NDFA Social Housing Lot 3
Coolaghknock Glebe – Factual Report

Client:	NDFA
Client's Representative:	Malone O'Regan Consulting Engineers
Report No.:	23-0881F
Date:	January 2024
Status:	Final for Issue

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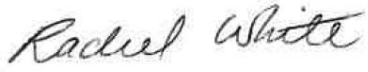
Document Control Sheet

Report No.:		23-0881F			
Project Title:		NDFA Social Housing Lot 3 – Coolaghknock Glebe Factual Report			
Client:		NDFA			
Client's Representative:		Malone O'Regan Consulting Engineers			
Revision:	A00	**Status:**	Final for Issue	**Issue Date:**	22nd January 2024
Prepared by:		**Reviewed by:**		**Approved by:**	
 Rachel White B.A. (Mod.) Geoscience		 Sean Ross BSc MSc PGeo MIEI		 Darren O'Mahony BSc MSc MIEI EurGeol PGeo	

The works were conducted in accordance with:

British Standards Institute (2015) BS 5930:2015+A1:2020, Code of practice for ground investigations.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

Laboratory testing was conducted in accordance with:

British Standards Institute BS 1377:1990 parts 2, 4, 5, 7 and 9

METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in BS5930:2015+A1:2020, The Code of Practice for Ground Investigation.

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample (thick walled sampler).
UT	Nominal 100mm diameter undisturbed open tube sample (thin walled sampler).
P	Nominal 100mm diameter undisturbed piston sample.
B	Bulk disturbed sample.
LB	Large bulk disturbed sample.
SB	Sonic bulk disturbed sample.
D	Small disturbed sample.
C	Core sub-sample (displayed in the Field Records column on the logs).
L	Liner sample from dynamic sampled borehole.
W	Water sample.
ES / EW	Soil sample for environmental testing / Water sample for environmental testing.
SPT (s)	Standard penetration test using a split spoon sampler (small disturbed sample obtained).
SPT (c)	Standard penetration test using 60 degree solid cone.
(x,x/x,x,x,x)	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length.
(Y for Z/ Y for Z)	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given seating or test length 'Z' (mm).
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm).
HVP / HVR	In situ hand vane test result (HVP) and vane test residual result (HVR). Results presented in kPa.
V VR	Shear vane test (borehole). Shear strength stated in kPa. V: undisturbed vane shear strength VR: remoulded vane shear strength
Soil consistency description	In cohesive soils, where samples are disturbed and there are no suitable laboratory tests, N values may be used to indicate consistency on borehole logs – a median relationship of Nx5=Cu is used (as set out in Stroud & Butler 1975).
dd-mm-yyyy	Date at the end and start of shifts, shown at the relevant borehole depth. Corresponding casing and water depths shown in the adjacent columns.
▽	Water strike: initial depth of strike.
▼	Water strike: depth water rose to.
Abbreviations relating to rock core – reference Clause 36.4.4 of BS 5930: 2015+A1:2020	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.
(xxx/xxx/xxx)	Spacing between discontinuities (minimum/average/maximum) measured in millimetres.

NDFA Social Housing Lot 3 – Coolaghknock Glebe - Factual Report

1 AUTHORITY

On the instructions of Malone O'Regan Consulting Engineers ("the Client's Representative"), acting on the behalf of NDFA ("the Client"), a ground investigation was undertaken at the above location to provide geotechnical and environmental 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 ground 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 recorded during the investigation. No responsibility can be taken for conditions not encountered through the scope of work commissioned, for example between exploratory hole points, or beneath the termination depths achieved.

This report was prepared by Causeway Geotech Ltd for the use of the Client and the Client's Representative in response to a particular set of 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, slit trenches, soil sampling, environmental sampling, groundwater monitoring, in-situ and laboratory testing, and the preparation of a factual report on the findings.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the works were conducted on a greenfield site located 1.5km east of Kildare Town. The site is bordered by Connagh Road and Coolaghknock housing developments to the north, west and south and agricultural land to the south and east. There is a wastewater treatment plant in the very south of the site. Elevations vary across the site.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between 17th October and 14th December 2023, comprised:

- seventeen boreholes
  - twelve light cable percussion boreholes
  - five boreholes by sonic drilling
- a standpipe installation in three boreholes
- seven machine dug trial pits
- six machine slit trenches; and
- an infiltration test performed in three trial pits.

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

4.2 Boreholes

A total of seventeen boreholes were put down in a minimum diameter of 150mm through soils and rock strata to their completion depths by a combination of methods, including light cable percussion boring by a Dando 2000 rig, and sonic drilling by Fraste CRS-XL Duo sonic drilling rig.

The borehole logs state the methodology and plant used for each location, as well as the appropriate depth ranges.

A summary of the boreholes, subdivided by category in accordance with the methods employed for their completion, is presented in the following sub-sections.

4.2.1 Light cable percussion boreholes

Twelve boreholes (BH01, BH02, BH03-BH07A, BH08-BH10 and BH11) were put down to completion in minimum 200mm diameter using a Dando 2000 light cable percussion boring rig. All boreholes were terminated on encountering virtual refusal on obstructions.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

Disturbed (bulk and small bag) samples were taken within the encountered strata. Undisturbed (U100)

samples were taken where appropriate and as directed within fine soils. Environmental samples were taken at standard intervals, as directed by the Client's Representative.

Standard penetration tests were carried out in accordance with BS EN 22476-3:2005+A1:2011 at standard depth intervals using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). 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. The SPT hammer energy measurement report is provided in Appendix K.

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.

4.2.2 Sonic drilled boreholes

Five boreholes (BH01A, BH02A, BH07B, BH10A and RC04) were put to their completion by sonic drilling techniques only. The boreholes were completed using a Fraste CRS XL Duo rubber-tracked sonic drilling rig.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions. Fully cased sonic drilling techniques were employed to advance the boreholes of nominal 180mm diameter to completion at a depth of 10.20m.

Standard penetration tests were carried out in accordance with BS EN 22476-3:2005+A1:2011 at standard depth intervals throughout the overburden using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). 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. The SPT hammer energy measurement report is provided in Appendix K.

The disturbed sonic samples were placed a rigid core liner in single channel wooden core boxes. They were then photographed and examined by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with BS 5930: 2015: Code of practice for ground investigations.

Appendix B presents the borehole logs, with sonic sample photographs presented in Appendix C.

4.3 Standpipe installations

A groundwater monitoring standpipe was installed in BH03, BH09 and BH11.

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

4.4 Trial Pits

Seven trial pits (TP01-TP07) were excavated using an 8t tracked excavator fitted with a 600mm wide bucket, to depths of 3.00m.

Environmental samples were taken at depths of 0.50m, 1.00m and one meter intervals thereafter in each trial pit.

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

No water strikes were encountered during excavation. The stability of the trial pit walls was noted on completion.

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

4.5 Slit trenches

Six slit trenches (ST01-ST06) were excavated by a combination of hand digging and mechanical excavation using a compact 3t tracked excavator fitted with a 600mm wide toothless bucket, to locate and identify buried services at the site.

Drawing of the trenches and the locations of services encountered during excavation are shown along with the slit trench logs in Appendix F, with photographs presented in Appendix G.

4.6 Infiltration tests

Four infiltration/soakaway tests (IT01-IT03) were carried out in accordance with BRE Digest 365 - Soakaways (BRE, 2016). The tests were conducted in similarly numbered trial pits.

Appendix H presents the soakaway pit logs followed by the results and analysis of the infiltration test, with photographs presented in Appendix E.

4.7 Surveying

The as-built exploratory hole positions were surveyed following completion of site operations by a Site Engineer from Causeway Geotech. Surveying was carried out using a Trimble R10 GPS system employing VRS and real time kinetic (RTK) techniques.

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

4.8 Groundwater monitoring

Following completion of site works, groundwater monitoring was conducted over four rounds. Ground water monitoring was carried out using a water interface probe.

The monitoring records are presented in Section 6.3.

5 LABORATORY WORK

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

5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests and particle size distribution analysis
- **compaction related:** California bearing ratio tests
- **soil chemistry:** pH and water soluble sulphate content

Laboratory testing of soils samples was carried out in accordance with British Standards Institute: *BS 1377, Methods of test for soils for civil engineering purposes; Part 1 (2016), and Parts 2-9 (1990).*

The test results are presented in Appendix I.

5.2 Environmental laboratory testing of soils

Environmental testing, as specified by the Client's Representative was conducted on selected soil samples by Derwentside Environmental Testing Services in Consett, Durham.

Rilta suite of analysis was carried out on several samples for landfill disposal criteria. This included testing for a range of determinants, including:

- Metals
- Speciated total petroleum hydrocarbons (TPH)
- Speciated polycyclic aromatic hydrocarbons (PAH)
- BTEX compounds
- Phenols
- Organic matter
- Cyanides

- Asbestos screen
- Sulphate and sulphide
- pH

Results of environmental laboratory testing are presented in Appendix J.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise gravels derived from limestones. These deposits are underlain by cherty often dolomitised limestone of the Rickardstown Formation.

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 across the site with a thickness range of 100 to 500mm.
- **Made Ground (fill):** reworked sandy gravelly clay fill or sandy clayey gravel fill with varying fragments of plastic extending to a depth of 0.30-1.30m in BH01, ST01-ST06 and TP01-TP06. A very localised greater extent of made ground was encountered in BH08, with driller encountered large fragments of wood at a depth of 3.80m.
- **Fluvioglacial deposits:** loose to medium dense sands and gravels encountered across the site, generally becoming denser with depth. Often with layers of soft to firm sandy gravelly clay or silt, also becoming stiffer with depth. Localized extents of firm to stiff clay were encountered in BH05 and BH06.

6.3 Groundwater

Groundwater was not noted during drilling at any of the borehole locations. However, it should be noted that the casing used in supporting the borehole walls during drilling may have sealed out any groundwater strikes and where sonic holes were completed, it should also be noted that the flush system used may have masked any ground water strikes encountered. Therefore, the possibility of encountering groundwater during excavation works should not be ruled out.

Groundwater was also not noted during excavation of any of the trial pits or slit trenches.

Subsequent groundwater monitoring of the standpipe installations recorded water levels as shown in Table 1.

