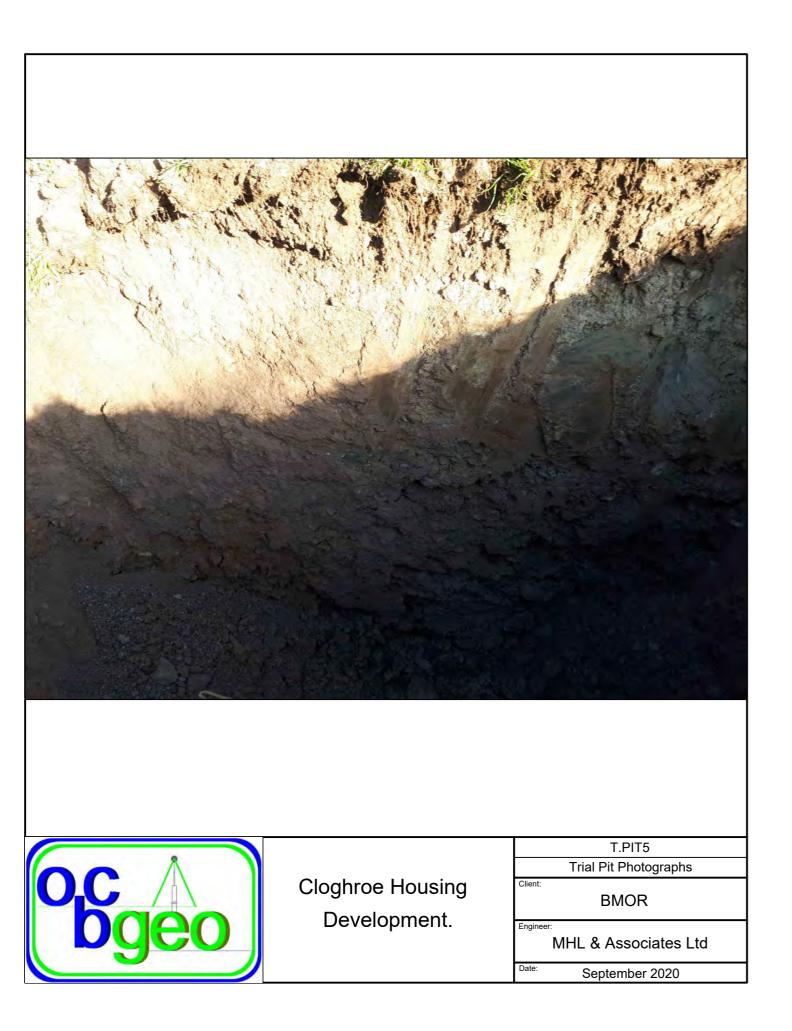
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	Trial Pit Photographs
ousing nent.	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

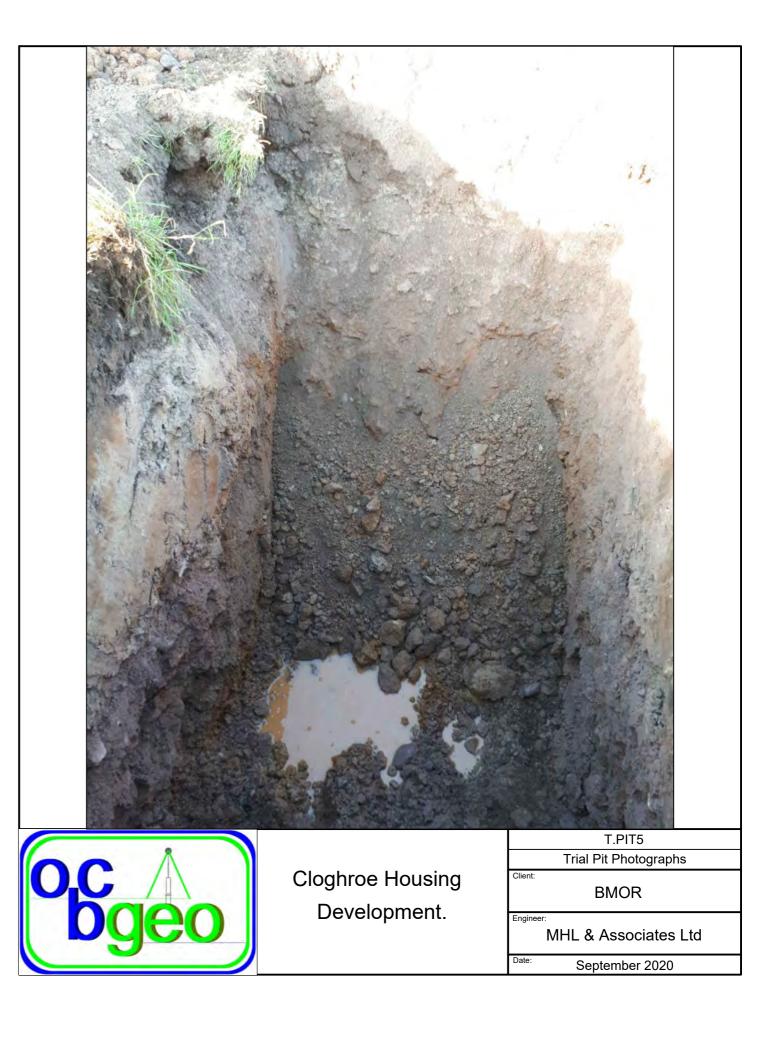


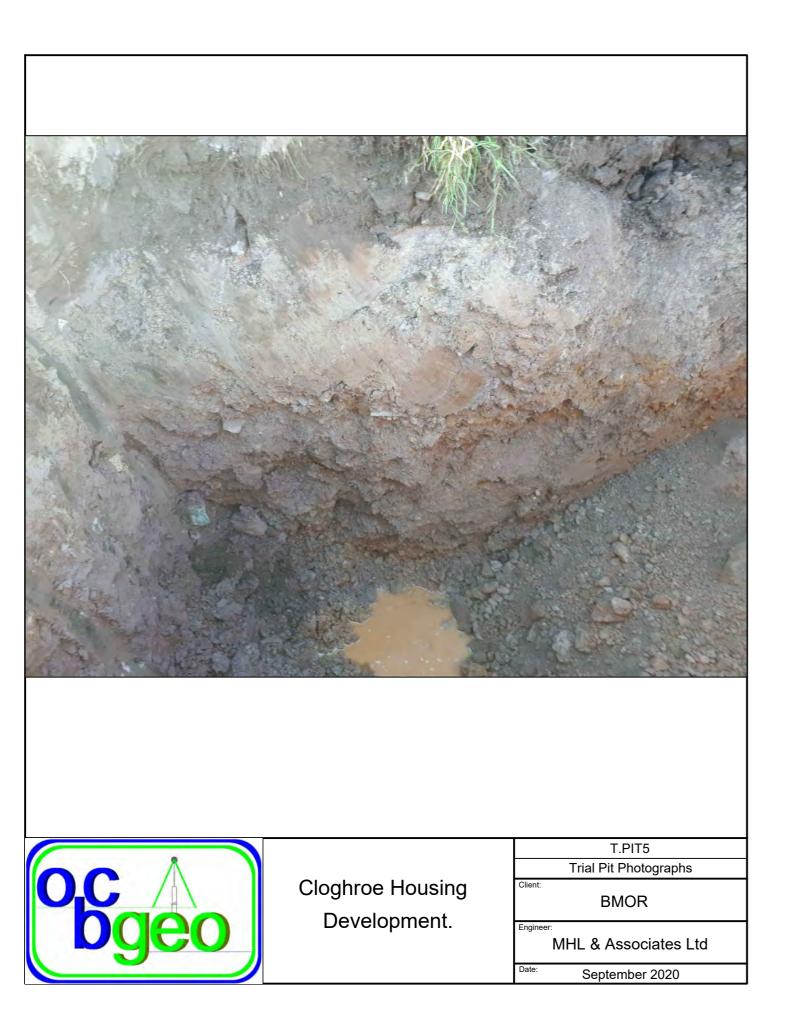




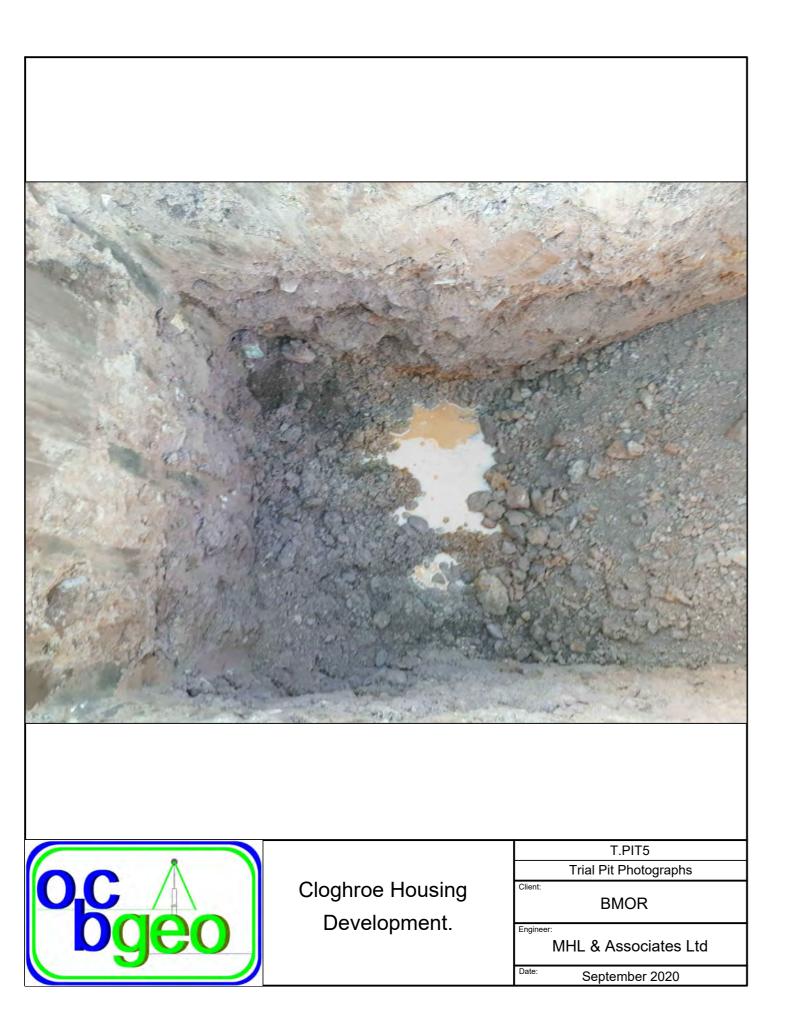
	T.PIT5
	Trial Pit Photographs
ousing nent.	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







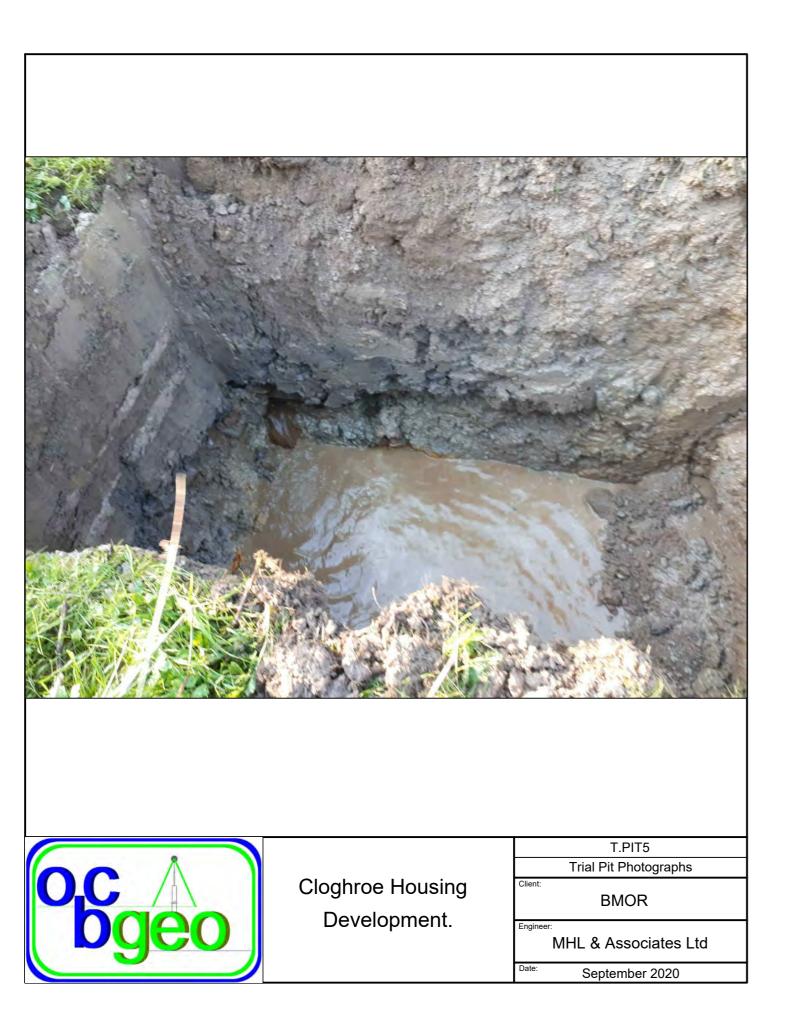


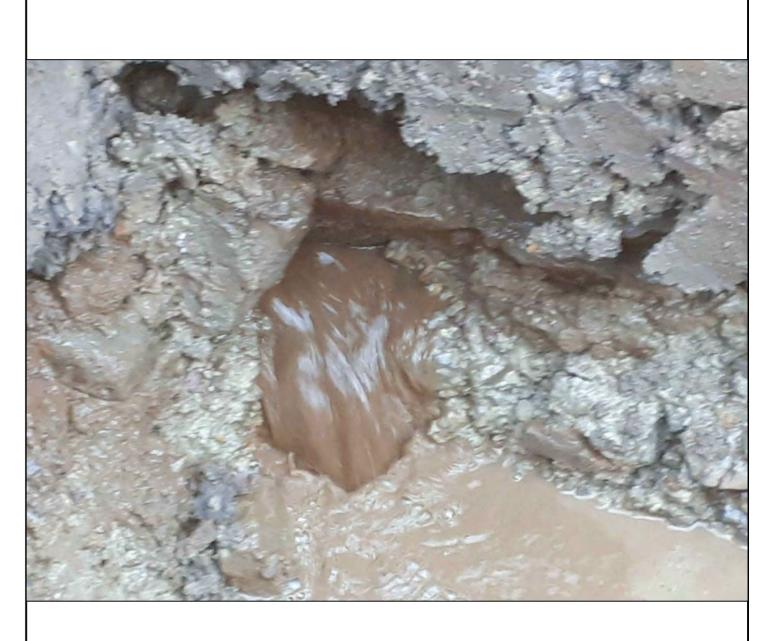






	T.PIT5
	Trial Pit Photographs
ousing nent.	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







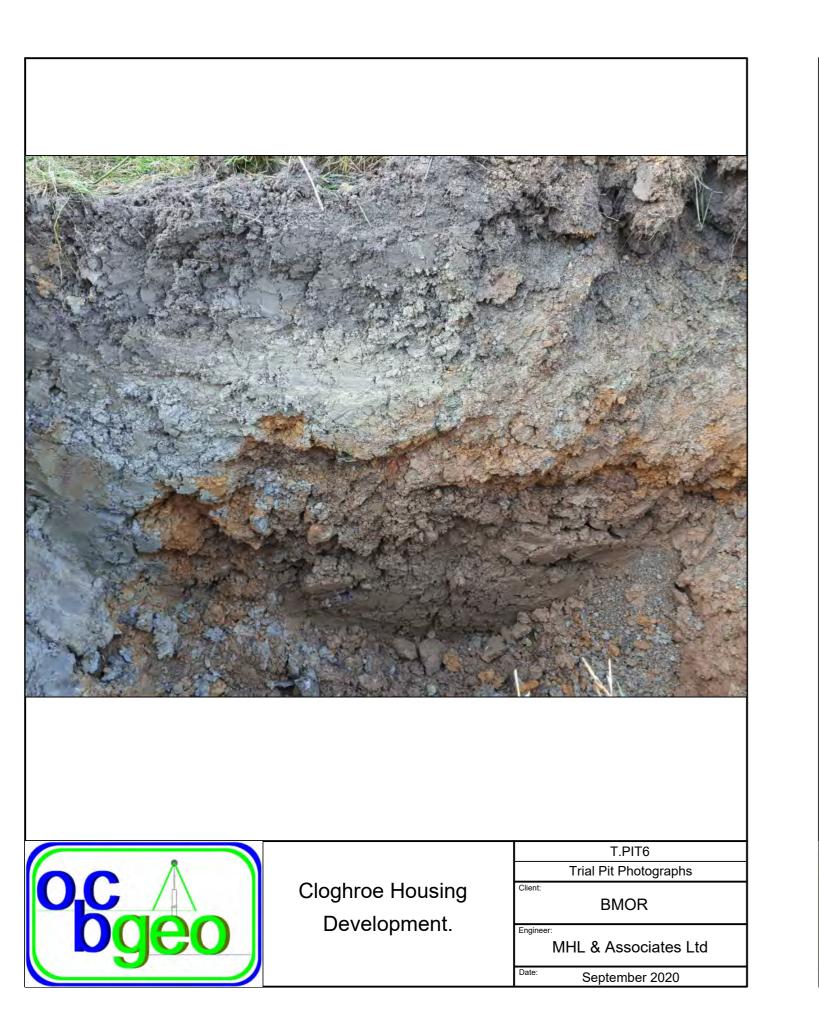
	T.PIT5
	Trial Pit Photographs
ousing nent.	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020