Table 1 Groundwater monitoring

Date	Water Level (mbgl)		
	BH03	BH09	BH11
14/11/2023	Dry	3.87	Dry
30/11/2023	Dry	Dry	Dry
15/12/2023	Dry	Dry	Dry
17/01/2024	Dry	Dry	Dry
13/03/2024	Dry	3.90	Dry

Continued monitoring of the three installed standpipes will give an indication of the seasonal variation in groundwater level which should be factored into design considerations.

7 REFERENCES

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland.

IS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. National Standards Authority of Ireland.

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

BS 5930: 2015+A1:2020: Code of practice for ground investigations. British Standards Institution.

BS EN ISO 14688-1:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 1 Identification and description.

BS EN ISO 14688-2:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 2 Principles for a classification.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS EN ISO 22476-3:2005+A1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test.

Building Research Establishment (2005) BRE Special Digest 1, Concrete in aggressive ground.

Building Research Establishment (2007), BRE Digest 365: Soakaways.

Land contamination risk management (LCRM), (2020) Environment Agency.

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

CAUSEWAY GEOTECH

Project No.:	23-0881F	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Coolaghknock Glebe	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

Title:

Site Location Plan

Last Revised:	**Scale:**
20/12/2023	1:10000

CAUSEWAY GEOTECH

Project No.:	23-0881F	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Coolaghknock Glebe	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

- Locations By Type - CP
- Locations By Type - SNC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan

Last Revised:	**Scale:**
09/01/2024	1:2000

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH01
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	0.90	674026.50 E 712995.55 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
0.90 m	10/11/2023	KF	Scale: 1:40
Elevation: 99.70 mOD	**End Date:** 10/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					99.60	0.10		TOPSOIL		
0.50	ES1							MADE GROUND: Greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular.		
					98.80	0.90		End of Borehole at 0.90m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH01A

Client: NDFA

Client's Rep: Malone O'Regan Consulting Engineers

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674027.05 E 712997.27 N

Final Depth: 10.20 m **Start Date:** 13/12/2023 **Driller:** RC

Elevation: 99.87 mOD **End Date:** 13/12/2023 **Logger:** AM

Sheet 1 of 2
Scale: 1:50

FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00		13-12-2023	0.00	Dry	99.67	0.20		TOPSOIL		
								Dark greyish brown very sandy subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.		
1.20 - 1.65	D1				98.67	1.20				
1.20 - 2.00	B13							Medium dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.		
1.20 - 2.70	SB2									
1.20 - 1.65	SPT (S)	N=16 (8,8/5,4,4,3)	1.20	0.50						
2.00 - 2.70	B14				97.87	2.00		Medium dense greyish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to coarse of various lithologies.		
2.70 - 3.15	D3									
2.70 - 4.20	SB4									
2.70 - 3.15	SPT (S)	N=11 (4,4/3,3,2,3)	2.70	0.50						
2.90 - 3.50	B15									
3.50 - 4.20	B16				96.37	3.50		Medium dense greyish brown fine to coarse SAND and subangular fine to coarse GRAVEL of various lithologies with low cobble content. Cobbles are of limestone.		
4.20 - 4.50	B17									
4.20 - 4.65	D5									
4.20 - 5.70	SB6				95.37	4.50				
4.20 - 4.65	SPT (S)	N=16 (3,3/4,5,4,3)	4.20	0.50				Medium dense becoming dense greyish brown sandy slightly clayey subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are of limestone.		
4.50 - 5.00	B18									
5.00 - 5.65	B19									
5.65 - 5.70	B20							*5.65m to 5.70m: Stiff greyish brown gravelly CLAY*		
5.70 - 6.15	D7									
5.70 - 7.20	SB8									
5.70 - 6.15	SPT (S)	N=36 (5,5/8,10,9,9)	5.70	0.50	93.77	6.10				
6.10 - 6.70	B21							Very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are of limestone.		
6.70 - 7.20	B22									
7.20 - 7.58	D9				92.67	7.20				
7.20 - 8.70	SB10							Low recovery: Dense grey subangular fine to coarse GRAVEL of various lithologies.		
7.20 - 7.58	SPT (S)	50 (8,12/50 for 225mm)	7.20	0.50						
8.20 - 8.40	B23									
8.40 - 8.70	B24				91.47	8.40		Stiff greyish brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are of limestone.		
8.70 - 10.20	SB12				91.17	8.70				
8.70 - 8.93	D11									
8.70 - 8.93	SPT (S)	50 (12,13/50 for 75mm)	8.70	0.50				Dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone.		
9.20 - 9.40	B25									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)
0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH01A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674027.05 E 712997.27 N

Final Depth:	10.20 m	Start Date:	13/12/2023	Driller:	RC	Sheet 2 of 2 Scale: 1:50
Elevation:	99.87 mOD	End Date:	13/12/2023	Logger:	AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.40 - 10.20	B26				90.47	9.40		Very stiff brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are of limestone.		
					89.67	10.20		End of Borehole at 10.20m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)
0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH02
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.65	674100.53 E 713013.44 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
1.60 m	11/11/2023	BE	Scale: 1:40
Elevation: 106.90 mOD	**End Date:** 11/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								TOPSOIL		
0.40	B4				106.50	0.40				
0.50	ES1							Greyish brown sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.		
1.00	D3									
1.00	ES2									
1.20 - 1.60	B5				105.70	1.20				
1.20 - 1.65	SPT (C)	N=38 (8,8/9,8,7,14) Hammer SN = 0895	1.20	0.00				Dense greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse.		
					105.30	1.60				
					105.25	1.65		Grey BOULDER. Recovered through percussive drilling as angular gravel.		
								End of Borehole at 1.60m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
1.20	200

Water Added

From (m)	To (m)
0.40	1.60

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.60	1.65	00:45

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH02A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674102.79 E 712995.35 N

Final Depth:	10.20 m	Start Date:	14/12/2023	Driller:	RC	Sheet 1 of 2 Scale: 1:50
Elevation:	105.58 mOD	End Date:	14/12/2023	Logger:	AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00		14-12-2023	0.00	Dry				TOPSOIL		
					105.28	0.30		Greyish brown very sandy subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
1.20 - 1.65	D1				104.38	1.20		Medium dense greyish brown slightly sandy very clayey subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse. *1.40m to 1.50m: Very clayey: borderline CLAY*		
1.20 - 1.70	B13									
1.20 - 2.70	SB2									
1.20 - 1.65	SPT (S)	N=13 (5,5/4,4,3,2)	1.20	0.60						
1.70 - 2.30	B14				103.88	1.70		Medium dense greyish brown fine to coarse SAND and subangular fine to coarse GRAVEL of various lithologies. *1.80m to 2.00m: Very clayey: borderline CLAY*		
2.30 - 2.70	B15				103.28	2.30		Loose brown slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse of various lithologies.		
2.70 - 3.15	D3									
2.70 - 4.20	SB4									
2.70 - 3.15	SPT (S)	N=6 (1,1/2,2,1,1)	2.70	0.60						
3.20 - 3.70	B16				102.38	3.20		Loose greyish brown sandy subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone and siltstone.		
3.70 - 4.20	B17									
4.20 - 4.65	D5				101.38	4.20		Medium dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone and siltstone.		
4.20 - 4.70	B18									
4.20 - 5.70	SB6									
4.20 - 4.65	SPT (S)	N=10 (2,2/3,3,2,2)	4.20	0.60						
4.70 - 5.10	B19									
5.10 - 5.70	B20				100.48	5.10		Medium dense greyish brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.		
5.70 - 6.15	D7									
5.70 - 7.20	SB8									
5.70 - 6.15	SPT (S)	N=16 (3,3/5,5,3,3)	5.70	0.60						
6.40 - 7.20	B21				99.18	6.40		Medium dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone and siltstone.		
7.20 - 7.65	D9									
7.20 - 8.70	SB10									
7.20 - 7.65	SPT (S)	N=22 (2,6/6,7,5,4)	7.20	0.60						
7.60 - 8.10	B22									
8.10 - 8.70	B23									
8.70 - 10.20	SB12				96.88	8.70		Dense greyish brow sandy clayey subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are subrounded of various lithologies.		
8.70 - 9.15	D11									
8.70 - 9.20	B24									
8.70 - 9.15	SPT (S)	N=37 (8,8/10,11,8,8)	8.70	0.60						
9.20 - 9.70	B25									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)
0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH02A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674102.79 E 712995.35 N	10.20 m	14/12/2023	RC	Scale: 1:50
					Elevation: 105.58 mOD	End Date: 14/12/2023	Logger: AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.70 - 10.20	B26				95.38	10.20		End of Borehole at 10.20m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details		Water Added	
To (m)	Diam (mm)	From (m)	To (m)
10.20	177	0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH03
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	3.50	674085.00 E 712975.10 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
3.50 m	09/11/2023	BE	Scale: 1:40
Elevation: 102.68 mOD	**End Date:** 10/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								TOPSOIL		
0.50	ES1				102.18	0.50				
0.50 - 1.20	B4							Greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	B7				101.48	1.20				
1.20 - 2.00	B5							Dense greyish brown very sandy slightly clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
1.20 - 1.65	SPT (C)	N=31 (6,7/7,8,7,9) Hammer SN = 0895	1.20	Dry						
2.00	B6									
2.00	D10									
2.00 - 2.45	B8									
2.00 - 2.45	SPT (C)	N=34 (8,8/9,8,8,9) Hammer SN = 0895	2.00	Dry						
3.00	D11									
3.00 - 3.45	B9									
3.00 - 3.45	SPT (C)	N=31 (6,8/7,9,8,7) Hammer SN = 0895	3.00	0.00						
3.50 - 3.55	SPT (C)	50 (25 for 30mm/50 for 20mm)	3.00	0.00	99.18	3.50		End of Borehole at 3.50m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
3.50	200

Water Added

From (m)	To (m)
0.50	3.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
0.50	3.50	04:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH04
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	7.50	674096.98 E 712954.60 N

Final Depth:	7.50 m	Start Date:	23/10/2023	Driller:	BE	Sheet 1 of 2 Scale: 1:40
Elevation:	101.31 mOD	End Date:	24/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.20	B4				101.21	0.10		TOPSOIL		
								Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
0.50	ES1									
1.00	D3									
1.00	ES2									
1.20 - 1.50	B5				100.11	1.20				
1.20 - 1.65	B7							Medium dense locally loose greyish brown gravelly very silty fine to coarse SAND. Gravel is subangular fine to medium.		
1.20 - 1.65	SPT (C)	N=11 (2,3/3,3,3,2)	1.20	Dry						
1.50 - 1.70	B6									
2.00	D9									
2.00 - 2.45	B8									
2.00 - 2.45	SPT (C)	N=8 (2,2/2,2,2,2)	2.00	Dry						
					98.91	2.40		Loose light grey gravelly slightly silty fine to coarse SAND. Gravel is subrounded fine to medium.		
2.70	B10									
3.00	D13				98.31	3.00		Medium dense light grey gravelly slightly silty fine to coarse SAND. Gravel is subrounded fine to medium.		
3.00 - 3.45	D11									
3.00 - 4.00	B12									
3.00 - 3.45	SPT (S)	N=18 (2,3/4,4,5,5)	3.00	Dry						
4.00	D14				97.31	4.00		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine.		
4.00 - 4.45	D16									
4.00 - 5.00	B15									
4.00 - 4.45	SPT (S)	N=19 (1,3/4,5,5,5)	4.00	Dry						
5.00	D19									
5.00 - 5.45	D17									
5.00 - 6.50	B18									
5.00 - 5.45	SPT (S)	N=18 (2,4/4,5,5,4)	5.00	Dry						
6.00	D21									
6.20	B20									
6.50 - 7.50	B22				94.81	6.50		Dense grey sandy silty subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
6.50 - 6.67	SPT (C)	50 (25 for 125mm/50 for 45mm)	6.50	0.00						
7.00	D23									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
7.50	200

Water Added

From (m)	To (m)
6.20	7.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
6.20	7.50	02:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH04
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	7.50	674096.98 E 712954.60 N

Final Depth:	7.50 m	Start Date:	23/10/2023	Driller:	BE	Sheet 2 of 2 Scale: 1:40
Elevation:	101.31 mOD	End Date:	24/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					93.81	7.50		End of Borehole at 7.50m		

7.5
8.0
8.5
9.0
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
7.50	200

Water Added

From (m)	To (m)
6.20	7.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
6.20	7.50	02:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH05
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 1
Cable Percussion	Dando 2000	0.00	5.80	674054.07 E	5.80 m	24/10/2023	BE	Scale: 1:40
				712907.56 N	Elevation: 98.61 mOD	End Date: 25/10/2023	Logger: SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.00	B4				98.41	0.20		TOPSOIL		
0.50	ES1							Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.00	B5				97.61	1.00		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	D6									
1.20 - 2.00	B7									
1.20 - 1.65	SPT (S)	N=12 (3,3/3,3,3,3) Hammer SN = 0895	1.20	Dry						
2.00	D10									
2.00 - 2.45	D8									
2.00 - 3.00	B12									
2.00 - 2.45	SPT (S)	N=12 (2,2/3,3,3,3) Hammer SN = 0895	2.00	Dry						
3.00	B11									
3.00 - 3.45	D9									
3.00 - 4.00	B13									
3.00 - 3.45	SPT (S)	N=13 (3,3/3,4,3,3) Hammer SN = 0895	3.00	Dry						
4.00	D14									
4.00 - 5.00	B15									
4.00 - 4.45	SPT (S)	N=12 (3,3/3,3,3,3) Hammer SN = 0895	4.00	Dry						
5.00	D16									
5.00 - 5.45	D17									
5.00 - 5.80	B18									
5.00 - 5.45	SPT (S)	N=10 (2,3/3,2,2,3) Hammer SN = 0895	5.00	Dry						
5.80 - 5.82	SPT (C)	50 (25 for 5mm/50 for 15mm) Hammer SN = 0895	5.80	Dry	92.81 92.81	5.80		Grey BOULDER of limestone. Recovered through chiselling as angular gravel. End of Borehole at 5.80m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
5.80	5.80	01:00

Casing Details

To (m)	Diameter
5.80	200

Water Added

From (m)	To (m)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH06
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	5.00	674211.26 E 712909.53 N

Final Depth:	5.00 m	Start Date:	07/11/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	101.26 mOD	End Date:	08/11/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.00	B3				100.96	0.30		TOPSOIL		
0.50	ES1							Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
1.00	D6				100.26	1.00				
1.00	ES2							Soft becoming firm orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00 - 1.20	B4									
1.20 - 1.65	D5									
1.20 - 2.00	B8									
1.20 - 1.65	SPT (S)	N=6 (1,0/1,2,2,1)	1.20	Dry						
2.00	B11									
2.00	D12									
2.00 - 2.65	D7									
2.00 - 2.80	B9									
2.00 - 2.45	SPT (S)	N=8 (1,1/2,2,2,2) Hammer SN = 0895	2.00	Dry						
2.80	B10				98.46	2.80		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
3.00 - 3.45	D13									
3.00 - 4.00	B17									
3.00 - 3.45	SPT (S)	N=21 (3,5/5,6,5,5) Hammer SN = 0895	3.00	Dry						
4.00	D15									
4.00 - 4.45	D14									
4.00 - 5.00	B18									
4.00 - 4.45	SPT (S)	N=28 (6,8/8,6,7,7) Hammer SN = 0895	4.00	Dry						
5.00	D16				96.26	5.00				
5.00 - 5.04	SPT (S)	50 (25 for 10mm/50 for 25mm) Hammer SN = 0895	5.00	Dry				End of Borehole at 5.00m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
5.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
5.00	5.00	01:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH07
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.20	674175.41 E 712858.13 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
1.20 m	07/11/2023	KF	Scale: 1:40
Elevation: 99.88 mOD	**End Date:** 07/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					99.78	0.10		TOPSOIL		
0.50	ES1							Greyish brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
1.00	B3				98.88	1.00				
1.00	ES2							Dense greyish brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
1.20 - 1.65	SPT (S)	N=60 (5,7/10,13,15,22)	1.00	0.00	98.68	1.20		End of Borehole at 1.20m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
1.00	200

Water Added

From (m)	To (m)
0.00	1.20

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal and move to position BH07A.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH07A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.50	674176.88 E 712864.60 N

Final Depth:	1.50 m	Start Date:	07/11/2023	Driller:	KF	Sheet 1 of 1 Scale: 1:40
Elevation:	100.53 mOD	End Date:	08/11/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					100.43	0.10		TOPSOIL Greyish brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
					99.53	1.00		Dense greyish brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
1.50 - 1.54	SPT (C)	50 (25 for 15mm/50 for 20mm)	1.50	Dry	99.03	1.50		End of Borehole at 1.50m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
1.50	200

Water Added

From (m)	To (m)
0.10	1.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.50	1.50	00:30

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH07B
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674176.69 E 712858.66 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 2
10.20 m	12/12/2023	RC	Scale: 1:50
Elevation: 99.97 mOD	**End Date:** 13/12/2023	**Logger:** AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					99.67	0.30		TOPSOIL		
								Dark greyish brown very sandy subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.		
1.20 - 1.65	D1				98.77	1.20				
1.20 - 1.70	B13							Medium dense greyish brown sandy slightly clayey subrounded fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are rounded.		
1.20 - 2.70	SB2									
1.20 - 1.65	SPT (S)	N=23 (4,4/6,8,4,5)	1.20	0.40						
1.70 - 2.20	B14									
2.20 - 2.78	B15				97.77	2.20		Dense dark greyish brown very sandy silty subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse. Cobbles are subrounded.		
2.70 - 3.15	D3									
2.70 - 3.20	B16									
2.70 - 4.20	SB4									
2.70 - 3.15	SPT (S)	N=48 (8,14/12,15,15,6)	2.70	0.40	96.77	3.20				
3.20	B17							Dense greyish brown very sandy subangular to subrounded fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of limestone, siltstone and sandstone.		
3.20 - 3.70	B18									
3.70 - 4.20	B19									
4.20 - 4.65	D5									
4.20 - 4.70	B20									
4.20 - 5.70	SB6									
4.20 - 4.65	SPT (S)	N=50 (10,14/12,12,13,13)	4.20	0.40						
4.70 - 5.20	B21									
5.20 - 5.70	B22				94.77	5.20		Medium dense greyish brown sandy slightly clayey subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.		
5.70 - 6.10	B23									
5.70 - 6.15	D7									
5.70 - 7.20	SB8									
5.70 - 6.15	SPT (S)	N=23 (4,4/6,6,5,6)	5.70	0.40	93.87	6.10		Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone, siltstone and sandstone.		
6.10 - 6.65	B24									
6.65 - 7.20	B25				93.32	6.65		Dense greyish brown sandy clayey angular to subrounded fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of limestone and siltstone.		
7.20 - 7.35	D9									
7.20 - 7.70	B26									
7.20 - 8.70	SB11									
7.20 - 7.35	SPT (S)	50 (25 for 100mm/50 for 50mm)	7.20	0.40						
7.70 - 8.20	B27									
8.20 - 8.70	B28									
8.70 - 10.20	SB12									
8.70 - 9.00	D10									
8.70 - 9.60	B29									
8.70 - 9.00	SPT (S)	50 (11,13/50 for 150mm)	8.70	0.40						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)
0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH07B
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674176.69 E 712858.66 N

Final Depth:	Start Date:	Driller:	Sheet 2 of 2 Scale: 1:50
10.20 m	12/12/2023	RC	
Elevation: 99.97 mOD	**End Date:** 13/12/2023	**Logger:** AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.60 - 10.20	B30				90.37	9.60		Stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone and sandstone.		
10.20		12-12-2023	10.2	0.40	89.77	10.20		End of Borehole at 10.20m		
10.20		13-12-2023	10.2	0.40						

9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)
0.00	10.20

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH08
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	8.00	674130.90 E 712848.94 N