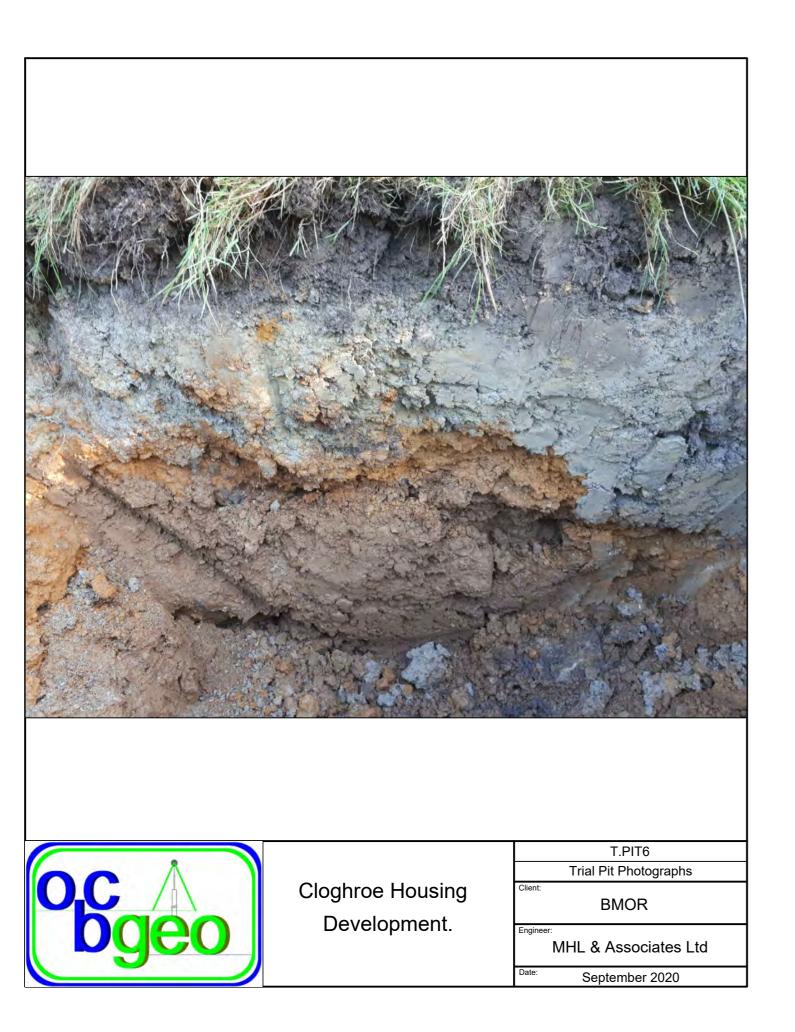


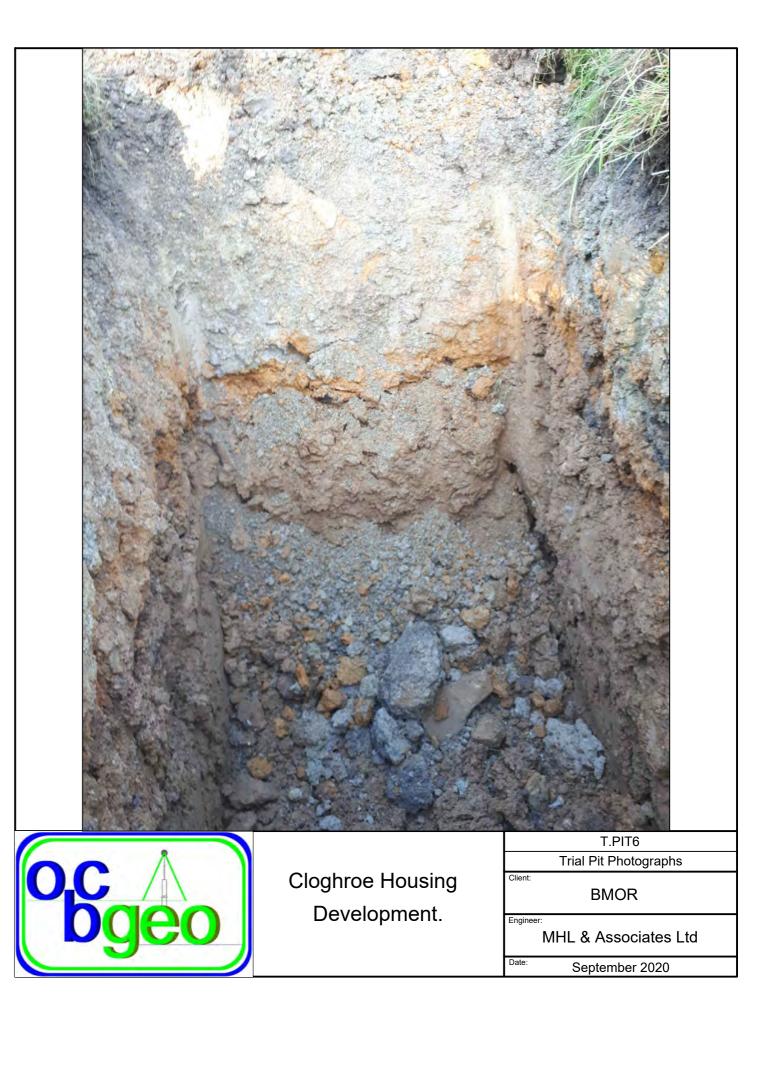


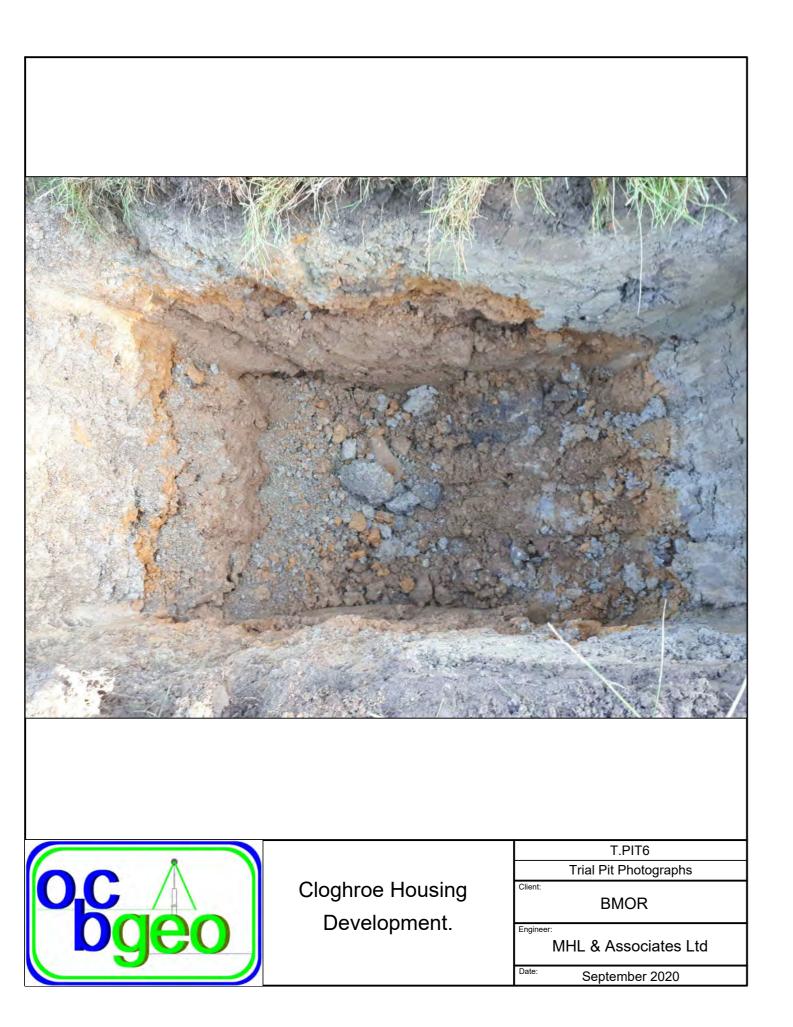
ousing nent.	T.PIT6
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020















ousing nent.	T.PIT6
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

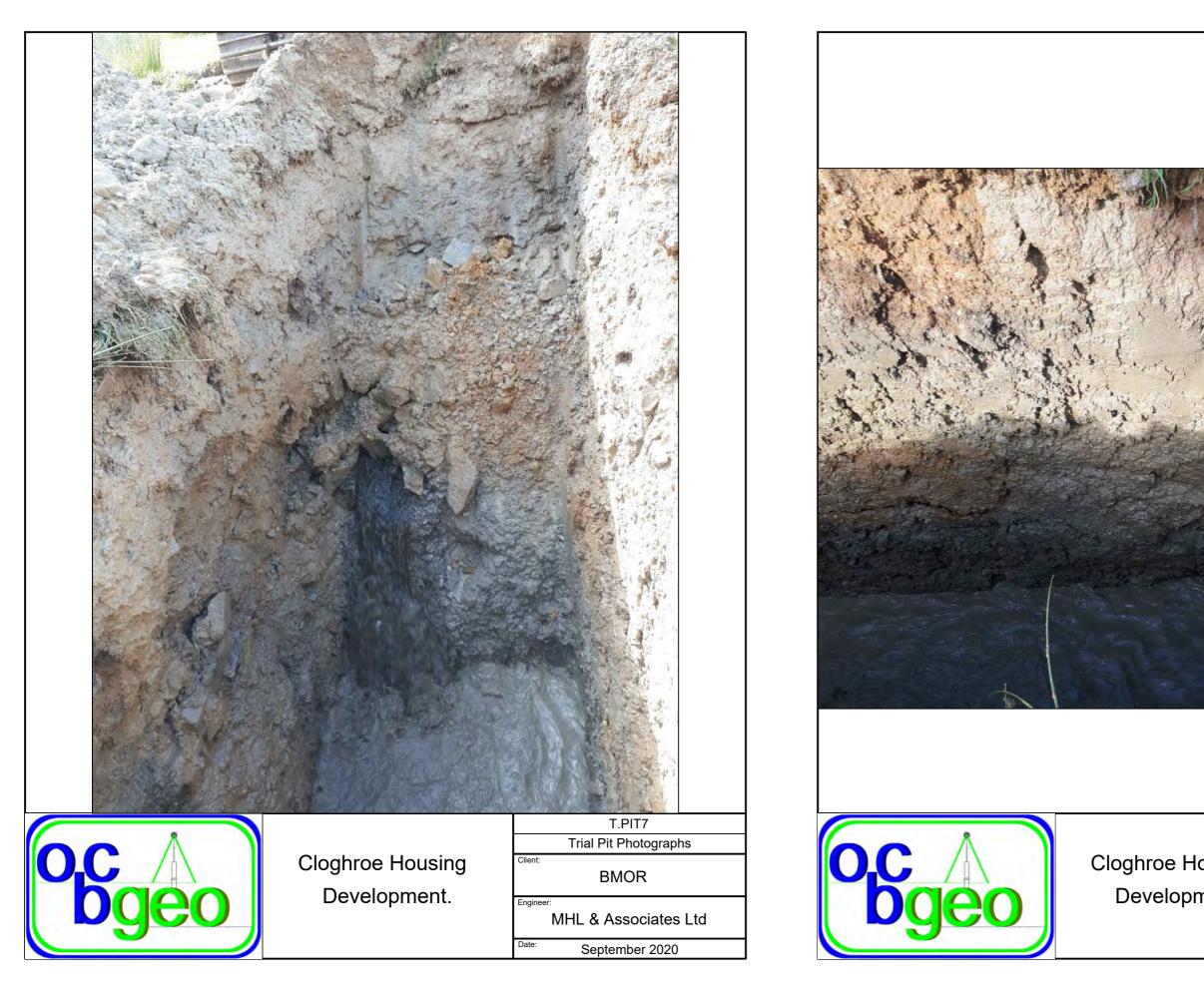








ousing nent.	T.PIT7
	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020





ousing ment.	T.PIT7
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

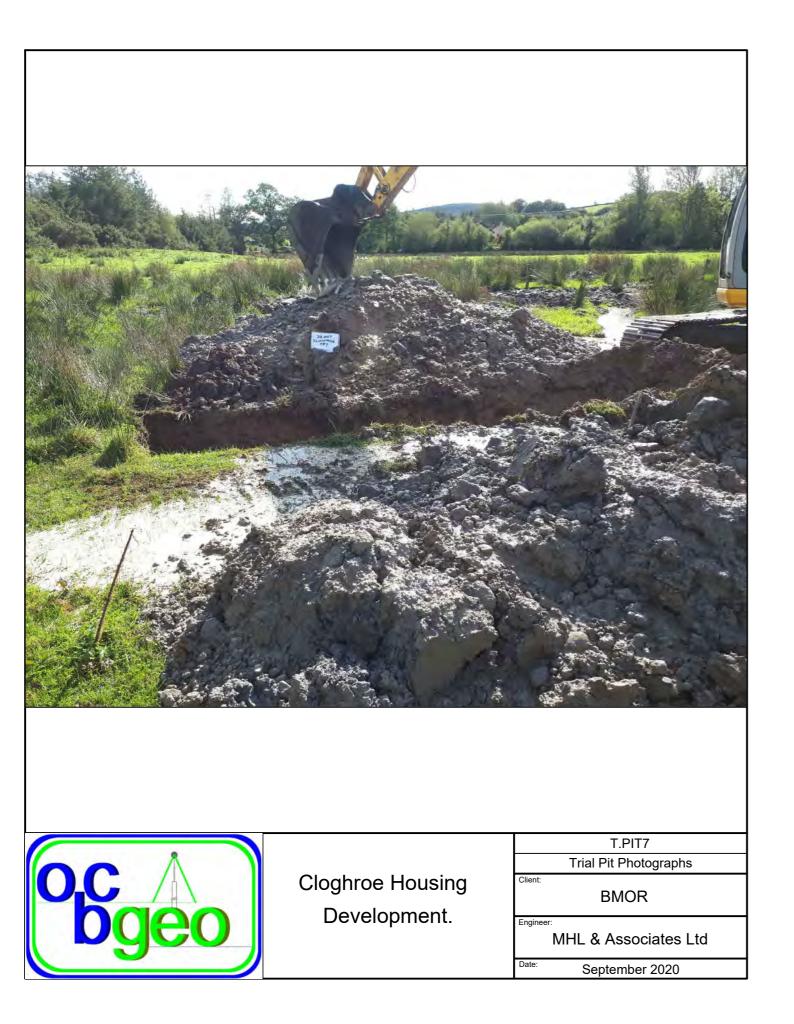




T.PIT7
Trial Pit Photographs
Client: BMOR
Engineer: MHL & Associates Ltd
Date: September 2020



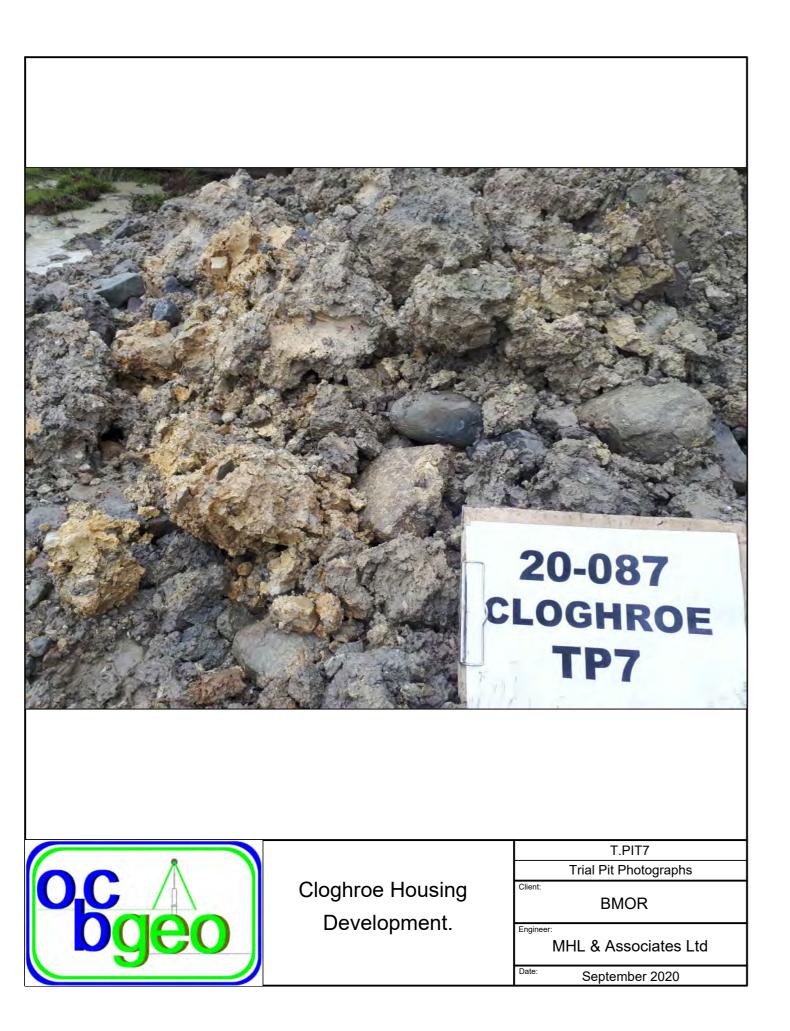
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	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







ousing nent.	T.PIT7
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

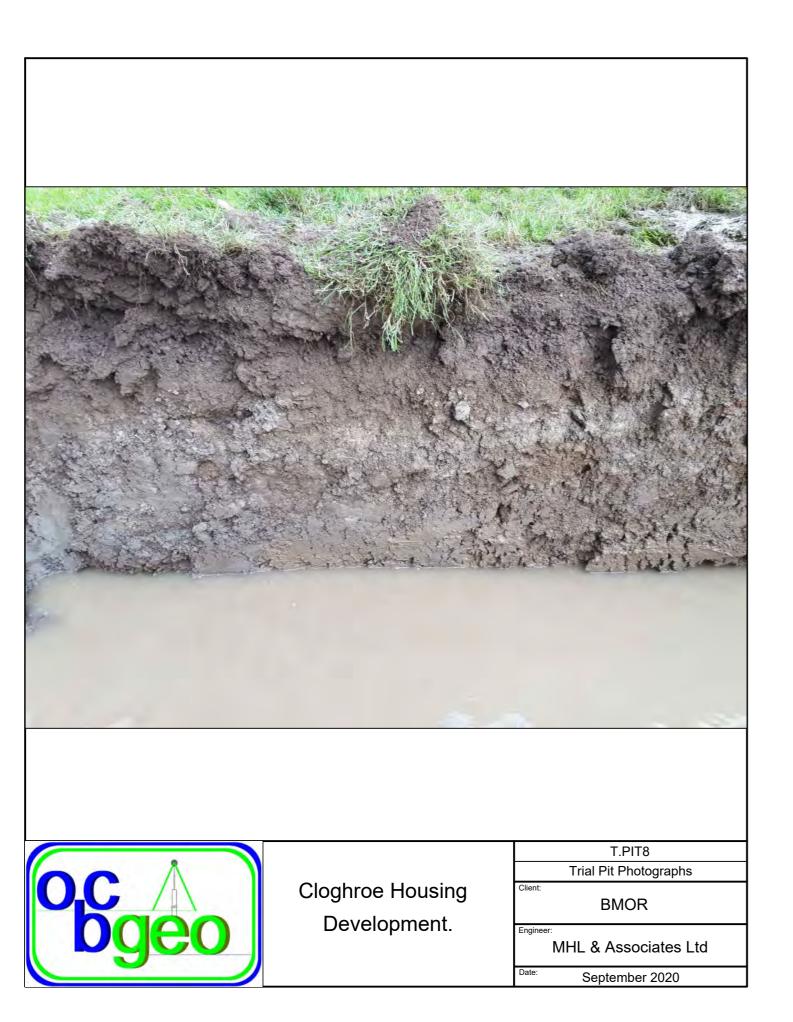






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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