Final Depth:	8.00 m	Start Date:	26/10/2023	Driller:	BE	Sheet 1 of 2 Scale: 1:40
Elevation:	99.15 mOD	End Date:	07/11/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.80	B5				98.95	0.20		TOPSOIL MADE GROUND: Brown sandy very clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.		
0.50	ES1									
0.80	B6				98.35	0.80		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	B4									
1.20 - 1.65	SPT (C)	N=11 (2,3/3,2,2,3) Hammer SN = 0895	1.20	Dry						
2.00	D9									
2.00 - 2.45	B7									
2.00 - 2.45	SPT (C)	N=10 (2,3/3,2,2,3) Hammer SN = 0895	2.00	Dry						
3.00	D10									
3.00 - 3.45	B8									
3.00 - 3.45	SPT (C)	N=10 (3,3/3,3,2,2) Hammer SN = 0895	3.00	Dry						
3.80 - 4.60	B11				95.35	3.80		MADE GROUND: Large fragments of WOOD and wire.		
4.00	D12									
4.00 - 4.45	B13									
4.00 - 4.60	B14									
4.00 - 4.45	SPT (C)	N=15 (2,2/4,6,3,2) Hammer SN = 0895	4.00	Dry						
					94.55	4.60		Firm greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
5.00 - 5.45	B15									
5.00 - 5.45	SPT (C)	N=9 (2,2/2,1,3,3) Hammer SN = 0895	5.00	0.00						
					93.45	5.70		Dense gravelly clayey fine to coarse SAND. Gravel is subrounded fine to coarse.		
6.00	D17									
6.50	B16				92.65	6.50		Dense greyish brown sandy slightly silty fine to coarse GRAVEL. Sand is fine to coarse.		
6.50 - 8.00	B18									
6.50 - 6.82	SPT (C)	50 (3,10/50 for 175mm) Hammer SN = 0895	6.50	0.00						
7.00	D19									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
8.00	200

Water Added

From (m)	To (m)
5.80	8.00

Chiselling Details

From (m)	To (m)	Time (hh:mm)
6.50	8.00	02:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH08
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	8.00	674130.90 E 712848.94 N

Final Depth:	8.00 m	Start Date:	26/10/2023	Driller:	BE	Sheet 2 of 2 Scale: 1:40
Elevation:	99.15 mOD	End Date:	07/11/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
8.00 8.00 8.00 - 8.26	B21 D20 SPT (C)	50 (8,15/50 for 115mm) Hammer SN = 0895	8.00	0.00	91.15	8.00		End of Borehole at 8.00m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
8.00	200

Water Added

From (m)	To (m)
5.80	8.00

Chiselling Details

From (m)	To (m)	Time (hh:mm)
6.50	8.00	02:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH09
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	8.00	674281.70 E 712834.44 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 2
8.00 m	08/11/2023	BE	Scale: 1:40
Elevation: 101.10 mOD	**End Date:** 09/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
0.50	B4				100.60	0.50		TOPSOIL
0.50	ES1							Soft light brown slightly sandy slightly gravely CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.
1.00	D3							
1.00	ES2							
1.20 - 1.65	D5				99.90	1.20		Medium dense greyish brown slightly gravelly silty fine to coarse SAND. Gravel is subrounded fine to coarse.
1.20 - 2.00	B6							
1.20 - 1.65	SPT (S)	N=12 (1,2/3,3,3,3) Hammer SN = 0895	1.20	Dry				
2.00	D8				99.10	2.00		Medium dense greyish brown very sandy slightly silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.
2.00 - 2.45	B7							
2.00 - 3.00	B10							
2.00 - 2.45	SPT (C)	N=21 (6,5/6,5,5,5) Hammer SN = 0895	2.00	Dry				
3.00	D9							
3.00 - 3.45	B11							
3.00 - 4.00	B12							
3.00 - 3.45	SPT (C)	N=21 (4,4/4,6,5,6) Hammer SN = 0895	3.00	Dry				
4.00	B13				97.10	4.00		Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.
4.00	D15							
4.00 - 4.45	U16	Ublow=100 50% Recovery	4.00	0.00				
4.00 - 4.45	SPT (C)	N=22 (4,6/5,5,6,6) Hammer SN = 0895	3.00	0.00				
4.45 - 4.65	D14							
5.00	D19							
5.00 - 5.45	B23							
5.00 - 6.50	B17							
5.00 - 5.45	SPT (C)	N=27 (4,5/6,6,8,7) Hammer SN = 0895	5.00	0.00				
6.00	D20							
6.50 - 6.95	B24				94.60	6.50		Dense brown sandy slightly silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.
6.50 - 8.00	B18							
6.50 - 6.95	SPT (C)	N=39 (5,8/8,11,11,9) Hammer SN = 0895	6.50	0.00				
7.00	D21				94.15	6.95		Very stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.

Water

Backfill

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
8.00	200

Water Added

From (m)	To (m)
4.00	8.00

Chiselling Details

From (m)	To (m)	Time (hh:mm)
8.00	8.00	01:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH09
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	8.00	674281.70 E 712834.44 N

Final Depth:	Start Date:	Driller:	Sheet 2 of 2
8.00 m	08/11/2023	BE	Scale: 1:40
Elevation: 101.10 mOD	**End Date:** 09/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
8.00 8.00 8.00 - 8.32	B25 D22 SPT (C)	50 (21 for 120mm/50 for 200mm) Hammer SN = 0895	8.00	0.00	93.10	8.00		End of Borehole at 8.00m		

7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
8.00	200

Water Added

From (m)	To (m)
4.00	8.00

Chiselling Details

From (m)	To (m)	Time (hh:mm)
8.00	8.00	01:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH10
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.50	674259.46 E 712804.73 N

Final Depth:	1.50 m	Start Date:	08/11/2023	Driller:	KF	Sheet 1 of 1 Scale: 1:40
Elevation:	101.33 mOD	End Date:	08/11/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					101.23	0.10		TOPSOIL Dark brown sandy clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.		
0.50	ES1				100.83	0.50		Dense brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Cobble are subrounded.		
1.00	B3									
1.00	ES2									
1.00 - 1.05	SPT (C)	50 (25 for 20mm/50 for 30mm)	1.00	Dry						
					99.83	1.50		End of Borehole at 1.50m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter

Water Added

From (m)	To (m)
0.50	1.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
0.50	1.00	02:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH10A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674257.09 E 712807.79 N

Final Depth:	10.20 m	Start Date:	12/12/2023	Driller:	RC	Sheet 1 of 2 Scale: 1:50
Elevation:	101.20 mOD	End Date:	12/12/2023	Logger:	AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00		12-12-2023	0.00	Dry				TOPSOIL		
					100.90	0.30		Dark greyish brown very sandy subrounded fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are rounded.		
1.20 - 1.65	D1				100.00	1.20		Dense greyish brown very sandy slightly clayey subangular fine to coarse GRAVEL of limestone, siltstone and sandstone. Sand is fine to coarse.		
1.20 - 1.70	B13									
1.20 - 2.70	SB2									
1.20 - 1.65	SPT (S)	N=31 (8,8/8,9,9,5)	1.20	0.50						
1.70 - 2.20	B14									
2.20 - 2.70	B15									
2.70 - 3.15	D3									
2.70 - 3.20	B16									
2.70 - 4.20	SB4									
2.70 - 3.15	SPT (S)	N=43 (5,5/9,14,11,9)	2.70	0.50	98.00	3.20		Dense brownish grey very gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse of limestone, siltstone and sandstone.		
3.20 - 3.70	B17									
3.70 - 4.20	B18									
4.20 - 4.65	D5				97.00	4.20		Dense greyish brown very sandy slightly silty subangular fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse.		
4.20 - 4.80	B19									
4.20 - 5.70	SB6									
4.20 - 4.65	SPT (S)	N=45 (5,8/8,12,12,13)	4.20	0.50						
4.80 - 5.05	B20							*4.80m to 5.05m: Cobble recovered as light grey very sandy angular gravel.*		
5.05 - 5.70	B21									
5.70 - 6.15	D7									
5.70 - 6.20	B22									
5.70 - 7.20	SB8									
5.70 - 6.15	SPT (S)	N=49 (5,16/15,15,10,9)	5.70	0.50						
6.20 - 6.70	B23									
6.70 - 7.20	B24									
7.20 - 7.45	D9				94.00	7.20		Very stiff brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone, siltstone and sandstone. Cobbles are subangular to subrounded of limestone and siltstone.		
7.20 - 7.70	B25									
7.20 - 8.70	SB10									
7.20 - 7.45	SPT (S)	50 (9,13/50 for 100mm)	7.20	0.50						
7.70 - 8.20	B26									
8.20 - 8.70	B27									
8.70 - 10.20	SB12									
8.70 - 8.94	D11									
8.70 - 9.20	B28									
8.70 - 9.07	SPT (S)	50 (9,15/50 for 225mm)	8.70	0.50						
9.20 - 9.70	B29									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH10A
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674257.09 E 712807.79 N

Final Depth:	10.20 m	**Start Date:**	12/12/2023	**Driller:**	RC	Sheet 2 of 2 Scale: 1:50	
Elevation:	101.20 mOD	**End Date:**	12/12/2023	**Logger:**	AM	FINAL	

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.70 - 10.20	B30				91.00	10.20		End of Borehole at 10.20m		

9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	22/01/2024

AGS

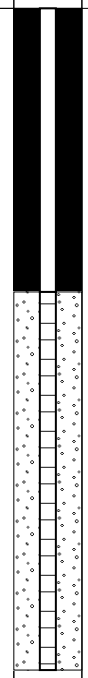
CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	BH11
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	3.50	674285.27 E 712726.70 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
3.50 m	08/11/2023	KF	Scale: 1:40
Elevation: 99.25 mOD	**End Date:** 09/11/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					99.15	0.10		TOPSOIL Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
0.50	ES1				98.75	0.50		Dense grey very sandy slightly silty subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
1.00	B3									
1.00	ES2									
1.00 - 1.38	SPT (C)	50 (8,12/50 for 225mm)	1.00	Dry						
2.00	B5									
2.00	D4									
2.00 - 2.39	SPT (C)	50 (7,10/50 for 240mm)	2.00	0.00						
3.00	B7									
3.00	D6									
3.00 - 3.45	SPT (C)	N=41 (7,6/10,14,7,10)	3.00	0.00						
3.50 - 3.52	SPT (C)	50 (25 for 10mm/50 for 15mm)	3.30	0.00	95.75	3.50		End of Borehole at 3.50m		



Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
3.30	200

Water Added

From (m)	To (m)
0.50	3.50

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.00	1.50	00:30
3.00	3.50	01:00

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during drilling.

Termination Reason

Terminated on refusal.

Last Updated

22/01/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	RC04
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674268.90 E 712719.93 N	10.20 m	08/12/2023	RC	Scale: 1:49
					Elevation: 98.62 mOD	End Date: 11/12/2023	Logger: AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00		08-12-2023	0.00	Dry				TOPSOIL		
					98.32	0.30		Dark greyish brown very gravelly fine to coarse SAND with high cobble content. Gravel is subrounded fine to coarse. Cobbles are rounded.		
1.20 - 1.65	D1		1.20	0.30	97.42	1.20		Medium dense brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to medium of various lithologies.		
1.20 - 1.70	B13		0.00	Dry						
1.20 - 2.70	SB2		0.00	Dry						
1.20 - 1.65	SPT (S)	N=15 (2,3/3,4,4,4)								
1.20		08-12-2023			96.92	1.70		Medium dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are of limestone and siltstone.		
1.20		11-12-2023								
1.70 - 2.30	B14									
2.30 - 2.70	B15									
2.70 - 3.15	D3		2.70	0.60						
2.70 - 3.65	B16									
2.70 - 4.20	SB4									
2.70 - 3.15	SPT (S)	N=13 (2,2/3,3,4,3)								
3.65 - 3.80	B17									
3.80 - 4.20	B18									
4.20 - 4.65	D5		4.20	0.60						
4.20 - 4.80	B19									
4.20 - 5.70	SB6									
4.20 - 4.65	SPT (S)	N=40 (4,9/9,9,10,12)								
4.80 - 5.55	B20									
5.55 - 5.70	B21				93.07	5.55		Stiff to very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are of limestone and siltstone.		
5.70 - 6.15	D7		5.70	0.60						
5.70 - 6.20	B22									
5.70 - 7.20	SB8									
5.70 - 6.15	SPT (S)	N=36 (6,6/7,9,10,10)								
6.20 - 6.70	B23									
6.70 - 7.20	B24									
7.20 - 7.58	D9		7.20	0.60	91.42	7.20		Very stiff reddish brown sand slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of various lithologies. Cobbles are of various lithologies.		
7.20 - 8.00	B25									
7.20 - 8.70	SB10									
7.20 - 7.58	SPT (S)	50 (8,13/50 for 225mm)								
8.00 - 8.70	B26				90.62	8.00		Very stiff brown sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are of various lithologies.		
8.70 - 10.20	SB12		8.70	0.60						
8.70 - 8.93	D11									
8.70 - 8.93	SPT (S)	50 (11,13/50 for 75mm)								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated on Engineer's instruction.	02/05/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe	RC04
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste CRS-XL Duo	0.00	10.20	674268.90 E 712719.93 N

Final Depth:	10.20 m	**Start Date:**	08/12/2023	**Driller:**	RC	Sheet 2 of 2 Scale: 1:49
Elevation:	98.62 mOD	**End Date:**	11/12/2023	**Logger:**	AM	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.50 - 10.20	B27				88.42	10.20		End of Borehole at 10.20m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.20	177

Water Added

From (m)	To (m)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated on Engineer's instruction.	02/05/2024

AGS

CAUSEWAY GEOTECH

APPENDIX C

SONIC SAMPLE PHOTOGRAPHS

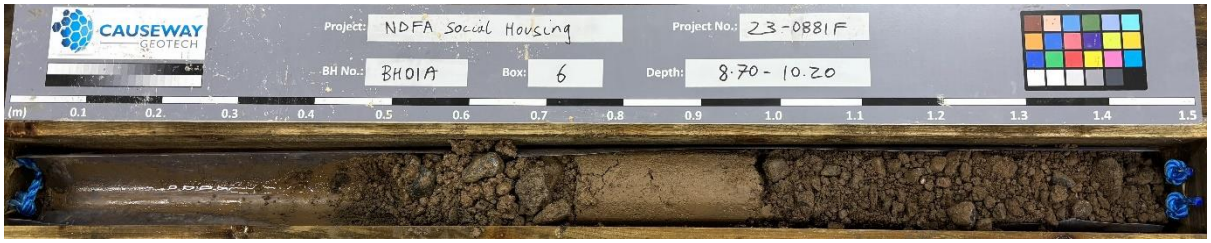
BH01A Box 1 (1.20-2.70m)

BH01A Box 2 (2.70-4.20m)

BH01A Box 3 (4.20-5.70m)

BH01A Box 4 (5.70-7.20m)

BH01A Box 5 (7.20-8.70m)



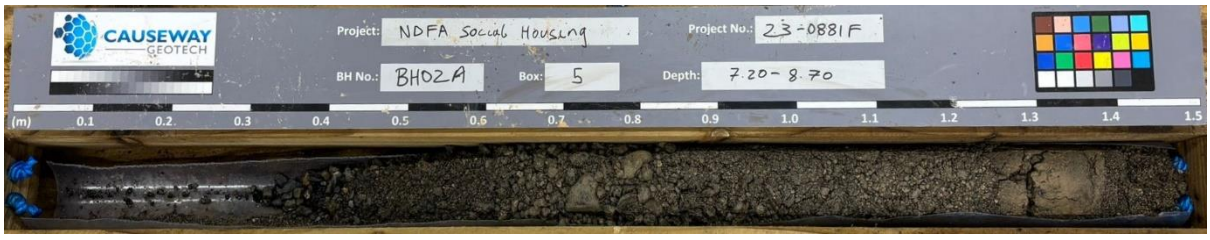
BH01A Box 6 (8.70-10.20m)

BH02A Box 1 (1.20-2.70m)

BH02A Box 2 (2.70-4.20m)

BH02A Box 3 (4.20-5.70m)

BH02A Box 4 (5.70-7.20m)



BH02A Box 5 (7.20-8.70m)

BH02A Box 6 (8.70-10.20m)

BH07B Box 1 (1.20-2.70m)

BH07B Box 2 (2.70-4.20m)

BH07B Box 3 (4.20-5.70m)

BH07B Box 4 (5.70-7.20m)

BH07B Box 5 (7.20-8.70m)

BH07B Box 6 (8.70-10.20m)

BH10A Box 1 (1.20-2.70m)

BH10A Box 2 (2.70-4.20m)

BH10A Box 3 (4.20-5.70m)

BH10A Box 4 (5.70-7.20m)

BH10A Box 5 (7.20-8.70m)

BH10A Box 6 (8.70-10.20m)

RC04 Box 1 (1.20-2.70m)

RC04 Box 2 (2.70-4.20m)

RC04 Box 3 (3.20-5.70m)

RC04 Box 4 (5.70-7.20m)

RC04 Box 5 (7.20-8.70m)

RC04 Box 6 (8.70-10.20m)

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP01
Coordinates 674013.91 E 713015.32 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 99.94 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			99.78	0.15		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	
0.50	ES1					MADE GROUND: Grey very gravelly silty fine to coarse SAND with low cobble content and rare sheets of plastic. Gravel is rounded fine to coarse. Cobbles are rounded.	
			99.04	0.90			
1.00 1.00 - 1.00	ES2 B3					Grey sandy silty rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
			98.44	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 1.00
Length: 2.50

Remarks:
HV not possible.
No groundwater encountered.

Stability: Unstable

Termination Reason: Terminated due to collapse.

Last Updated: 20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP02
Coordinates 674132.44 E 712989.26 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 106.70 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			106.40	0.30		MADE GROUND: Firm brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
0.50	ES1		105.90	0.80		MADE GROUND: Grey very gravelly slightly silty fine to coarse SAND with low cobble content. Gravel is rounded fine to coarse. Cobbles are rounded.	
1.00 1.00 - 1.00	ES2 B5		105.40	1.30		MADE GROUND: Grey sandy slightly silty rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
2.00 2.00	B6 ES3		104.60	2.10		MADE GROUND: Grey very sandy silty rounded fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are subrounded.	
3.00 3.00	B7 ES4		103.70	3.00		MADE GROUND: Grey fine to coarse SAND.	
						End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 1.25
Length: 2.25

Remarks:
HV not possible.
No groundwater encountered.

Stability: Unstable

Termination Reason: Terminated at scheduled depth.

Last Updated: 20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP03
Coordinates 674176.21 E 712895.69 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 102.03 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			101.73	0.30		Grey very sandy silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.	
0.50	B3						
0.50	ES1						
1.00	ES2						
1.00 - 1.00	B4						
2.00	B5						
3.00	B6		99.03	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 0.60
Length: 3.00

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Termianted at scheduled depth.

Last Updated
20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP04
Coordinates 674158.32 E 712823.78 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.83 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	
			98.53	0.30			
0.50	B3					Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to medium.	
0.50	ES1						
1.00	ES2						
1.00 - 1.00	B4						
			97.63	1.20		Soft greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	
2.00 - 2.00	B5						
3.00	B6		95.83	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 0.60
Length: 3.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Termianted at scheduled depth.

Last Updated
20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP05
Coordinates 674221.07 E 712804.56 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.97 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50	B3					MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
0.50	ES1		98.37	0.60		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
1.00	B4						
1.00	ES2		97.82	1.15		Grey very sandy slightly silty rounded fine to coarse GRAVEL. Sand is fine to coarse.	
2.00 - 2.00	B5						
3.00	B6		95.97	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 0.60
Length: 3.00

Remarks:
HV not possible.
No groundwater encountered.

Stability: Unstable

Termination Reason: Terminated at scheduled depth.

Last Updated: 20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP06
Coordinates 674235.38 E 712746.26 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 97.41 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			96.96	0.45			
0.50	B3					Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
0.50	ES1						
1.00	ES2						
1.00 - 1.00	B4						
			96.11	1.30		Brown gravelly very silty fine to coarse SAND. Sand is fine to coarse. Gravel is rounded fine to coarse.	
2.00	B5						
			95.11	2.30		Grey very sandy slightly silty rounded fine to coarse GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are rounded.	
3.00	B6		94.41	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 0.60
Length: 3.00

Remarks:
HV not possible.
No groundwater encountered.

Stability: Stable

Termination Reason: Terminated at scheduled depth.

Last Updated: 20/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** TP07
Coordinates 674334.60 E 712740.51 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 101.38 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50	B3					Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
0.50	ES1						
			100.68	0.70		Brown slightly sandy slightly silty rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
1.00	ES2						
1.00 - 1.00	B4						
			100.08	1.30		Grey sandy slightly silty rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
2.00	B5						
3.00	B6		98.38	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 0.60
Length: 2.00

Remarks:
HV not possible.
No groundwater encountered.