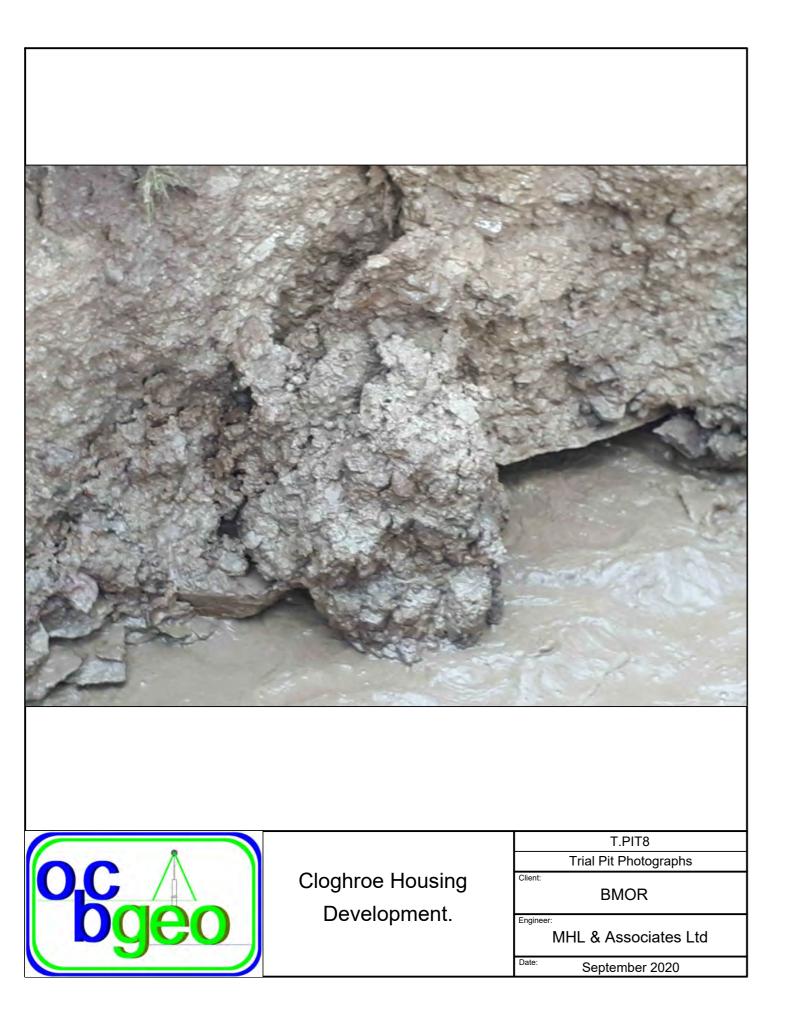








ousing nent.	T.PIT8
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







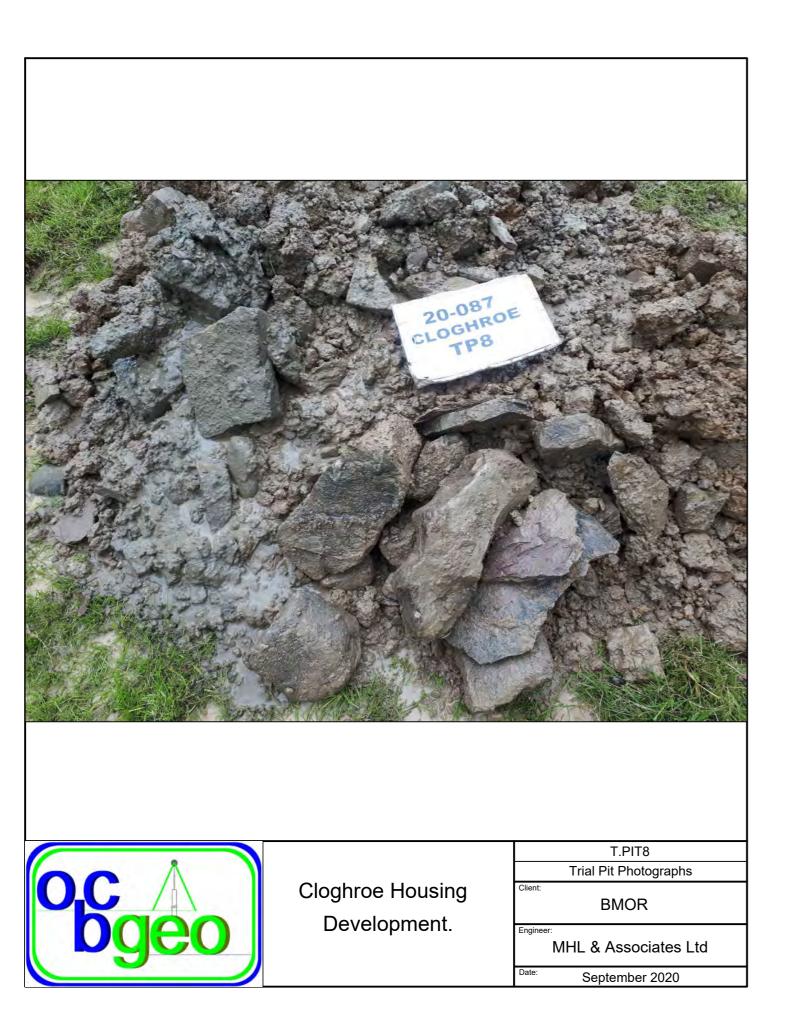
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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







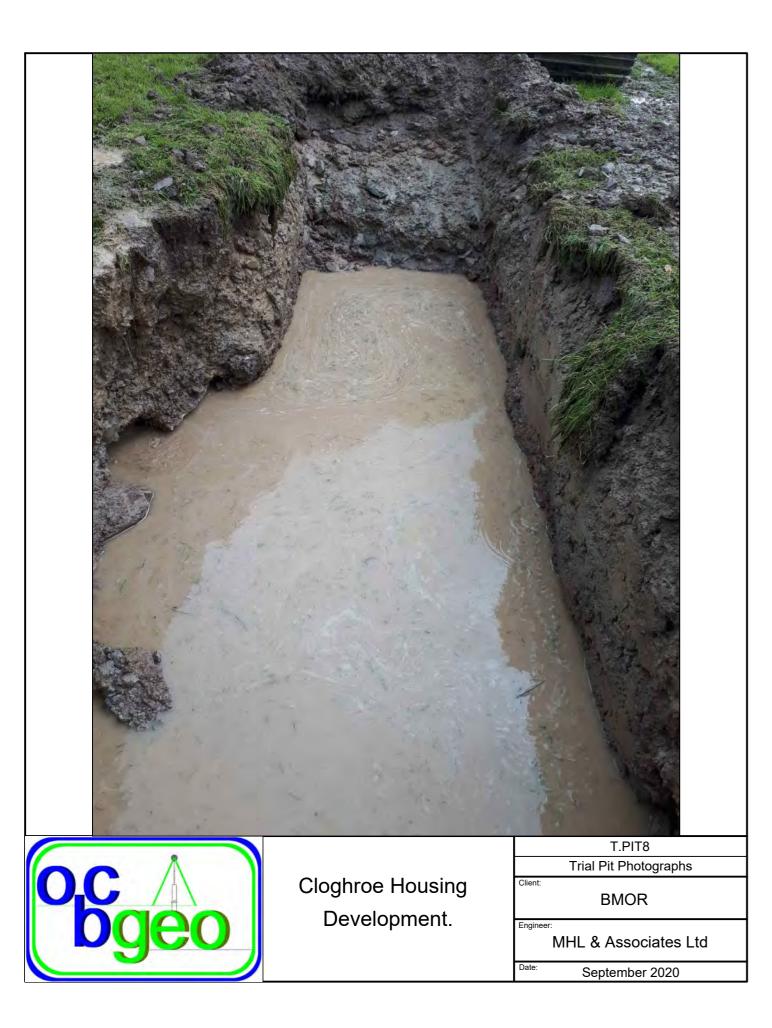
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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020

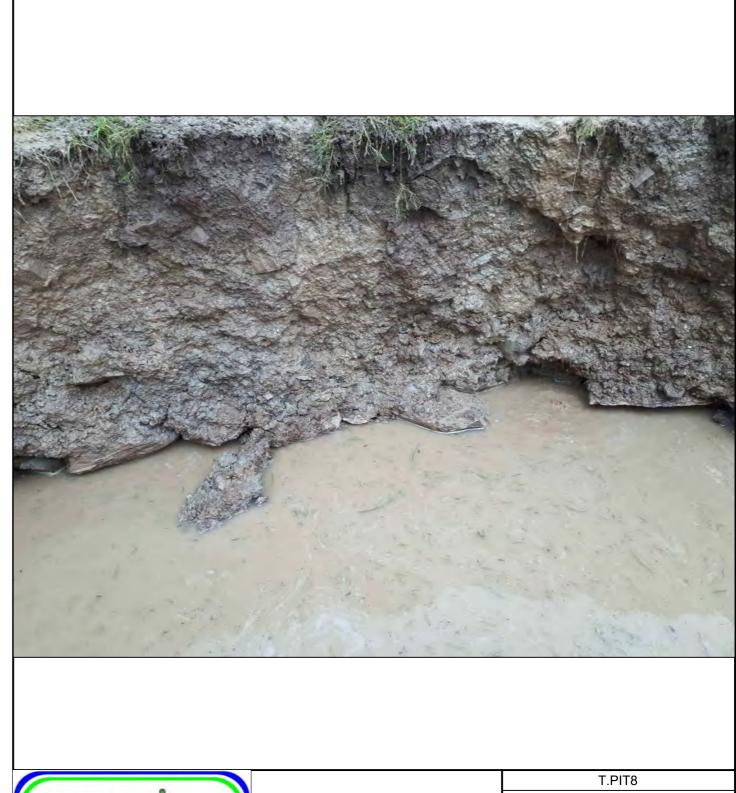






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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







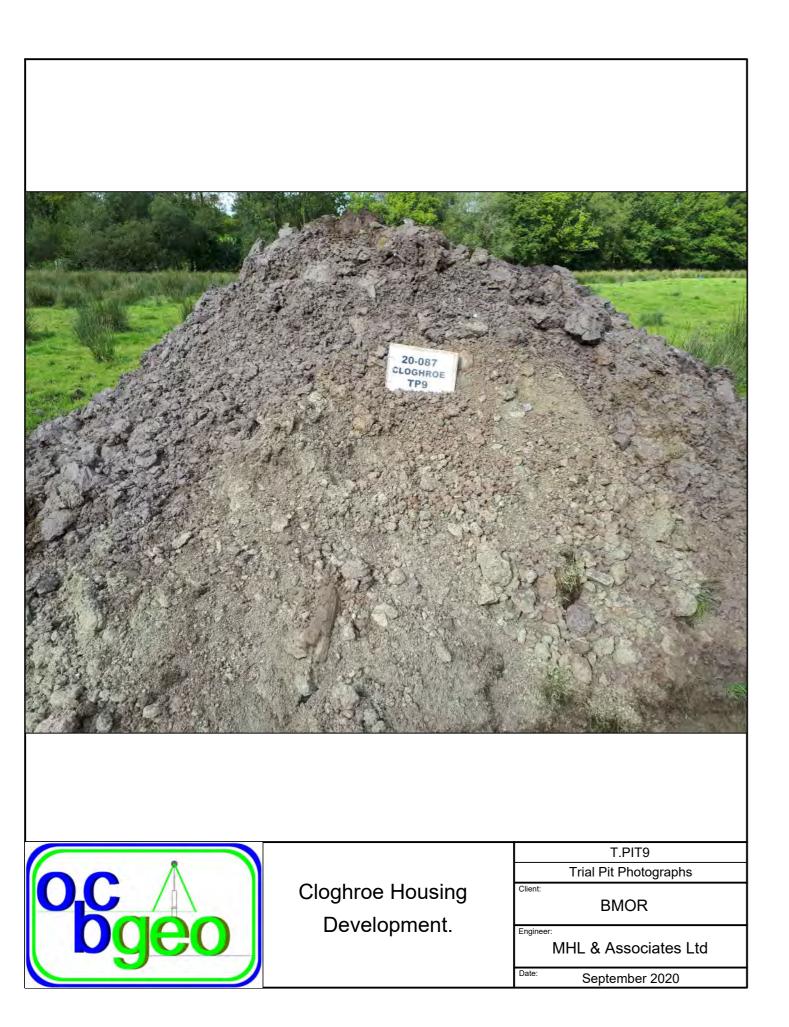
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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







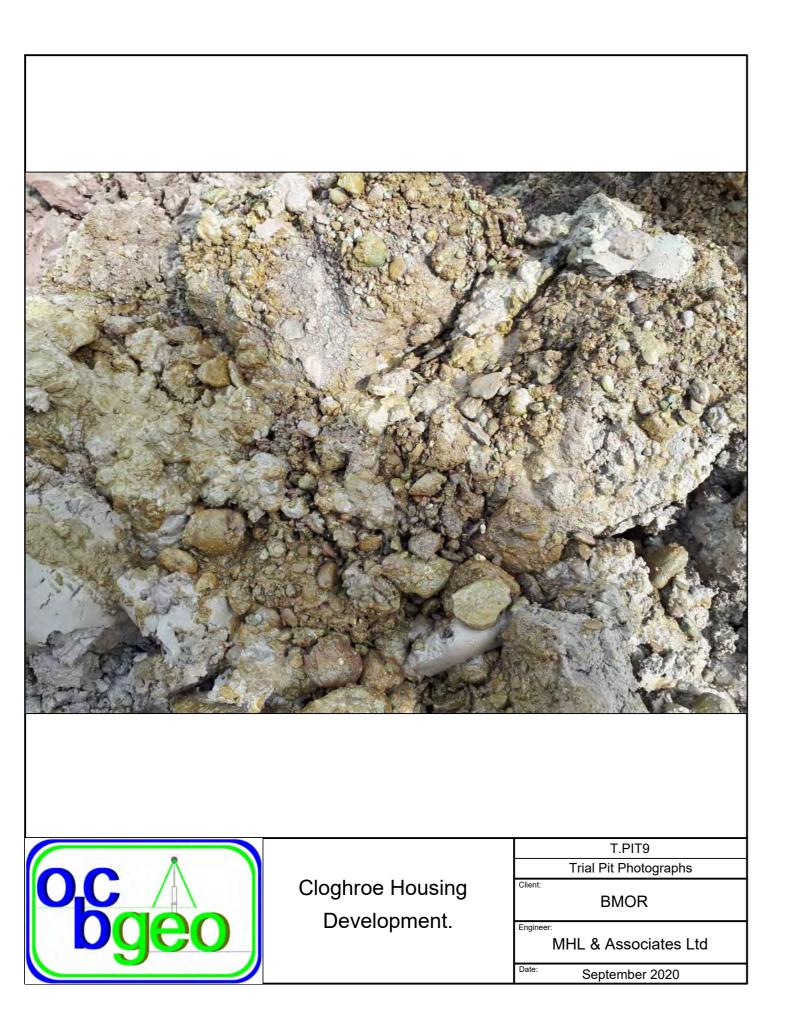
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	Trial Pit Photographs
	Client: BMOR
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







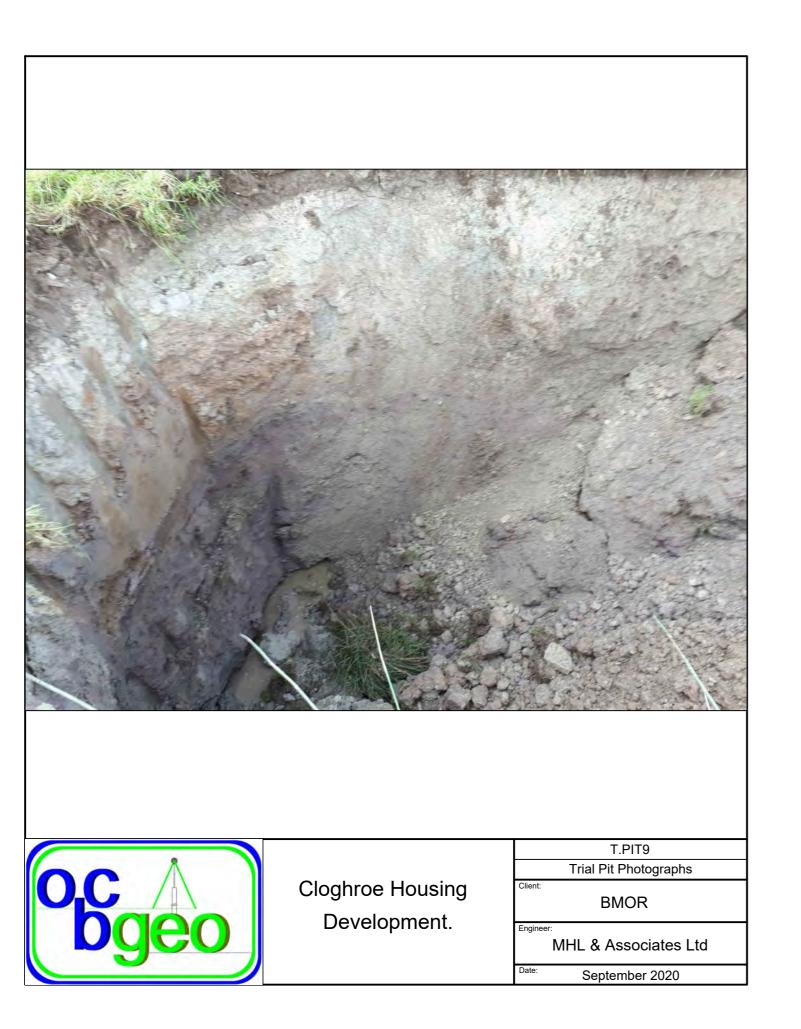
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	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







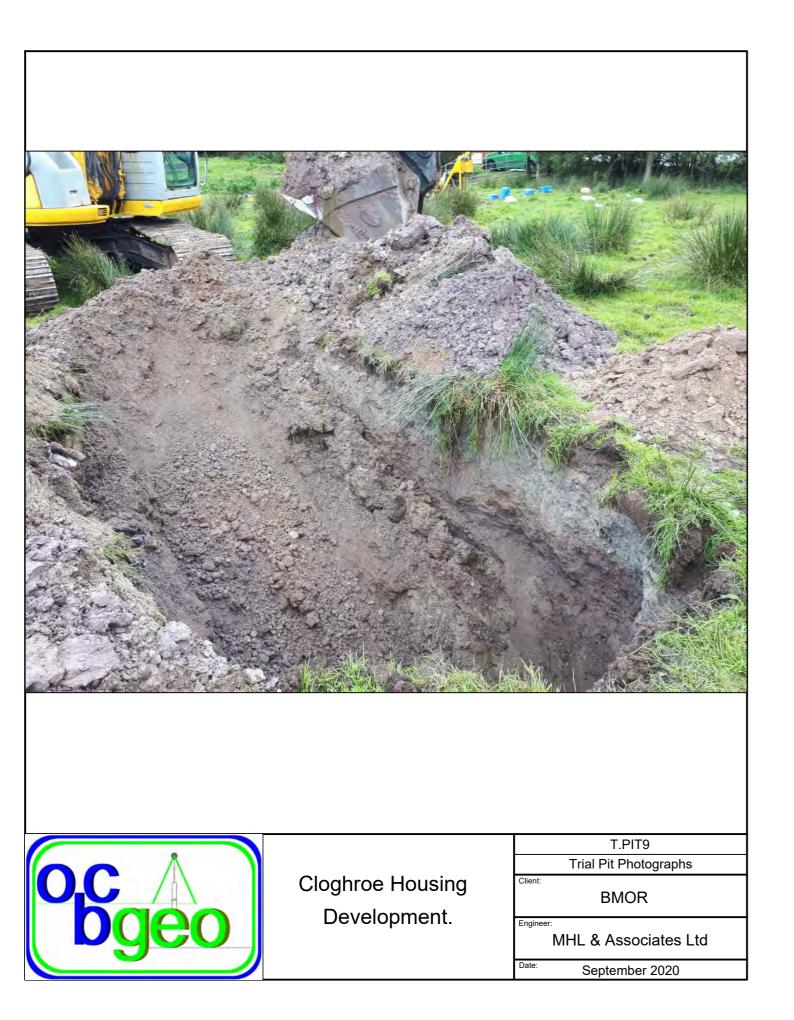
ousing ment.	T.PIT9
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







ousing nent.	T.PIT9
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020







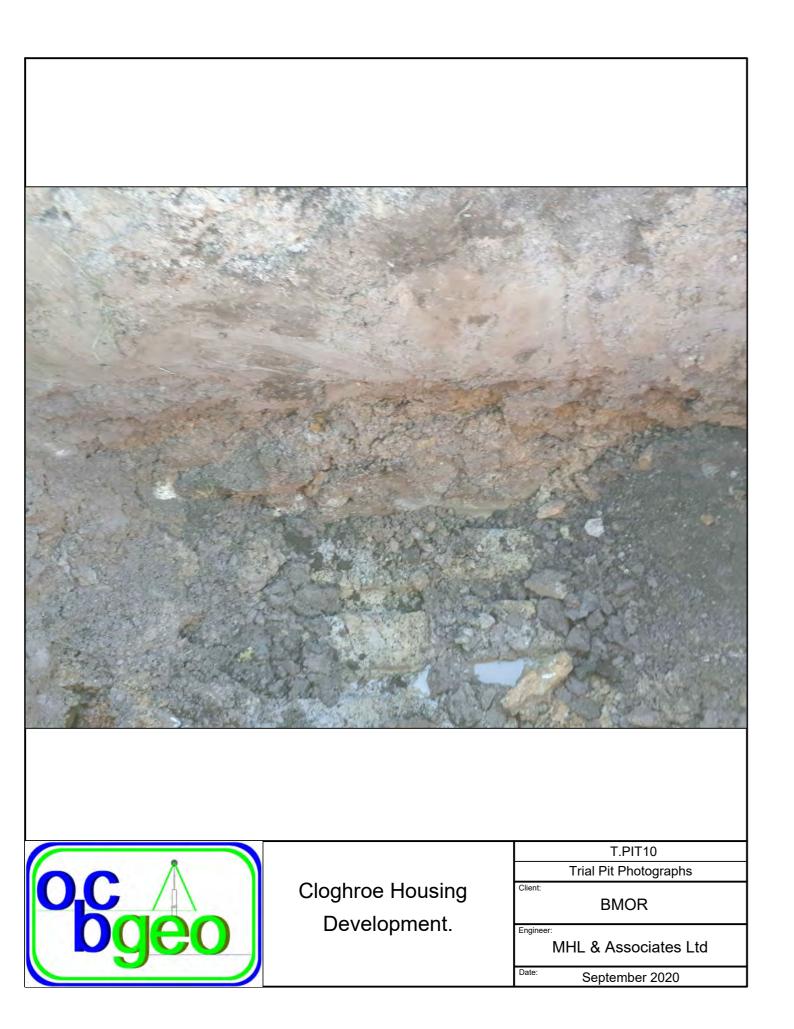
ousing nent.	T.PIT9
	Trial Pit Photographs
	Client:
	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020



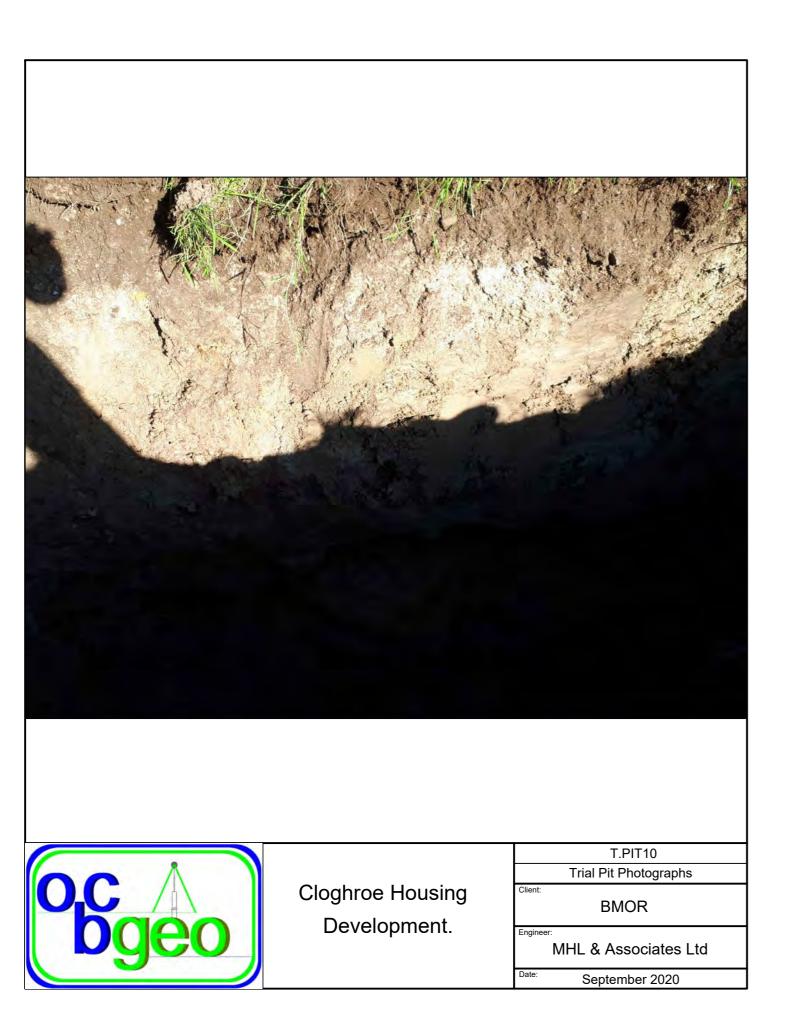




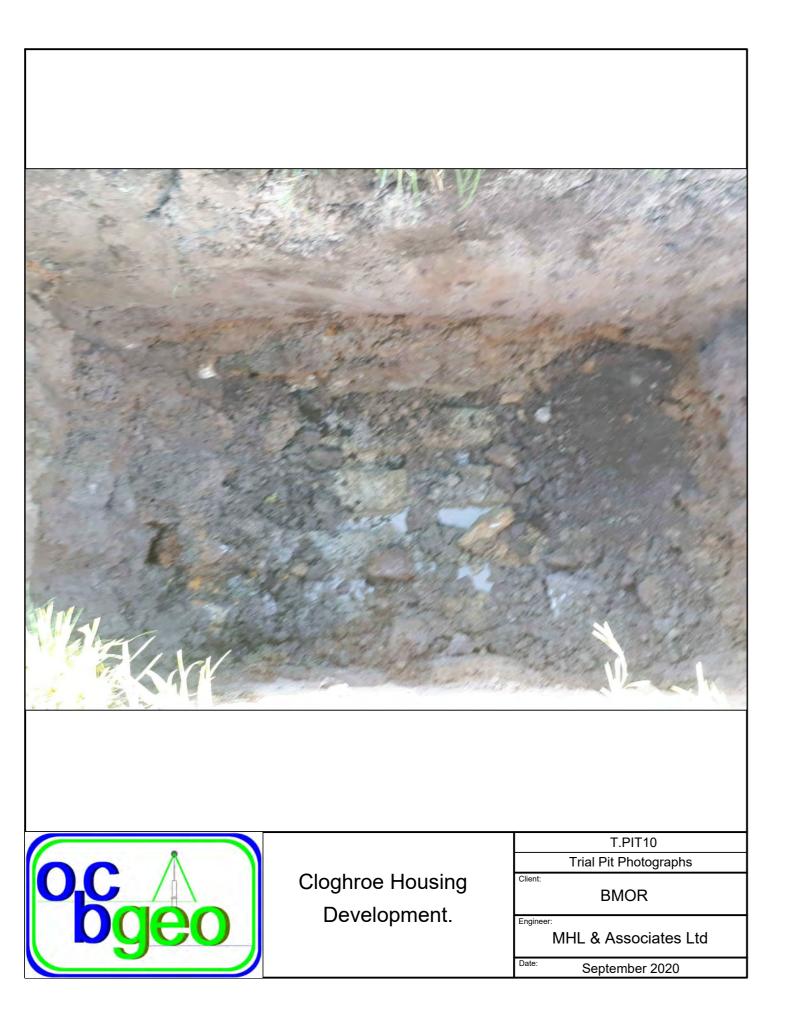
ousing nent.	T.PIT10
	Trial Pit Photographs
	Client: BMOR
	Engineer: MHL & Associates Ltd
	Date: September 2020















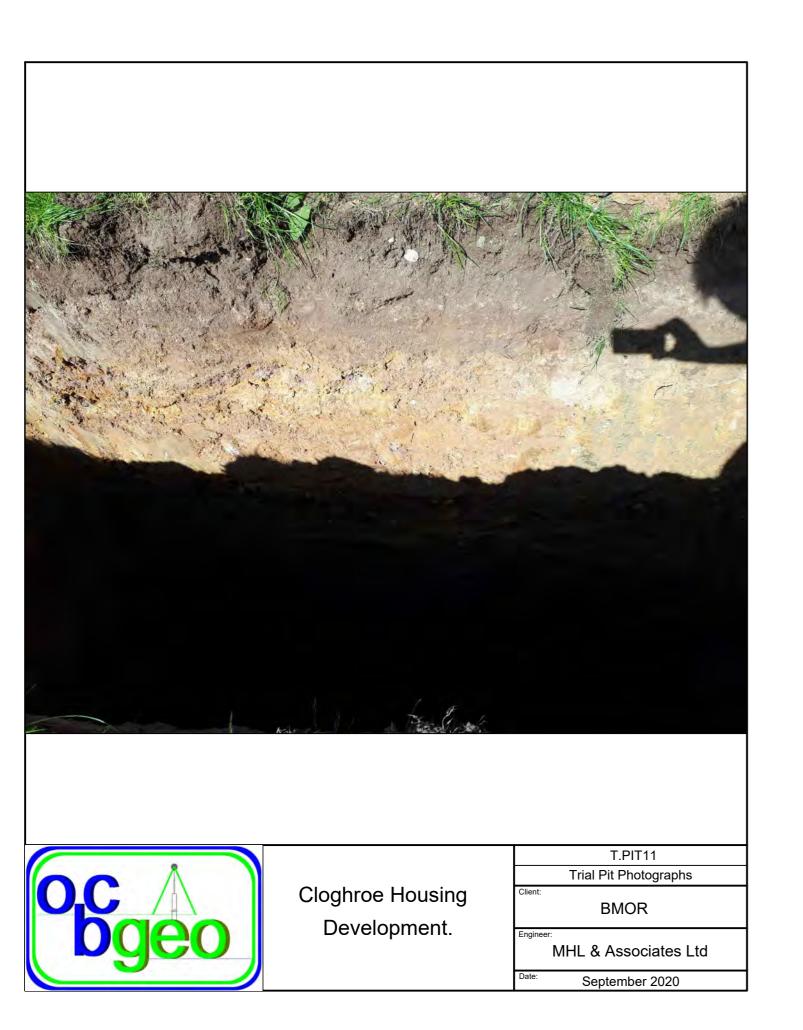
	T.PIT10
	Trial Pit Photographs
ousing ment.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020

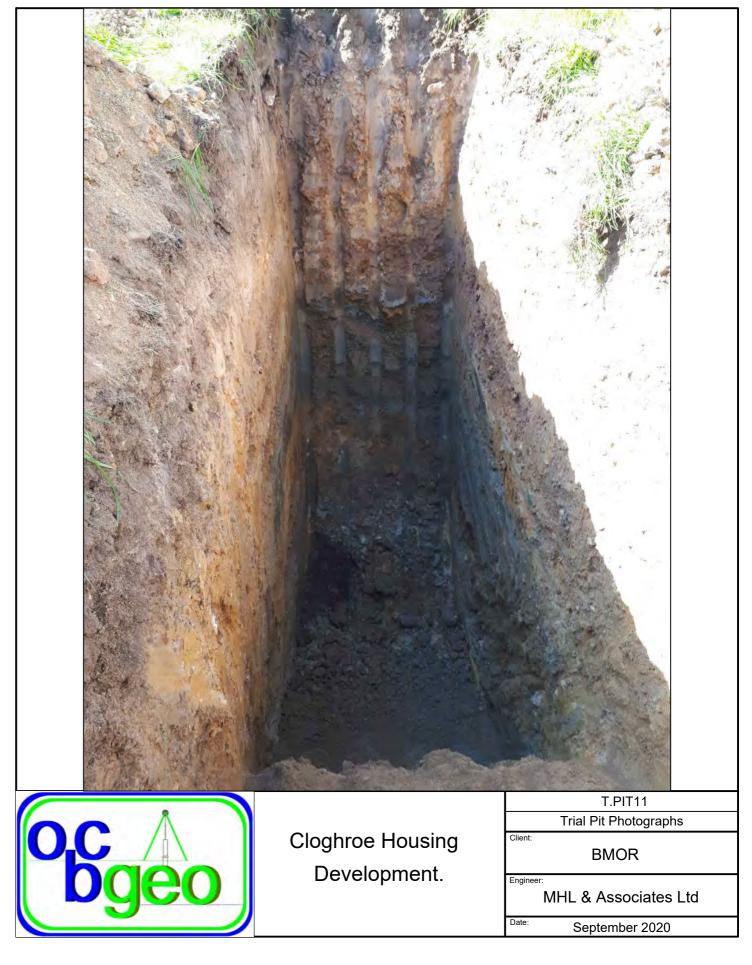


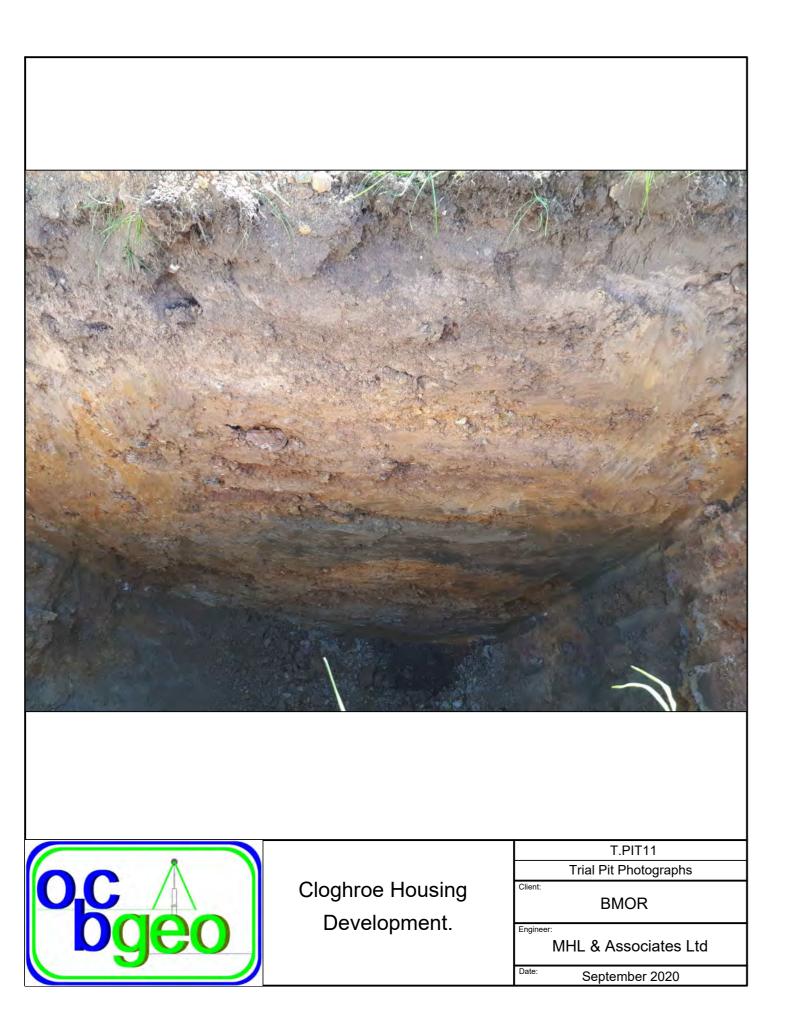




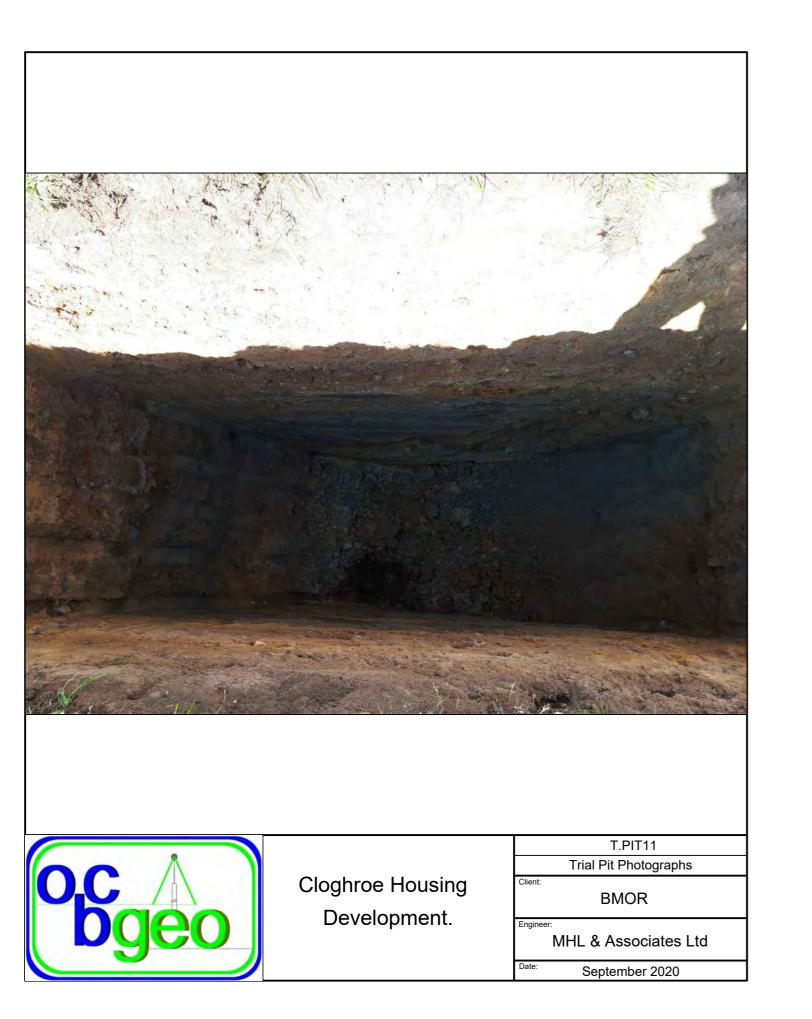
	T.PIT11
	Trial Pit Photographs
ousing	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020