Stability: Unstable

Termination Reason: Terminated at scheduled depth.

Last Updated: 20/12/2023

AGS

CAUSEWAY GEOTECH

APPENDIX E

TRIAL PIT PHOTOGRAPHS

TP01

TP01

TP01

TP01

TP01

TP01

TP01

TP01

TP02

TP02

TP02

TP02

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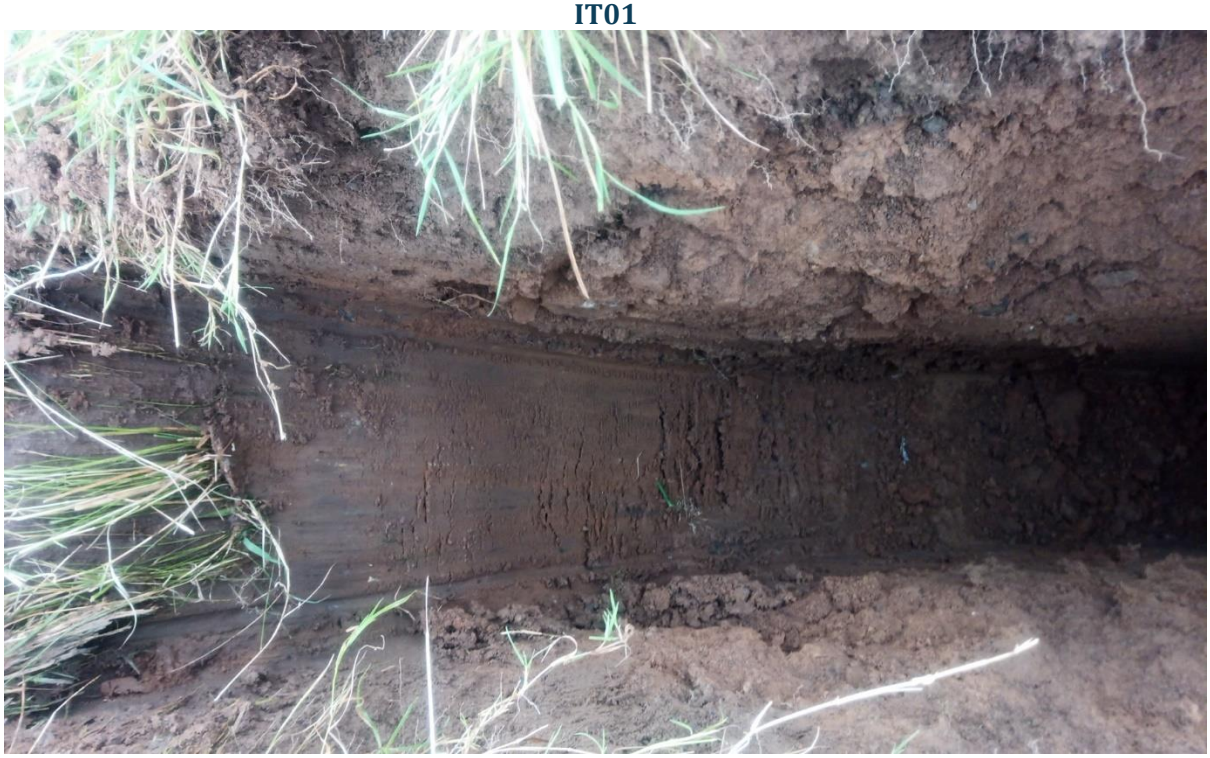
TP07

IT01

IT01



IT01

IT01

IT01

IT01

IT01

IT01

IT02

IT02

IT02

IT02

IT02

IT02

IT02

IT03

IT03

IT03

IT03

IT03

IT03

IT03

CAUSEWAY GEOTECH

APPENDIX F

SLIT TRENCH LOGS AND DRAWINGS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST01
Coordinates 674078.48 E 712926.48 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 99.30 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			99.00	0.30		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			98.60	0.70		MADE GROUND: Grey sandy silty angular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are subangular.	
			96.80	2.50		Stiff brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
						End of trial pit at 2.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.50
Width: 0.50
Length: 6.50

Remarks:
No groundwater encountered.

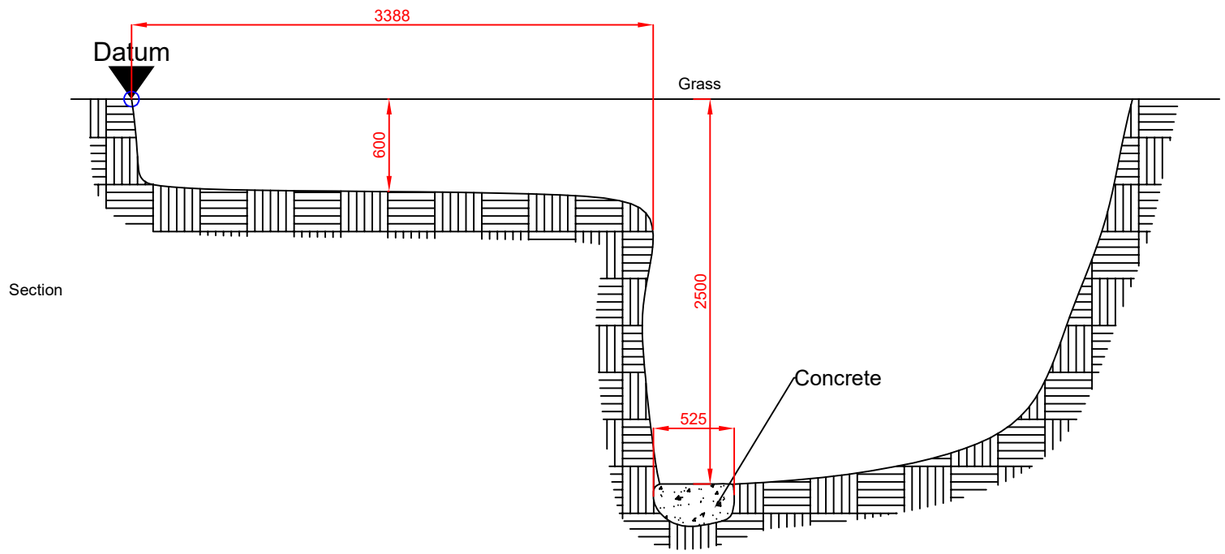
Stability:	Termination Reason	Last Updated
Stable	Terminated at scheduled depth.	20/12/2023

AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST01

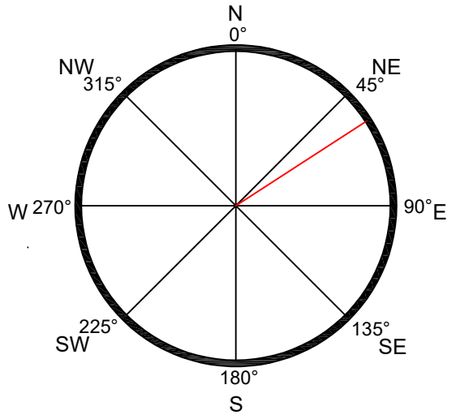
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 50° FROM NORTH

COORDINATES: DATUM

EASTING: - 674078.48

NORTHING: - 712926.48

ELEVATION: - 99.30

TRENCH LENGTH (m) : 6.50

TRENCH DEPTH (m) : 2.50

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST02
Coordinates 674076.79 E 712922.28 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 99.41 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Light brown slightly sandy very silty rounded fine to coarse GRAVEL. Sand is fine to coarse	
			99.01	0.40		Stiff brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
			97.41	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.00
Width: 0.50
Length: 10.00

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated at scheduled depth.