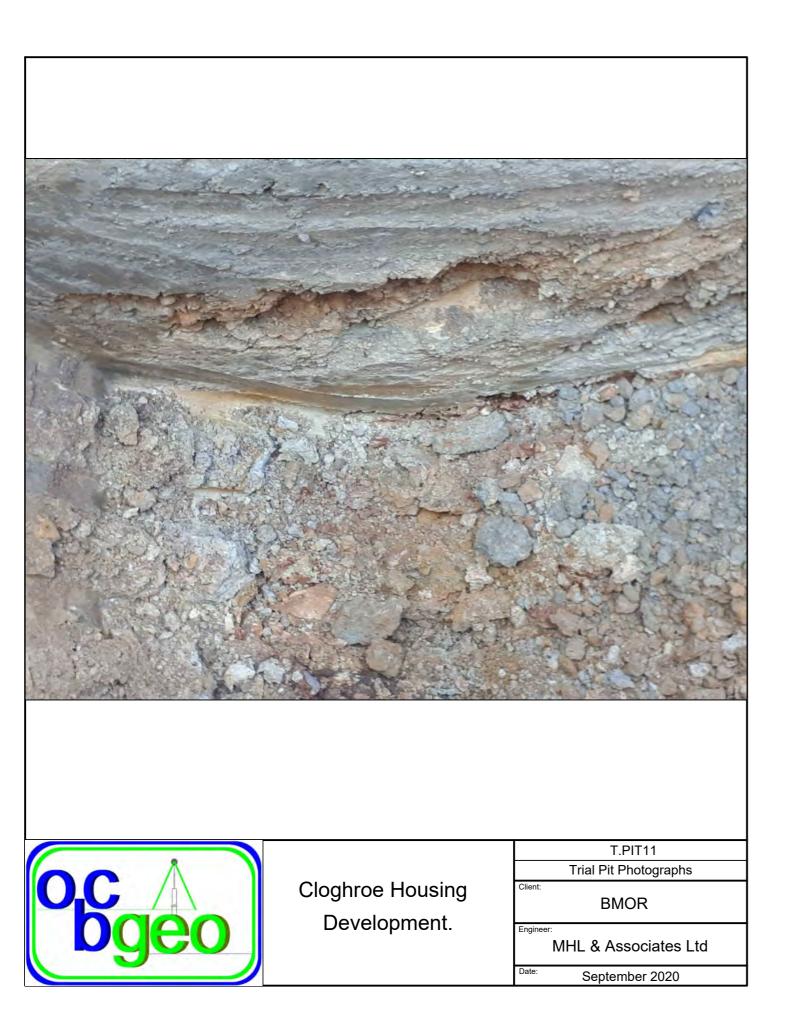


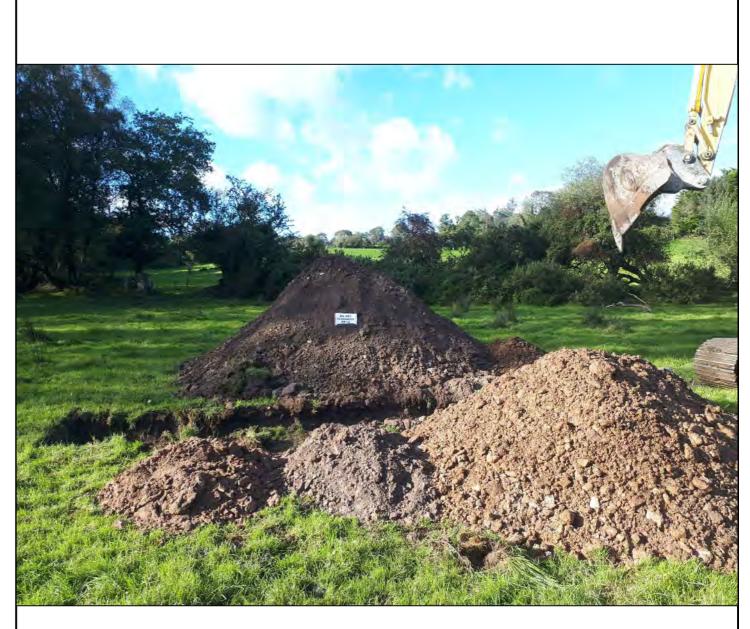






	T.PIT11
	Trial Pit Photographs
ousing ment.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020







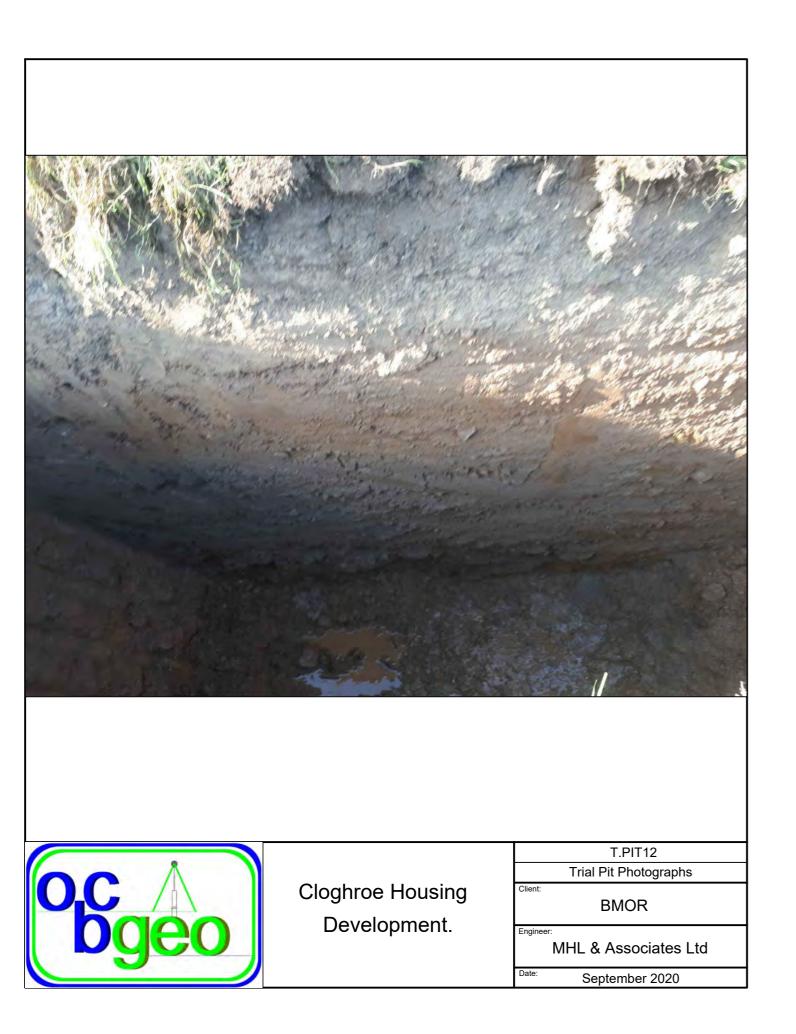
	T.PIT12
	Trial Pit Photographs
ousing	Client: BMOR
ment.	Engineer: MHL & Associates Ltd
	Date: September 2020

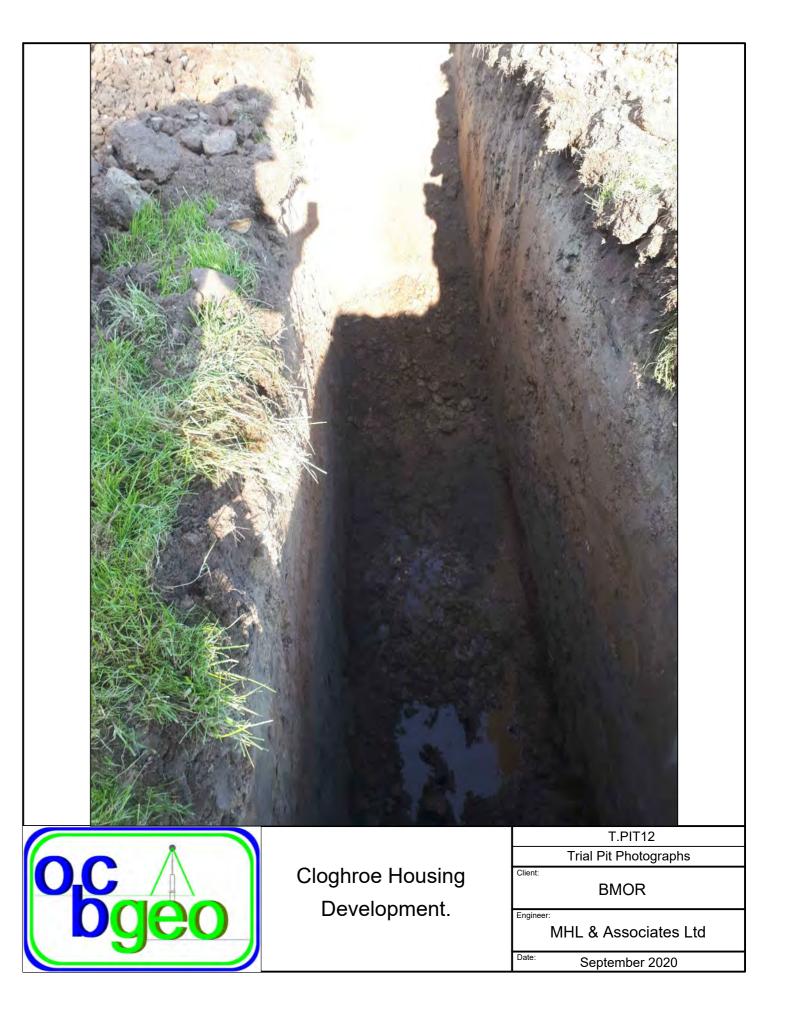


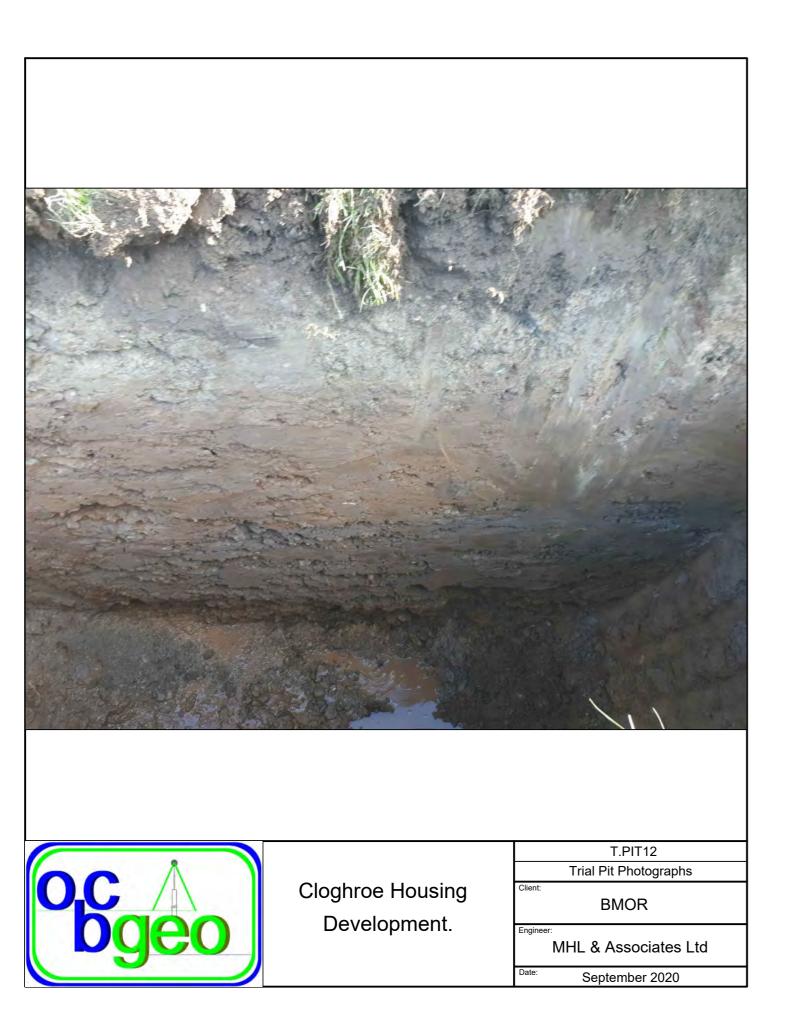


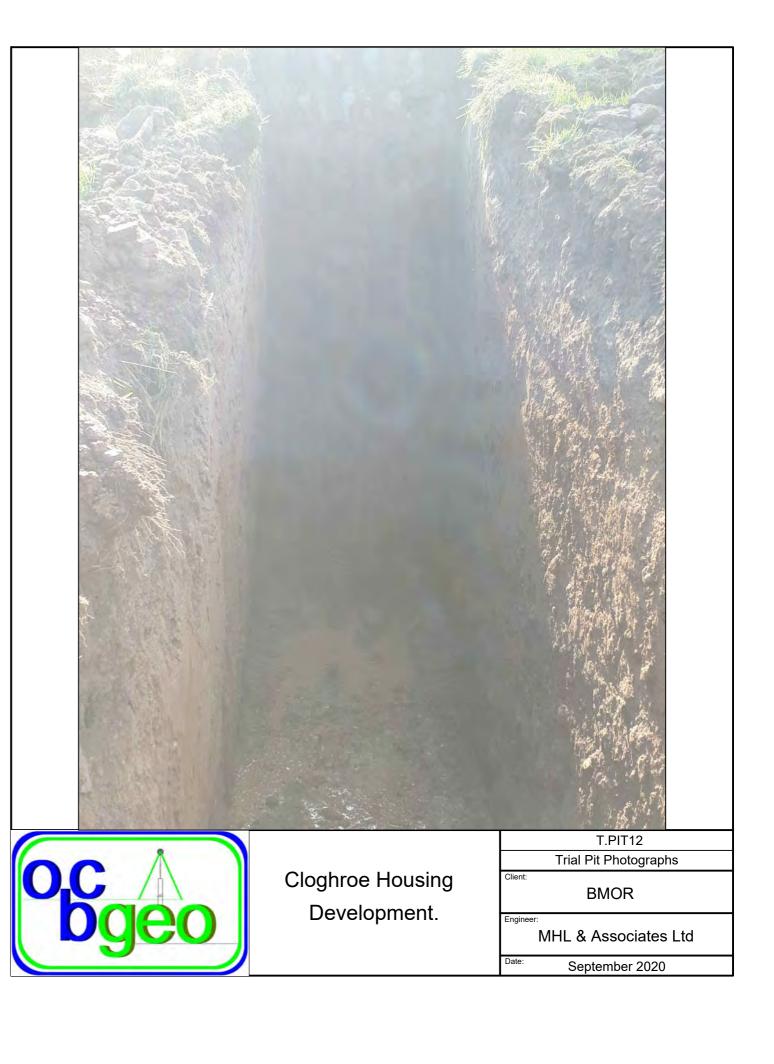


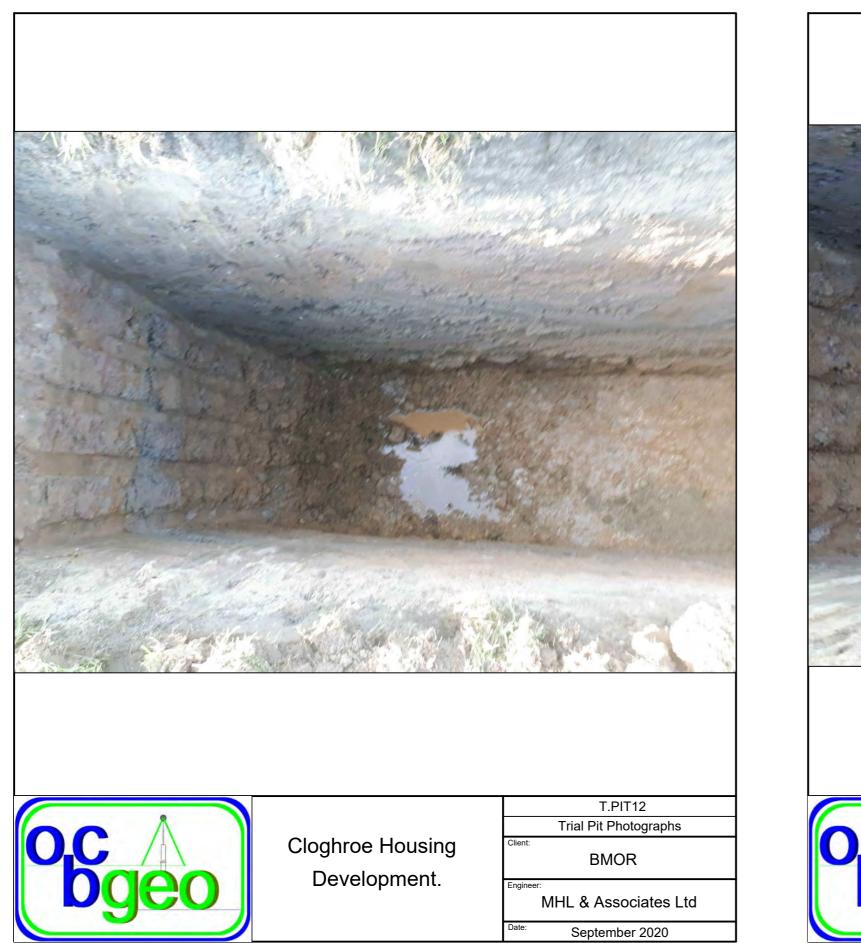
	T.PIT12
	Trial Pit Photographs
ousing nent.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020







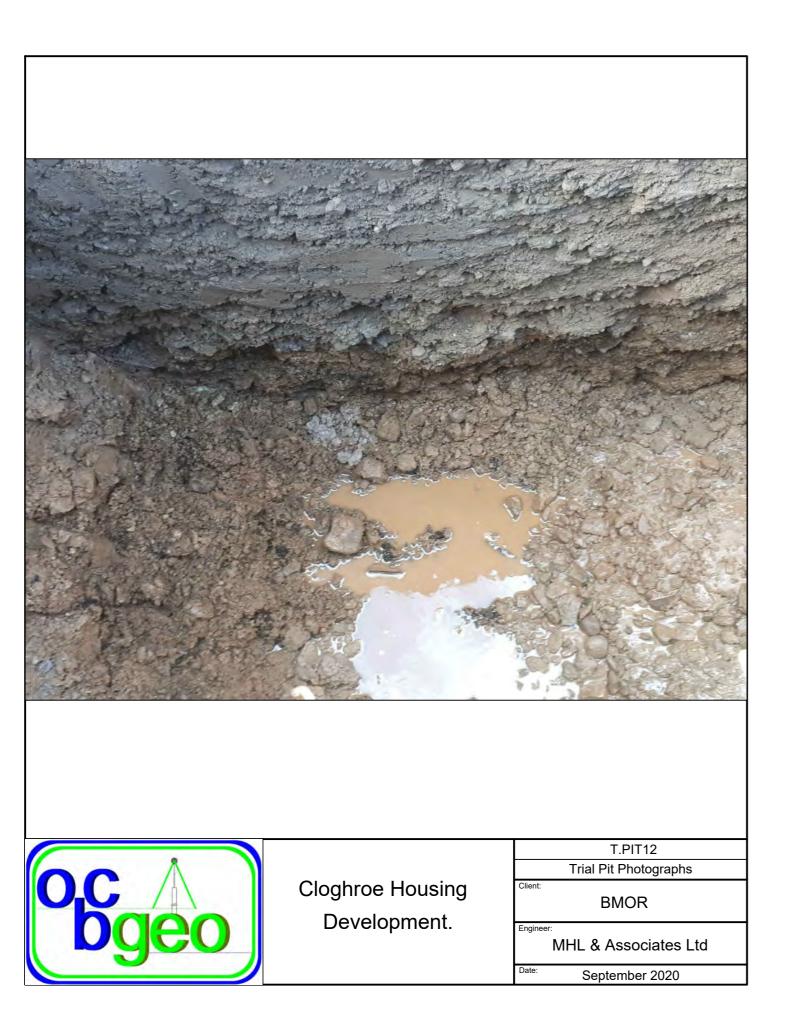








	T.PIT12
	Trial Pit Photographs
ousing	Client: BMOR
ment.	<sup>Engineer:</sup> MHL & Associates Ltd
	Date: September 2020







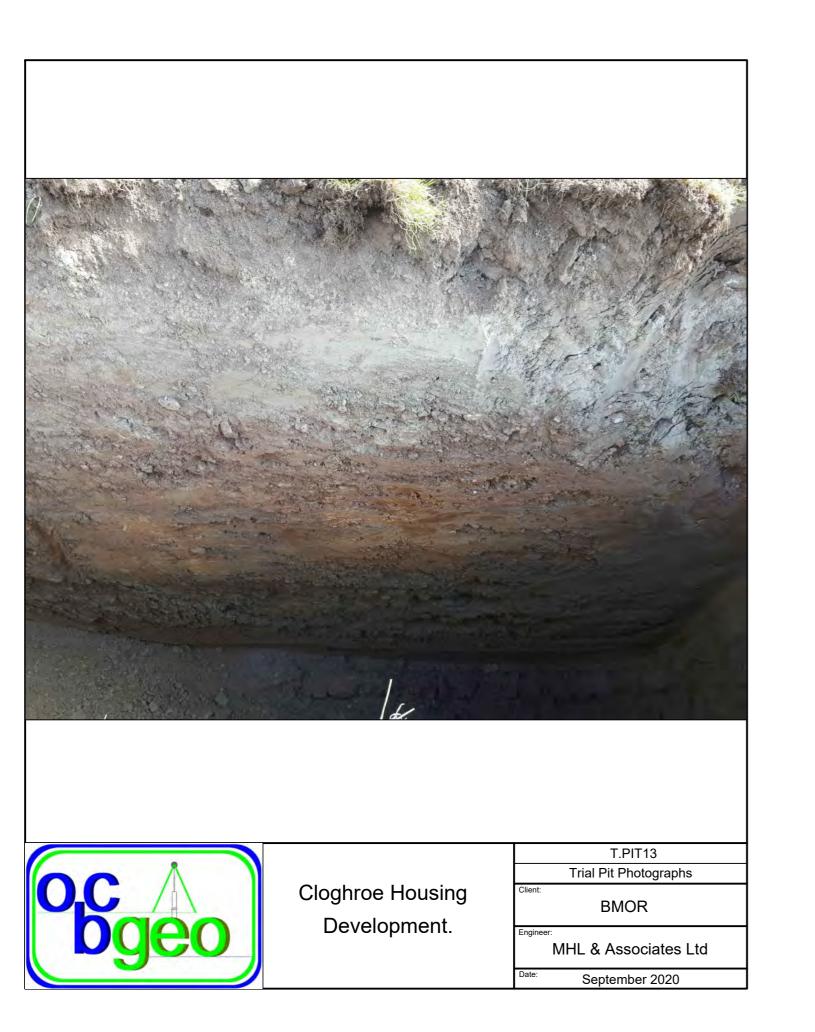
	T.PIT12
	Trial Pit Photographs
ousing	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020



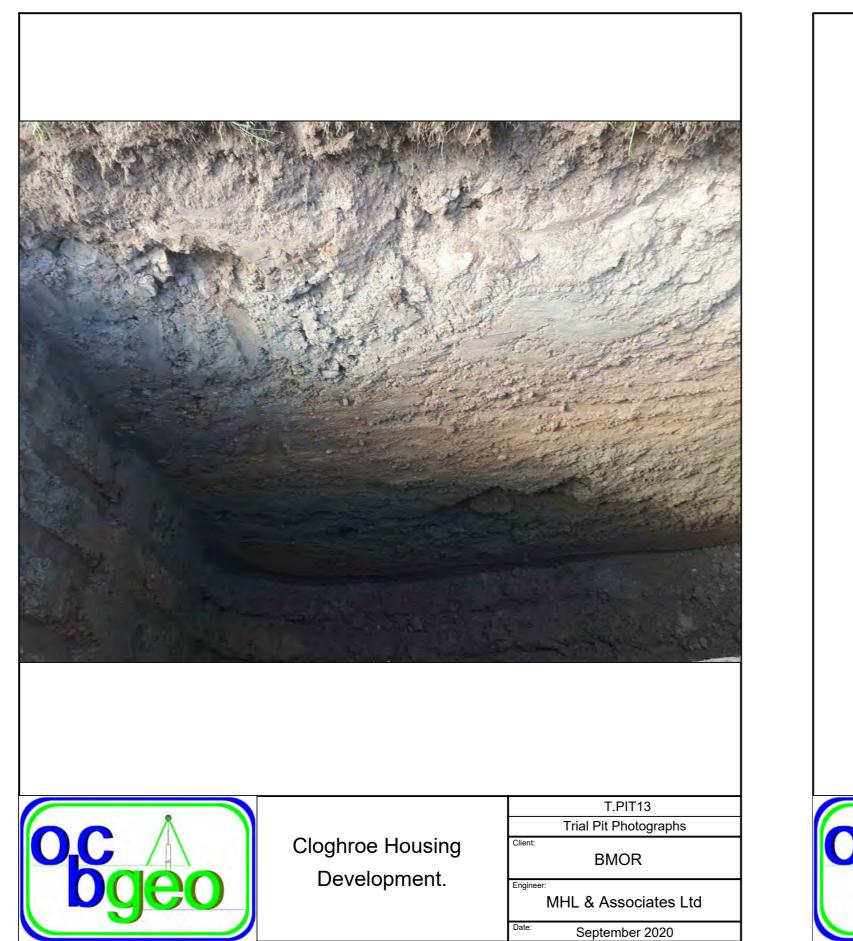




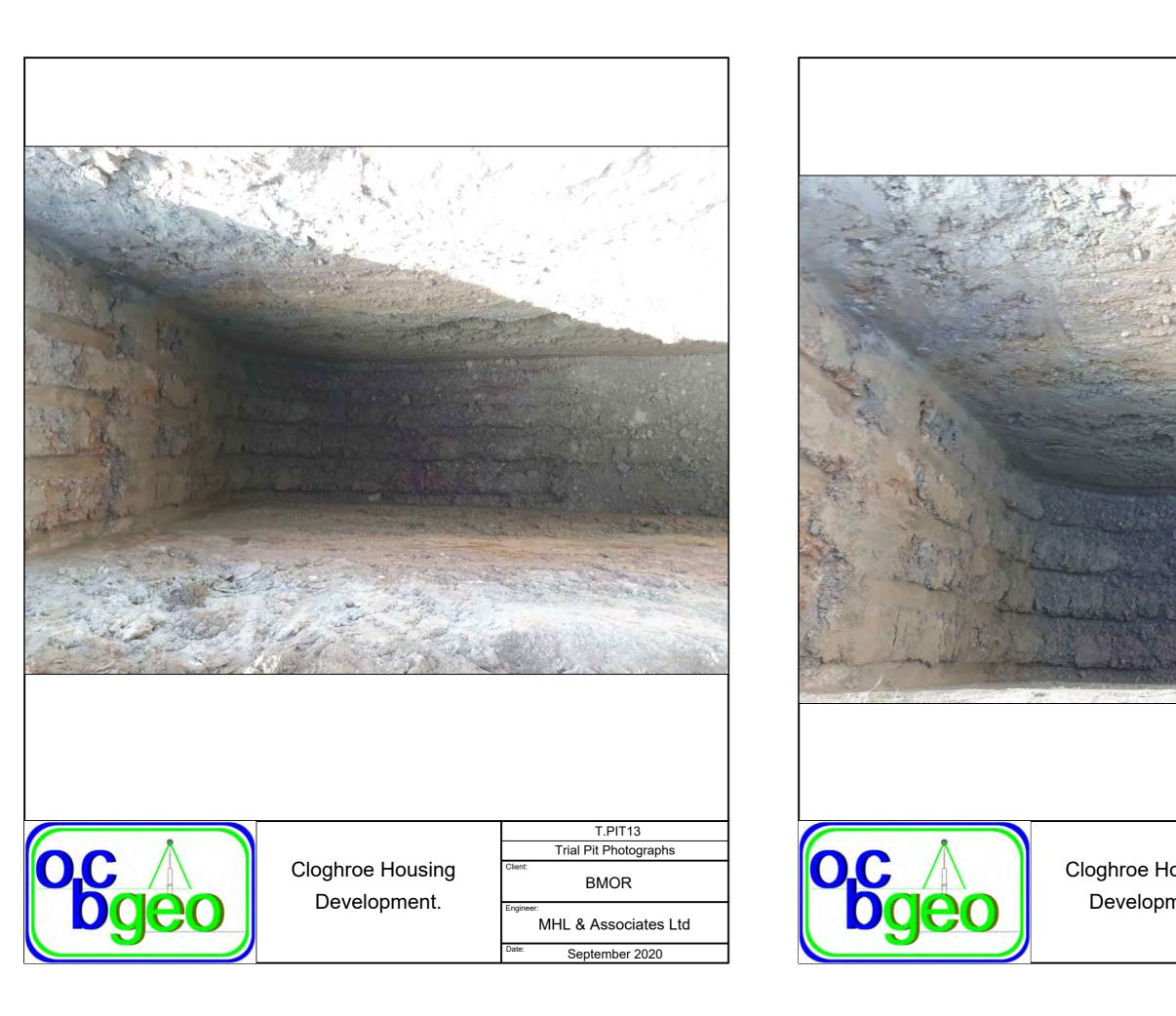
	T.PIT13
	Trial Pit Photographs
ousing ment.	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020





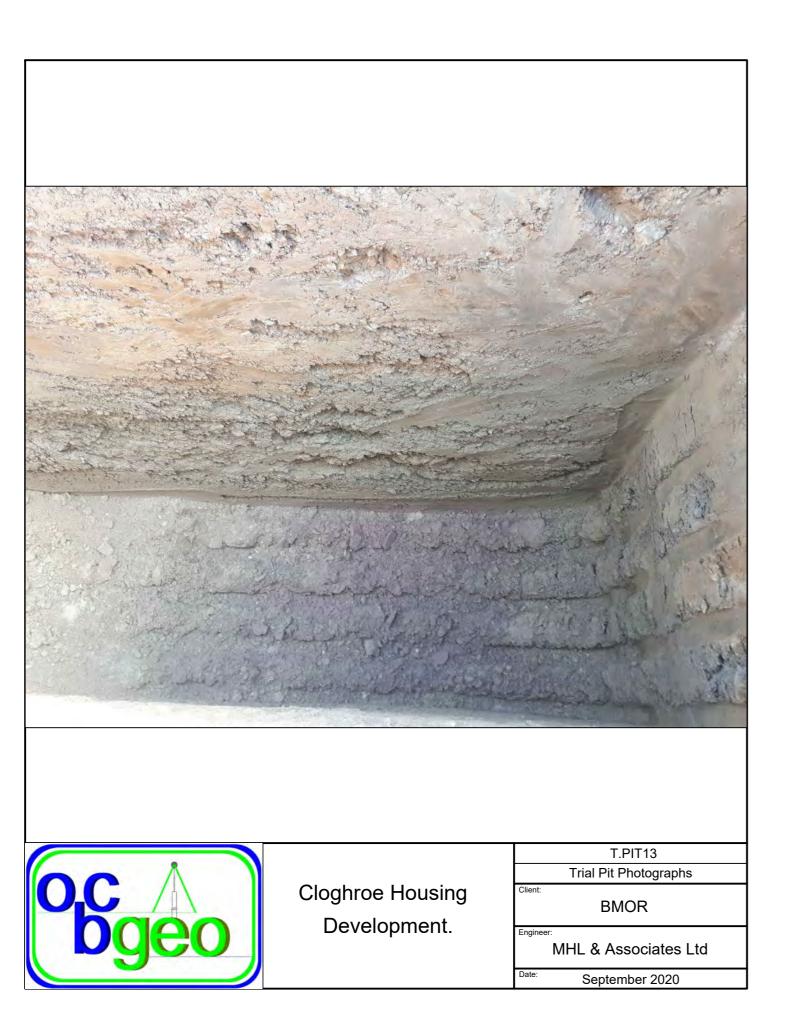








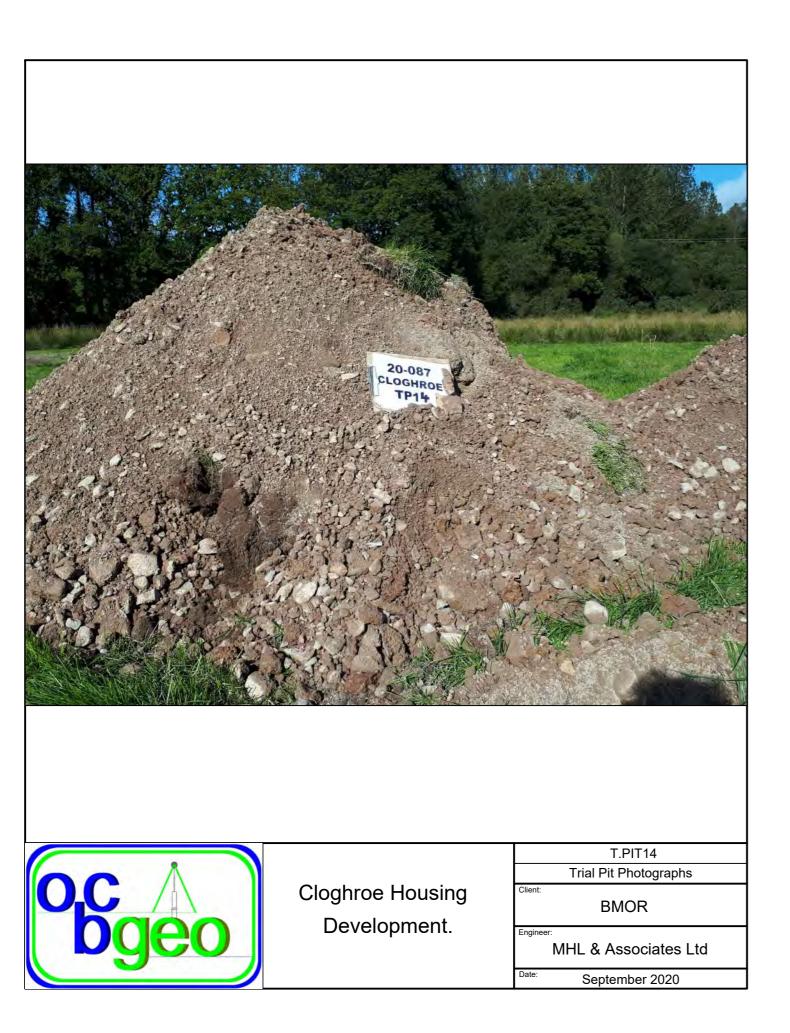
	T.PIT13
	Trial Pit Photographs
ousing	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020







	T.PIT14
	Trial Pit Photographs
ousing	Client: BMOR
ment.	Engineer: MHL & Associates Ltd
	Date: September 2020