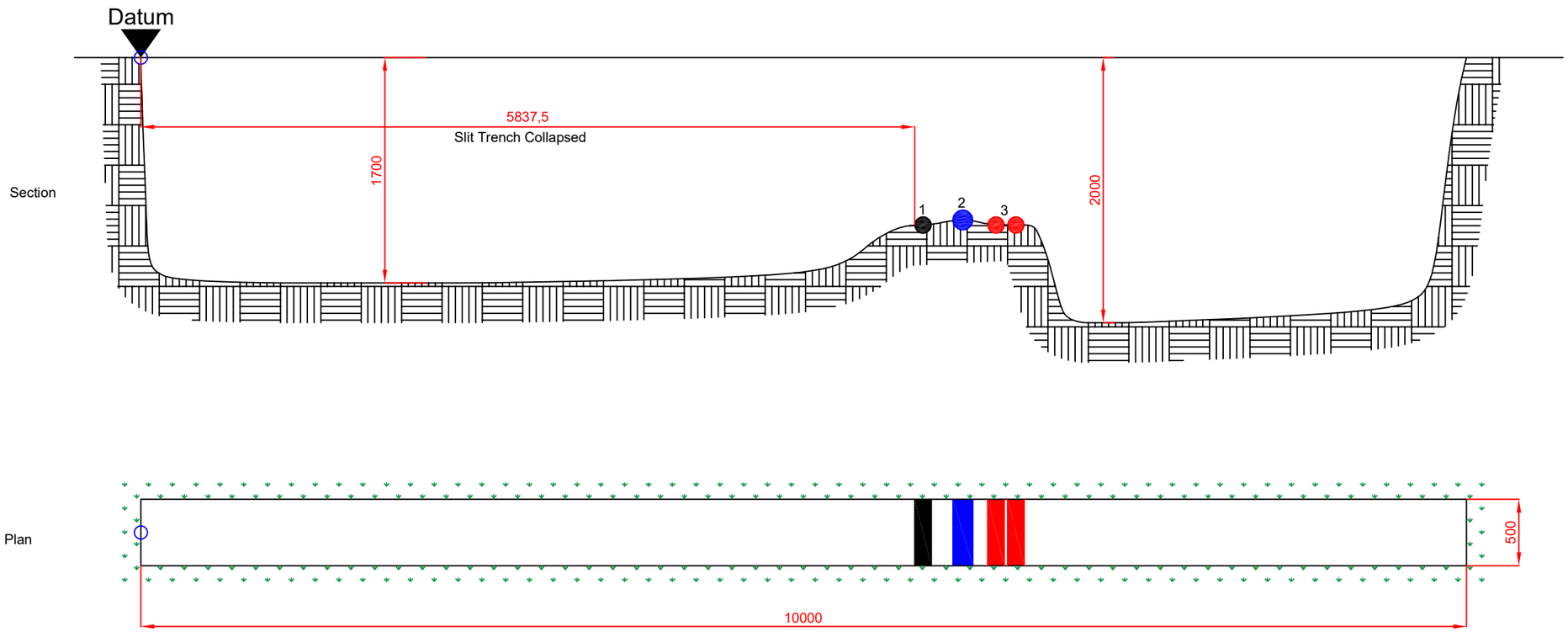
Last Updated
20/12/2023

AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST02

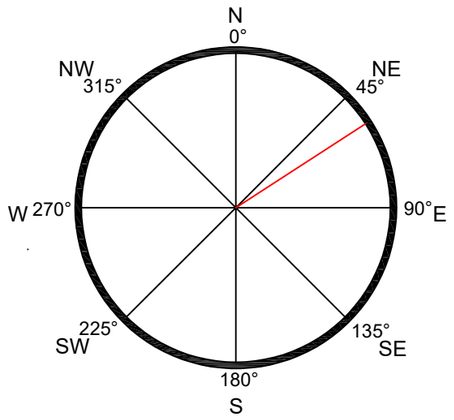
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	125	1.20	5.90	125mm Unknown Black Pipe
02	Unknown	150	1.15	6.20	150mm Unknown Blue PVC Pipe
03	Unknown	125 x 2	1.20	6.45-6.60	125mm x 2 Unknown BRed PVC Pipe
04					
05					Sewer Suspected @4m as per nearby Manhole.
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 50° FROM NORTH

COORDINATES: DATUM

EASTING: - 674076.79

NORTHING: - 712922.28

ELEVATION: - 99.41

TRENCH LENGTH (m) : 10.00

TRENCH DEPTH (m) : 2.00

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST03
Coordinates 674116.21 E 712889.83 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.90 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			98.50	0.40		MADE GROUND: Grey sandy silty angular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are angular.	
			98.20	0.70		Stiff brown slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are subrounded.	
			96.70	2.20		End of trial pit at 2.20m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.20
Width: 0.50
Length: 4.00

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/12/2023

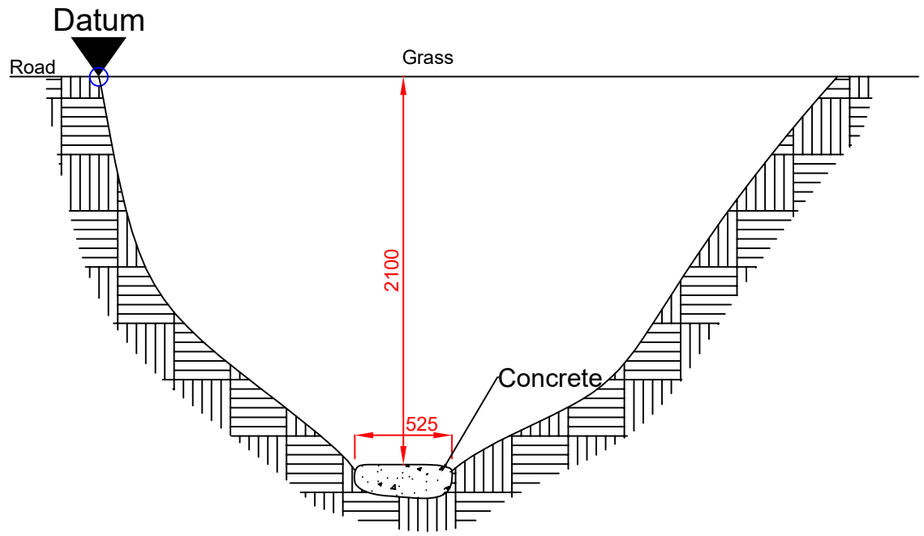
AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST03

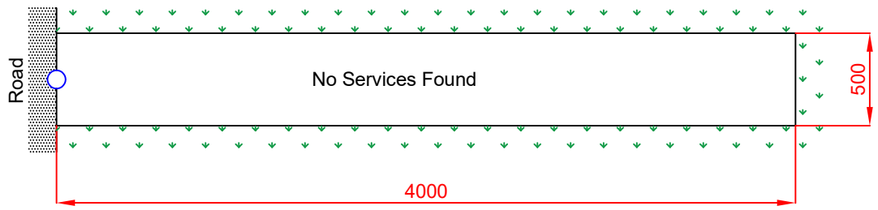
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

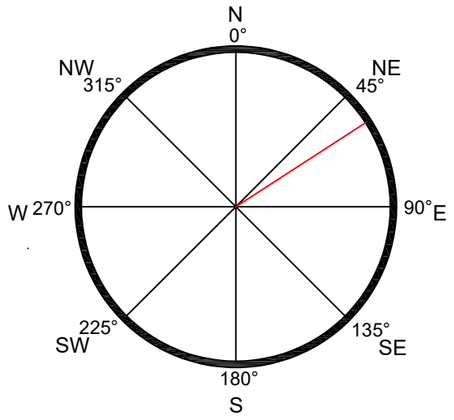


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 50° FROM NORTH

COORDINATES: DATUM

EASTING: - 674116.21

NORTHING: - 712889.83

ELEVATION: - 98.90

TRENCH LENGTH (m) : 4.00

TRENCH DEPTH (m) : 2.20

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST04
Coordinates 674115.75 E 712885.72 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.88 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low cobble content and rare sheets of plastic. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
			98.08	0.80		Stiff brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.	
			96.38	2.50		End of trial pit at 2.50m	

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.50
Width: 0.50
Length: 8.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/12/2023

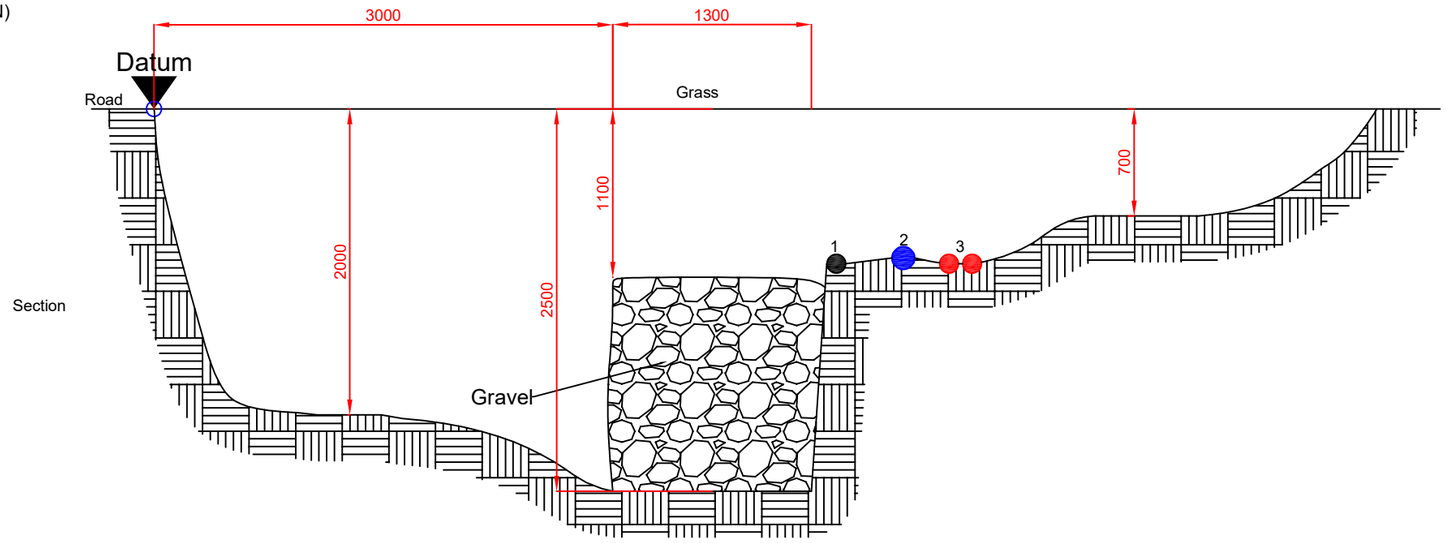
AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST04

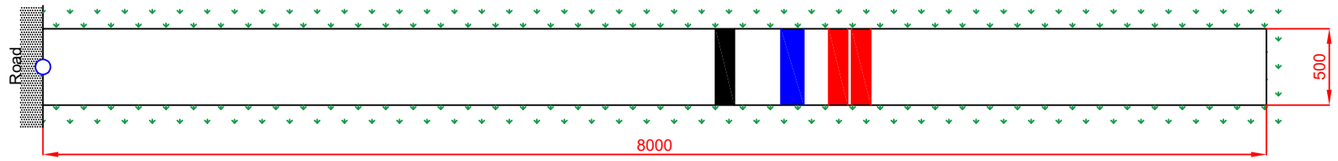
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

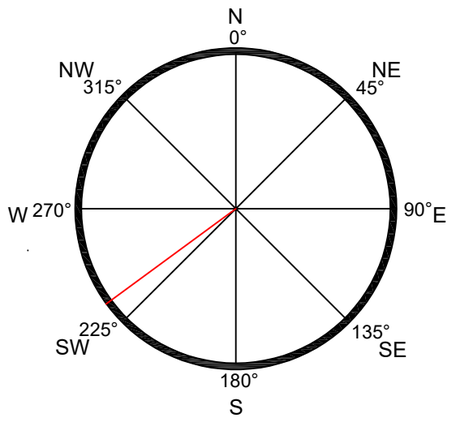
Section



Plan



TRENCH - ORIENTATION



TRENCH ORIENTATED : 230° FROM NORTH

No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	125	0.95	4.46	125mm Unknown Black PVC Pipe
02	Unknown	150	0.90	4.90	150mm Unknown Blue PVC Pipe
03	Unknown	125 x 2	0.95	5.20-5.35	125mm x 2 Unknown Red PVC Pipe
04					
05					
06					Under Gravel, Sewer Suspected @ 4.20m as seen in nearby manhole
07					
08					
09					
10					
11					
12					
13					
14					
15					