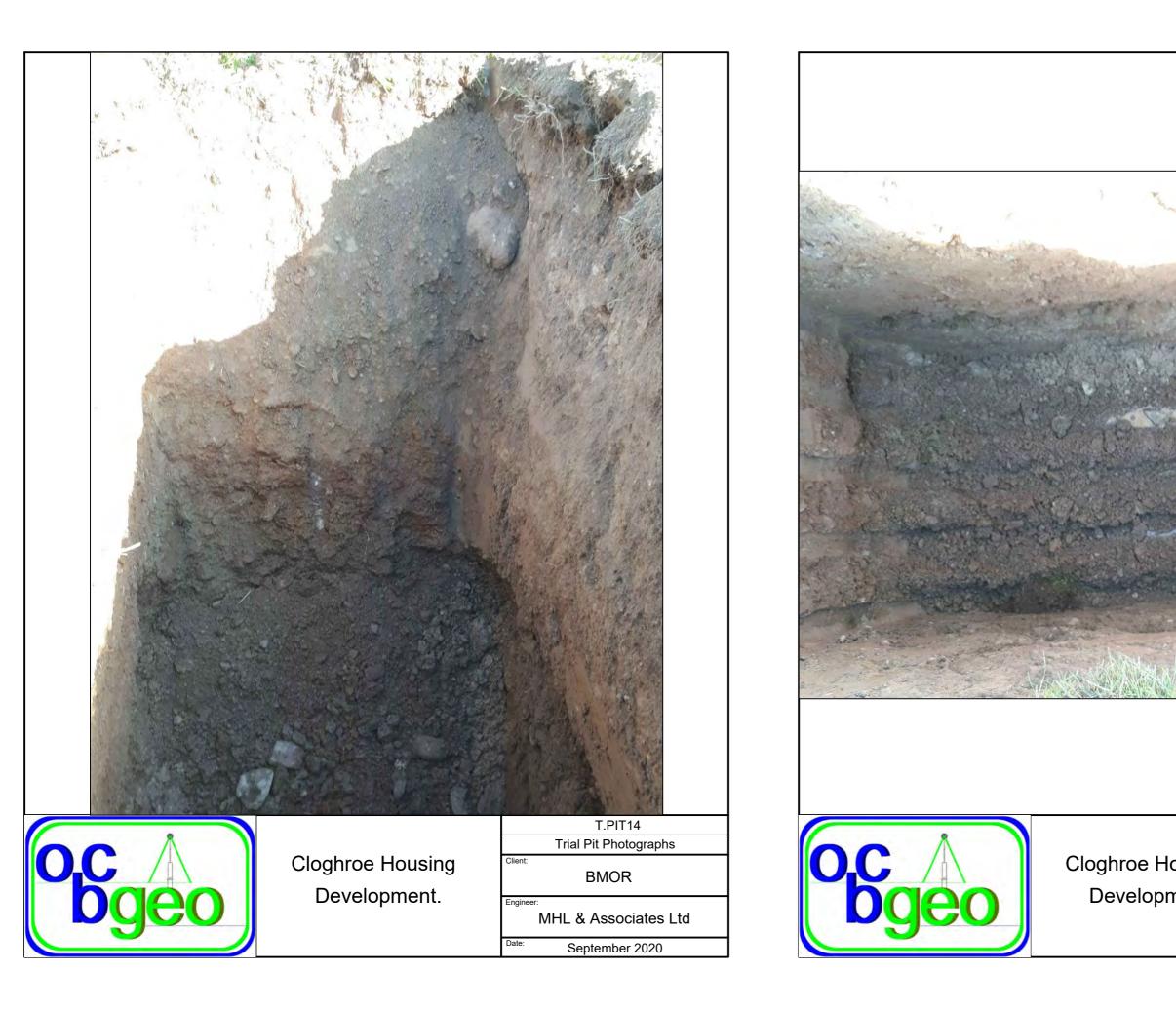


DIVIOR		
ousing nent. <sup>Client:</sup> BMOR Engineer: MHL & Associates Ltd		
	ousing nent.	Trial Pit Photographs Client: BMOR Engineer:



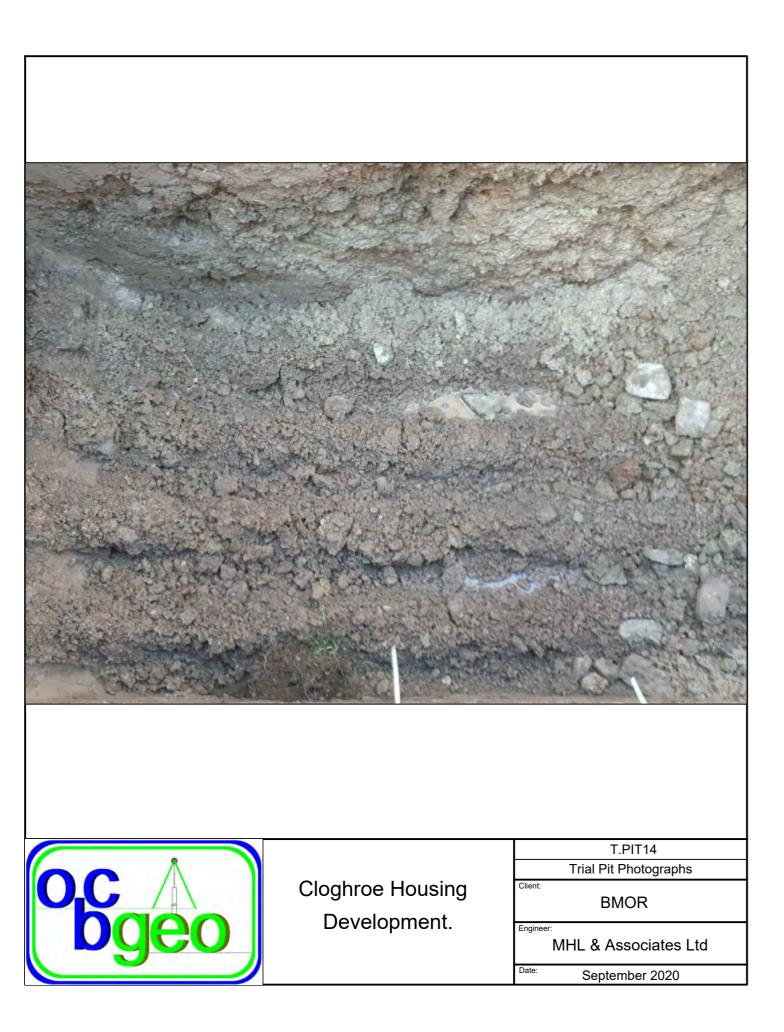


	T.PIT14
	Trial Pit Photographs
ousing	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020





	T.PIT14
	Trial Pit Photographs
ousing	Client: BMOR
nent.	Engineer: MHL & Associates Ltd
	Date: September 2020



Appendix E

**CBR Test Data** 

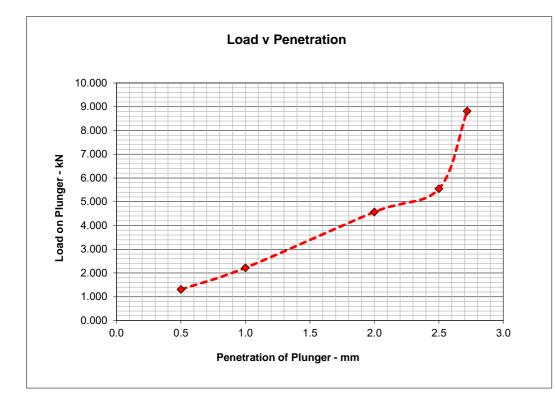
## CBR TEST DATA

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	Standard	Load at 2.5mm penetration x100
(mm)	load (kg)	1370
2.5	1370	
5	2055	Load at 5mm penetration x100
7.5	2630	15= x100
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	

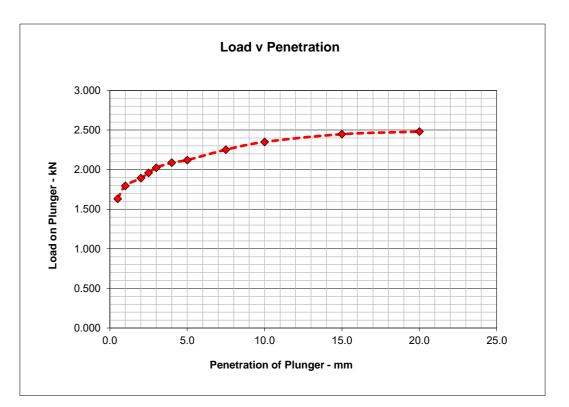


## CBR TEST DATA

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

		_
Penetration	Standard	Load at
(mm)	load (kg)	12.5 -
2.5	1370	
5	2055	Load at
7.5	2630	15=
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	



## OCB Geotechnical Ltd

t 2.5mm penetration x100

at 5mm penetration 2055

x100

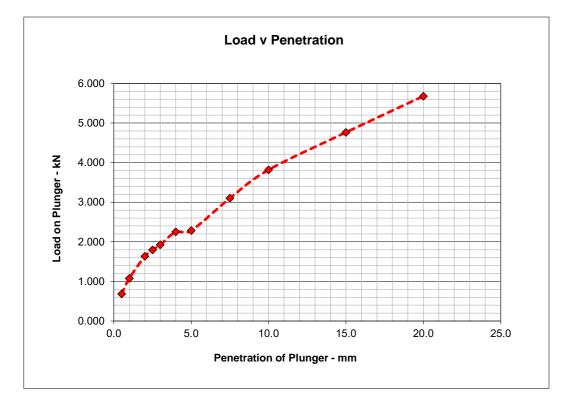
## CBR TEST DATA

OCB Geotechnical Ltd

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

Penetration (mm)	Standard load (kg)	I 2.5 = Load at 2.5mm penetration 1370	x100
2.5	1370		
5	2055	Load at 5mm penetration	100
7.5	2630	2055	x100
10	3180		
12.5	3600		

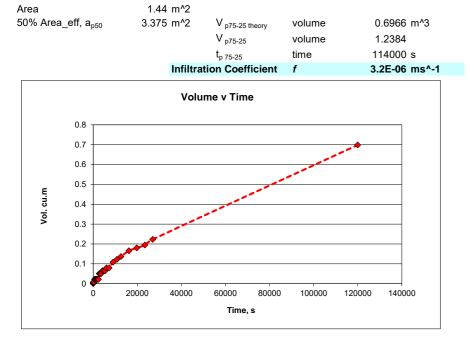
Penetration (mm)	Load Reading (Divisions)	Load Reading (kN)	Standard Load (Kg)	Load (Kg)	CBR (%)
0.5	21.0	0.685		70	
1	33.0	1.077		110	
2	50.0	1.632		166	
2.5	55.0	1.795	1370	183	13.36
3	59.0	1.926		196	
4	69.0	2.252		230	
5	70.0	2.285	2055	233	11.34
7.5	95.0	3.101		316	
10	117.0	3.819		389	
15	146.0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



Appendix F

**Infiltration Test Data** 

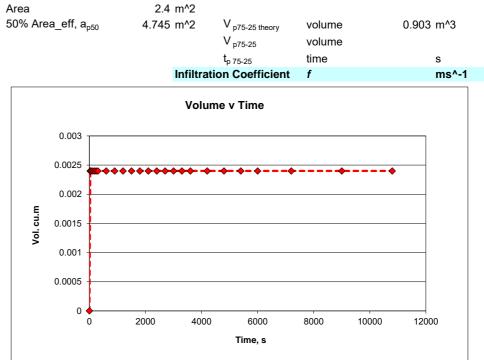
Project Name	Clo	ghroe Ho	using Developme	ent	Date	25/09/20	
Project No.		20-087			Location	TP05	1
Easting	557325.98	N	lorthing	574653.08	Level	29.42	
length, m	2.4	b, m (wid	1.2	depth, m	1.7		
l base, m	1.2	D, III (WIU	1.2	d eff, m	0.645		
l eff, m	1.2			u_en, m	0.045		
i_eii, iii	Time, min	Magguro	Time, sec	depth	Fall, m	Volume	1
Start	0	0.645	0		1 ali, 11 0		
Start	0.5	0.643	30			-	
	0.75	0.648	45				
	0.75	0.649	43 60		0.003		
	2	0.65	120				1
	3	0.65	120				1
	4	0.65	240				1
	5	0.65	300				1
	10	0.65	600				
	10	0.66	900				
	20	0.660	1200	-			
	20	0.660	1200				
	30	0.660	1800		0.015		
	35	0.66	2100				
	40	0.660	2400				
	40	0.680	2700				
	50	0.080	3000				
	55	0.680	3300				1
	60	0.680	3600				
	70	0.690	4200				
	80	0.690	4800				
	90	0.690	5400				
	100	0.030	6000				
	120	0.700	7200				,, <u> </u>
	120	0.72	9000				
	130	0.72	10800				
	210	0.73	12600		0.095		
	270	0.74	12000				
	330	0.70	19800				
	390	0.78	23400				
	450	0.78	27000				
	2000	1.13	120000	0.570	0.133	0.6984	



#### NOTES:

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

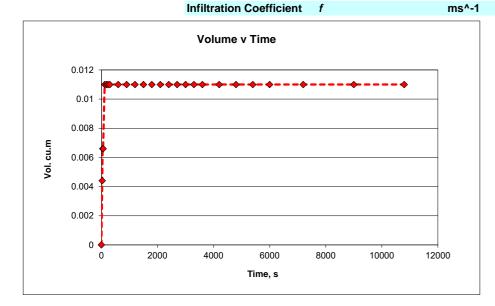
Project Name Project No. Easting length, m I_base, m I_eff, m Start	557475.99 <b>2.3</b>	20-087	using Developm <b>Iorthing</b>		Date Location	25/09/20
Easting length, m I_base, m I_eff, m	2.3	١				TP06
length, m I_base, m I_eff, m				574634.01		28.804
I_base, m I_eff, m				1		
l_eff, m		b, m (wid	1.2	depth, m	1.5	
_ /	2	-		d_eff, m	0.7	
Start	2.15			_		
Start	Time, min	Measure,	Time, sec	depth	Fall, m	Volume
ſ	0	0.700	C	0.8	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
ĺ	150	0.701	9000	0.799	0.001	0.0024
	180	0.701	10800		0.001	0.0024
Area	2.4	m^2				
50% Area_eff, a <sub>p50</sub>	4.745	m^2	V p75-25 theory	volume	0.903	m^3
			V <sub>p75-25</sub>	volume		



NOTES:

Water level did not fall sufficiently to calculate an Infiltration Coefficient

Project Name	Clo	ahroe Ho	using Developme	ent	Date	25/09/20	
Project No.	0.0	20-087			Location	TP10	
Easting	557254.03		Northing	574749.06		36.711	
length, m	2.2	b, m (wid	1.1	depth, m	1.6		
l_base, m	2			d_eff, m	0.6		
l_eff, m	2.1						
	Time, min	Measure,	Time, sec	depth	Fall, m	Volume	
Start	0	0.585		1.015		0	
	0.5	0.587	30	1.013	0.002	0.0044	
	0.75	0.588	45	1.012	0.003	0.0066	
	1	0.588	60	1.012	0.003	0.0066	
	2	0.59	120	1.01	0.005	0.011	
	3	0.59	180	1.01	0.005	0.011	
	4	0.59	240	1.01	0.005	0.011	
	5	0.59	300	1.01	0.005	0.011	
	10	0.59	600	1.01	0.005	0.011	
	15	0.59	900	1.01	0.005	0.011	
	20	0.59	1200	1.010	0.005	0.011	
	25	0.59	1500	1.010	0.005	0.011	
	30	0.59	1800	1.010	0.005	0.011	
	35	0.59	2100	1.01	0.005	0.011	
	40	0.59	2400	1.010	0.005	0.011	
	45	0.59		1.010	0.005	0.011	
	50	0.59	3000	1.01	0.005	0.011	
	55	0.59	3300	1.010	0.005	0.011	
	60	0.59	3600			0.011	
	70	0.59		1.010	0.005	0.011	
	80	0.59				0.011	
	90	0.59				0.011	
	100	0.59				0.011	
	120	0.59		1.010	0.005	0.011	
	150	0.59				0.011	
	180	0.59				0.011	
			•	•			
Area	2.2	m^2					
50% Area_eff, a <sub>p50</sub>	4.12	m^2	V p75-25 theory	volume	0.693	m^3	
1			V <sub>p75-25</sub>	volume			
			t <sub>p 75-25</sub>	time		s	
		Infiltratio	on Coefficient	f		ms^-1	



#### NOTES:

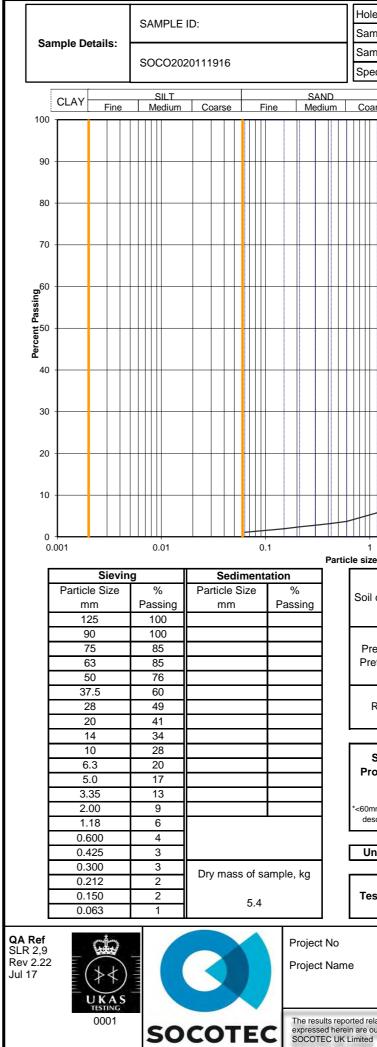
Water level did not fall sufficiently to calculate an Infiltration Coefficient

Appendix G Geotech

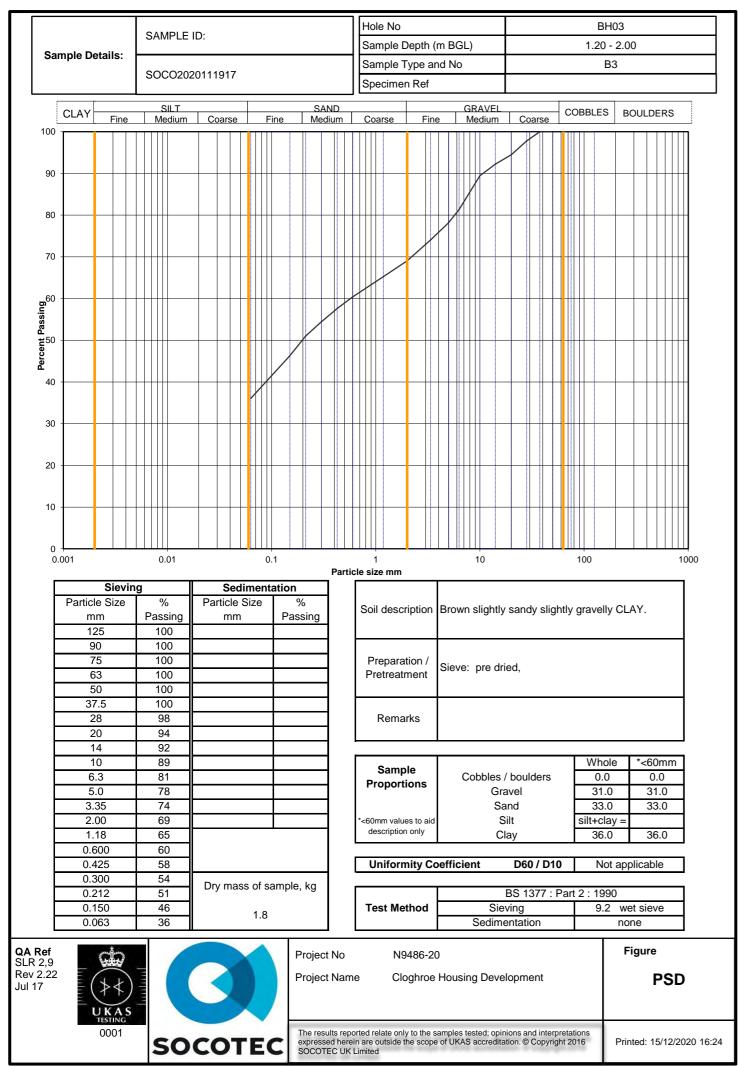
# **Geotechnical Soil Laboratory Test Results**

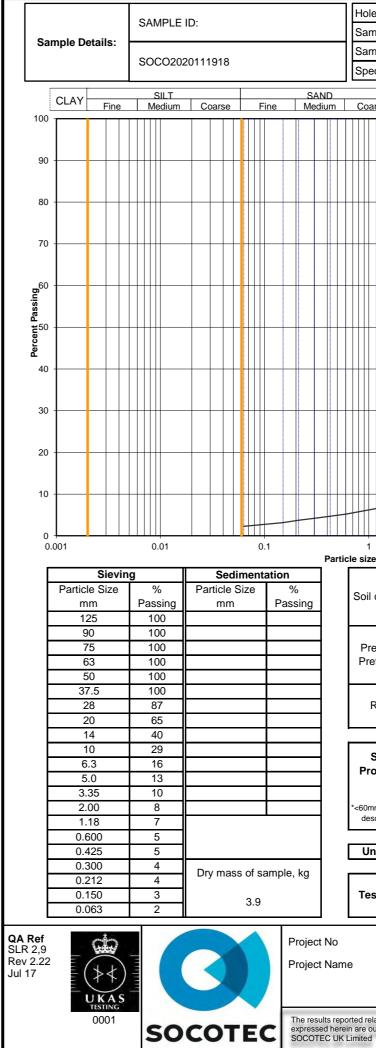
## **INDEX PROPERTIES - SUMMARY OF RESULTS**

		Samp	le			р	$p_{d}$	w	< 425	$W_{L}$	W <sub>P</sub>	ŀP	₽s	
Hole No.	No	Dept	h (m)	t	Soil Description				µm sieve					Remarks
	No.	from	to	type		Mg	/m3	%	%	%	%		Mg/m3	
BH01A	3	1.20	2.00	в	Reddish brown sandy GRAVEL with one cobble.			5.3						
BH03	3	1.20	2.00	в	Brown slightly sandy slightly gravelly CLAY.			11	58 s	22 a	13	9		
BH05	3	1.20	2.00	в	Brown mottled grey slightly sandy gravelly CLAY.			14	50 s	27 a	19	8		
TP07	3	0.70	1.20	в	Grey slightly gravelly sandy CLAY.			15						
TP07	5	1.70	2.20	в	Brown mottled grey slightly sandy gravelly CLAY.			12	49 s	24 a	15	9		
TP10	3	1.10	1.45	в	Brown slightly sandy very gravelly CLAY with one cobble.			8.8						
TP12	3	1.60	2.10	в	Brown slightly sandy slightly gravelly CLAY.			10	66 s	21 a	15	6		
General notes: Key : p bulk density, linear pd dry density w moisture content * test carried out to BS El	WL a b	ts carried Liquid lir 4 point co 1 point co	nit one test	1377 : 1	1990 unless annotated otherwise. See Remarks for WP Plastic limit NP non - plastic IP Plasticity Index	further d	<425un n from s siev	n prepara n natural s ed specir	soil nen		-g = ga		ensity	
<b>QA Ref</b> SLR 1 Rev 2.95 Mar 17		C			Project No N9486-20 Project Name Cloghroe Ho	using					Fi	gure	INC	X
		C		E	The results reported relate only to the sample expressed herein are outside the scope of U SOCOTEC UK Limited	es teste KAS acc	d; opinio creditatic	ns and in on. © Cop	terpretat yright 20	tions )17	1	Printe	d: 15/12	/2020 16:25

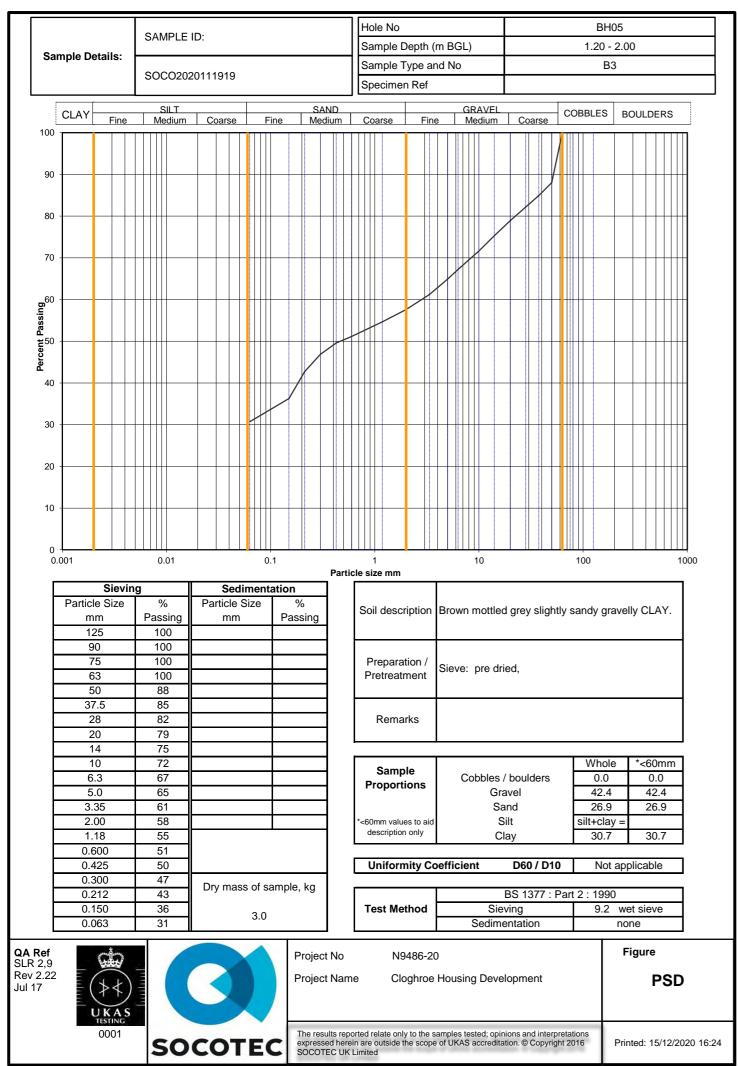


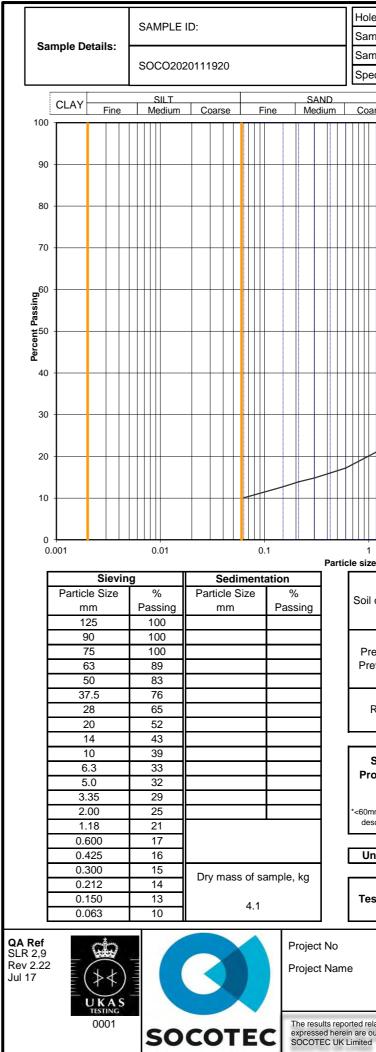
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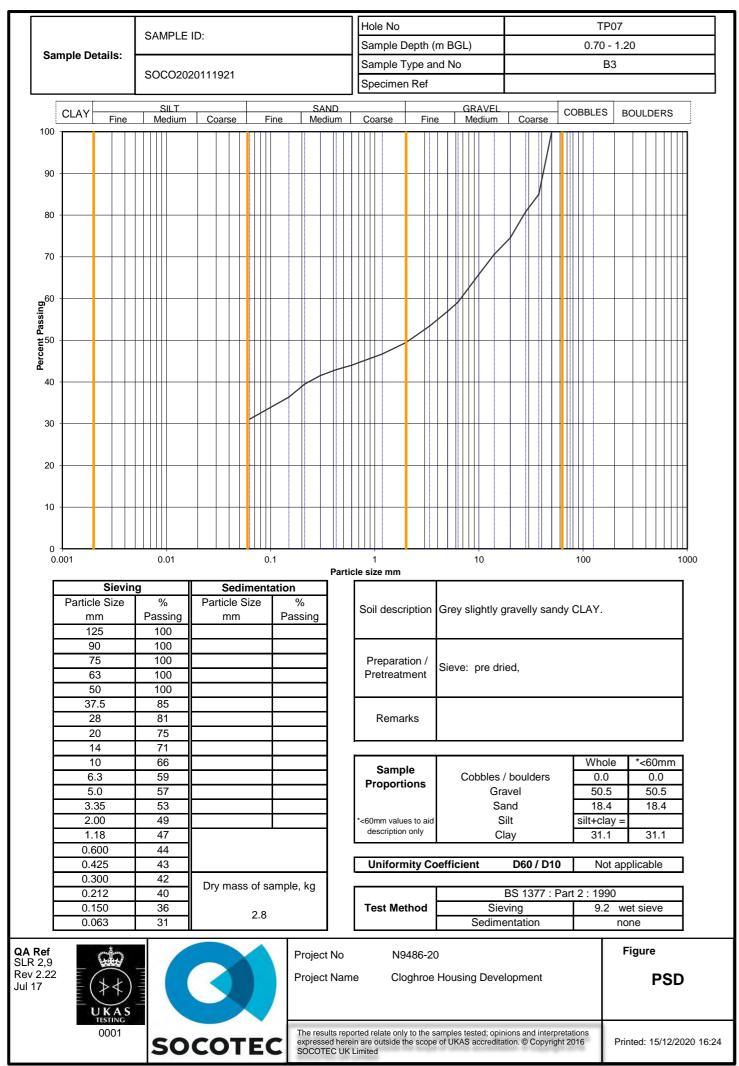


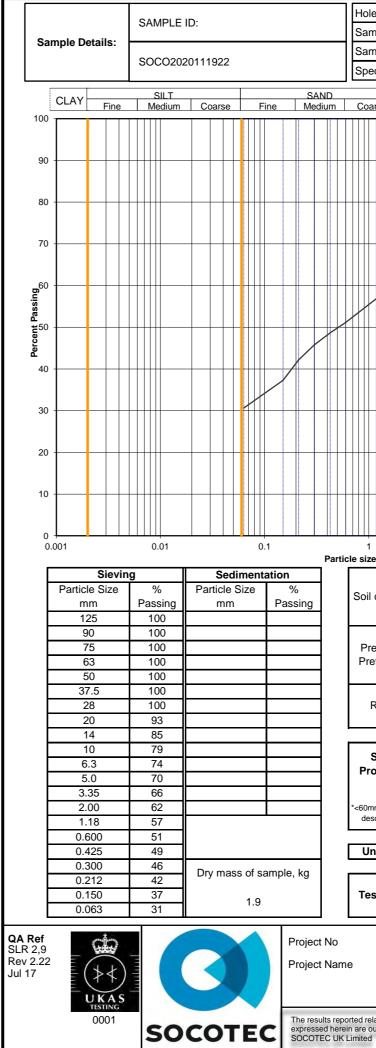
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BS 1377 : Part 2 : 1990           St Method         Sieving         9.2         wet sieve           Sedimentation         none         None											
N9486-20	)			Fi	gure						
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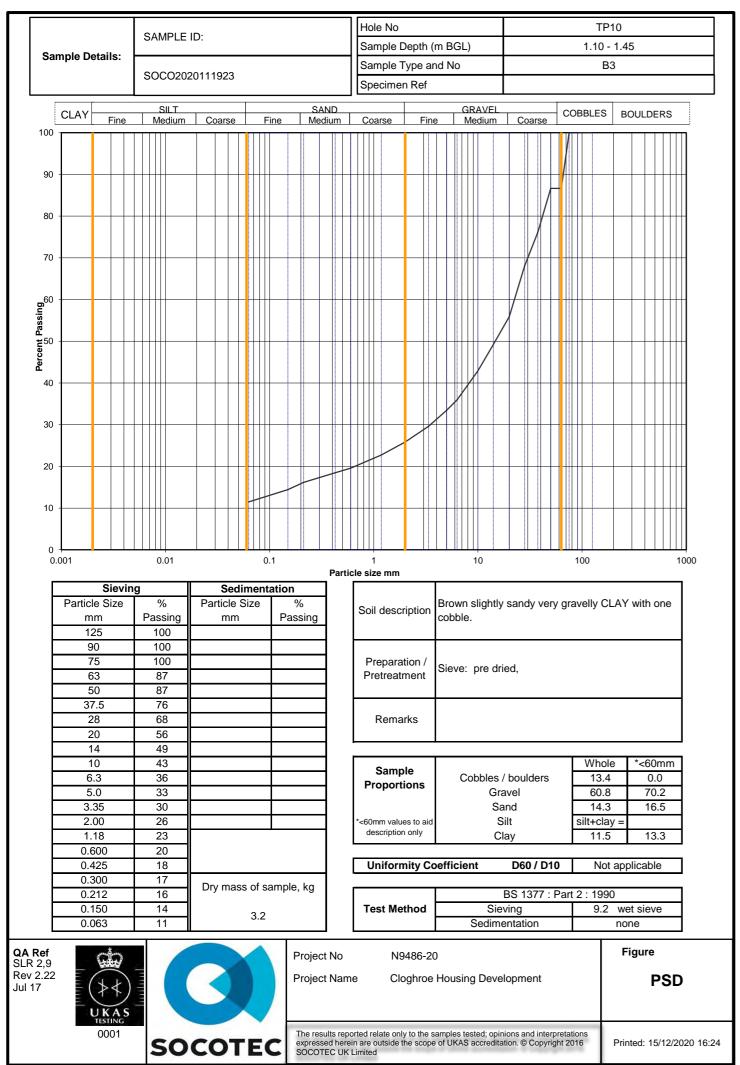


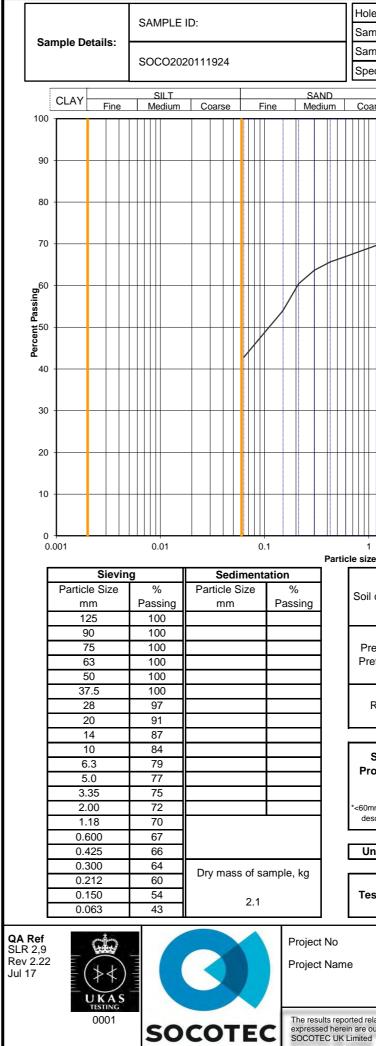
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late only to the sa utside the scope	ate only to the samples tested; opinions and interpretations tside the scope of UKAS accreditation. © Copyright 2016 Printed: 15/12/2020 16:24											





a No       TP07         nple Depth (m BGL)       1.70 - 2.20         nple Type and No       B5         usine Ref       COBBLES       BOULDERS         size       Fine       GRAVEL       COBBLES       BOULDERS         size       Fine       GRAVEL       COBBLES       BOULDERS         size       Fine       GRAVEL       COBBLES       BOULDERS         size       Fine       Medium       Coarse       Coarse       Coarse       Coarse         size       To       10       100       100       100       100         enamtion       Brown mottled grey slightly sandy gravelly CLAY.       Figure       Size       Size         size       Cobbles / boulders       O0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0													
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Sample oportions       Cobbles / boulders Gravel       0.0       0.0         Gravel       38.5       38.5         Sand       30.9       30.9         im values to aid scription only       Silt       Silt+Clay =         Clay       30.6       30.6         hiformity Coefficient       D60 / D10       Not applicable         Method       BS 1377 : Part 2 : 1990         St Method       Sieving       9.2 wet sieve         Sedimentation       none         N9486-20       Figure         Cloghroe Housing Development       PSD		Sieve: pre dri	ied,										
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Issued:

Summary of Chemical Analysis Soil Samples

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

contract nucle cloginoc			_					
			Lab No	1773299	1773300	1773301	1773302	1773303
		.Sa	ample ID	BH01A	BH03	BH05	TP07	TP12
			Depth	1.20	1.20	1.20	0.70	1.60
			Other ID	D4	D4	D4		
		Sam	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL
		Samp	ing Date	n/s	n/s	n/s	n/s	n/s
		Sampl	ing Time	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units					
Inorganics								
рН	DETSC 2008#		рН	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

Certificate Number 20-25064

Client Socotec - Geotechnical Lab Askern Road Doncaster DN6 8DG

- Our Reference20-25064Client ReferenceN9486-20Order No(not supplied)Contract TitleCloghroeDescription5 Soil samples.Date Received08-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



14-Dec-20





# Information in Support of the Analytical Results

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

#### **Containers Received & Deviating Samples**

		Date			inappropriate container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding time exceeded for tests	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