COORDINATES: DATUM

EASTING: - 674115.75

NORTHING: - 712885.72

ELEVATION: - 98.88

TRENCH LENGTH (m) : 8.00

TRENCH DEPTH (m) : 2.50

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST05
Coordinates 674186.58 E 712822.31 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.68 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded.	
			98.28	0.40		MADE GROUND: Stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular.	
			96.68	2.00		End of trial pit at 2.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.00
Width: 0.50
Length: 10.00

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated at scheduled depth.	20/12/2023

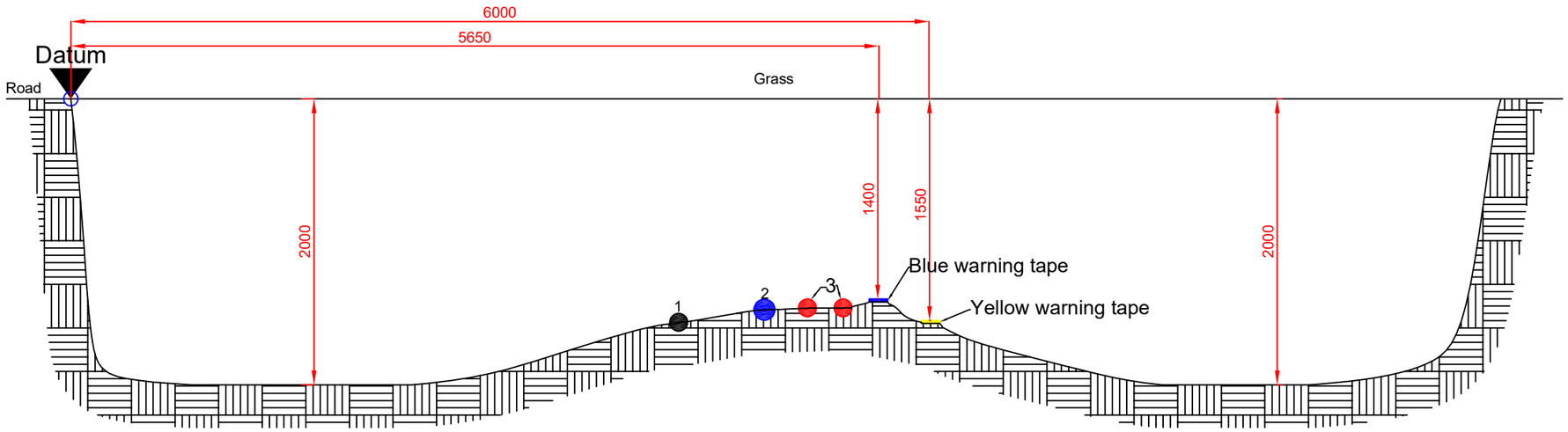
AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST05

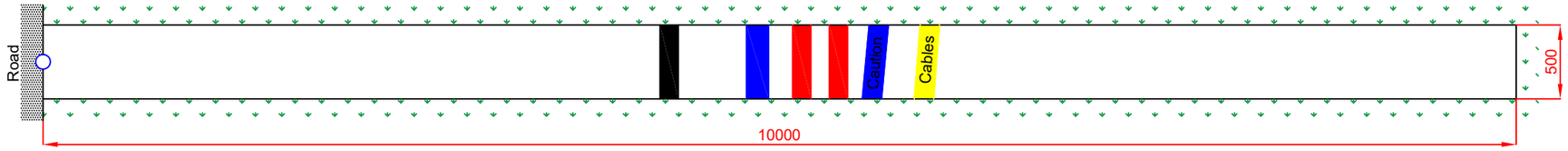
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

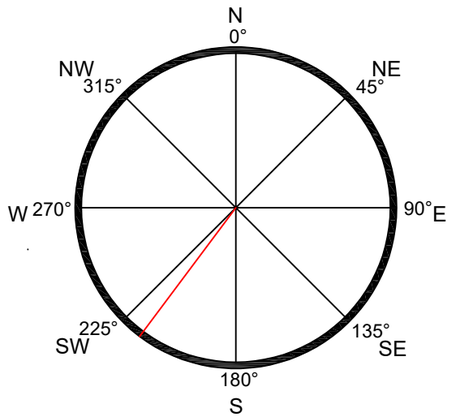


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	125	1.50	4.25	125mm Unknown Black PVC Pipe
02	Unknown	150	1.40	4.85	150mm Unknown Blue PVC Pipe
03	Unknown	125 x 2	1.40	5.15-5.40	125mm x 2 Unknown Red PVC Pipe
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 220° FROM NORTH

COORDINATES: DATUM

EASTING: - 674186.58

NORTHING: - 712822.31

ELEVATION: - 68.68

TRENCH LENGTH (m) : 10.00

TRENCH DEPTH (m) : 2.00

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** ST06
Coordinates 674186.33 E 712826.30 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 98.80 mOD	**Date:** 18/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			98.20	0.60		MADE GROUND: Grey slightly sandy slightly silty angular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular.	
			97.90	0.90		Firm brown slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded.	
			96.30	2.50		End of trial pit at 2.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.50
Width: 0.50
Length: 10.00

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated at scheduled depth.

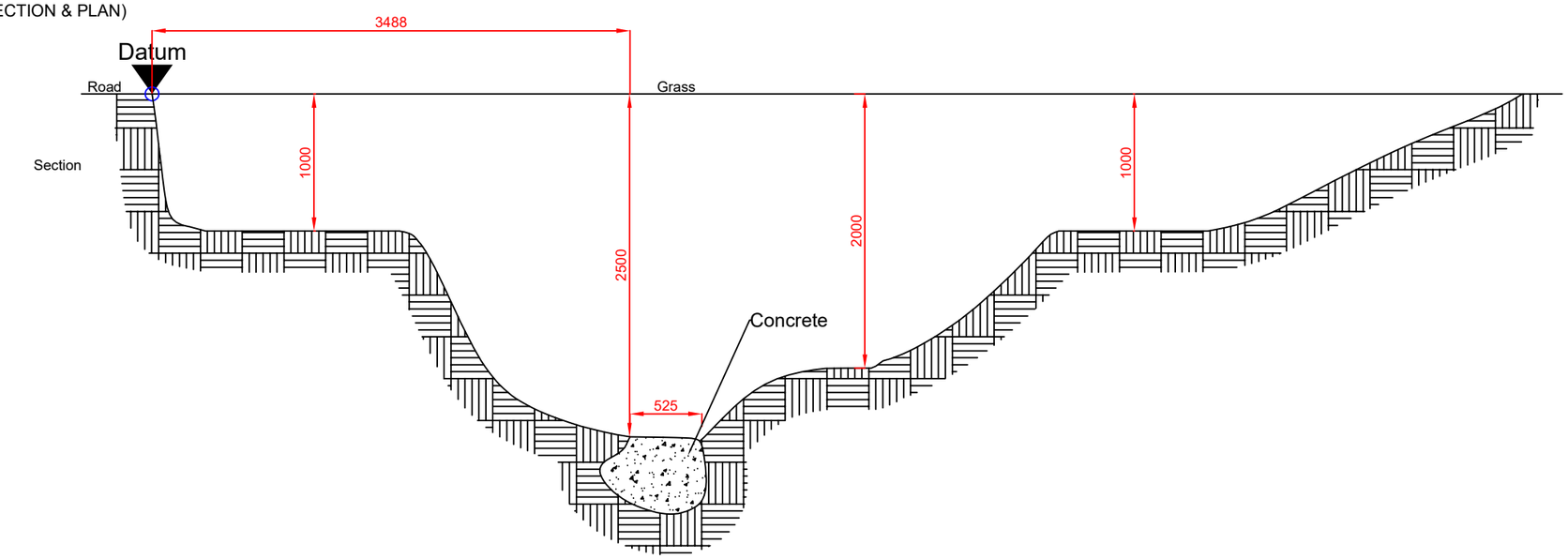
Last Updated
20/12/2023

AGS

JOB NUMBER: 23-0881F	JOB NAME: NDFA Social Housing Lot 3 – Coolaghknock Glebe	LOCATION: ST06

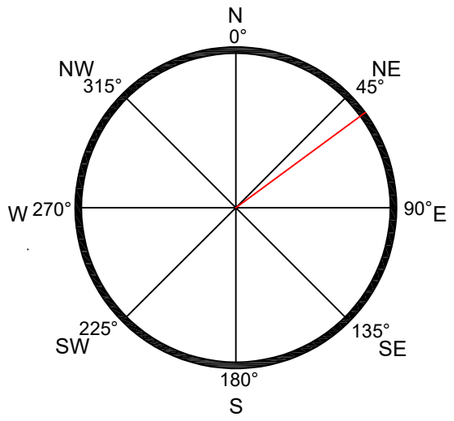
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	RS	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 50° FROM NORTH

COORDINATES: DATUM

EASTING: - 674186.33

NORTHING: - 712826.30

ELEVATION: - 98.80

TRENCH LENGTH (m) : 10.00

TRENCH DEPTH (m) : 2.50

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 18/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

APPENDIX G

SLIT TRENCH PHOTOGRAPHS

ST01

ST01

ST01

ST01

ST02

ST02

ST02

ST02

ST03

ST03

ST03

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ST06

ST06

ST06

CAUSEWAY GEOTECH

APPENDIX H

SOAKAWAY PIT LOGS AND TEST RESULTS

CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** IT01
Coordinates 674115.39 E 712905.52 N	**Client:** NDFA		
Method: Soakaway Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 99.55 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			99.25	0.30		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			98.95	0.60		Firm light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			98.05	1.50		Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
						End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.45
Length: 1.30

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/12/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0881F
Site: NDFA Social Housing Lot 3 - Coolaghknock Glebe
Test Location: IT01
Test Date: 17 October 2023

	width (m)	length (m)
test pit top dimensions	0.45	1.30
test pit base dimensions	0.30	0.60
test pit depth (m)	1.50	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.11	1.39
1	0.11	1.39
1	0.11	1.39
2	0.12	1.38
4	0.13	1.38
6	0.13	1.37
8	0.14	1.37
10	0.14	1.36
15	0.16	1.35
20	0.17	1.34
25	0.18	1.33
30	0.19	1.32
45	0.21	1.30
60	0.23	1.28
90	0.26	1.25
120	0.29	1.22
330	0.42	1.09

RESULTS (FROM GRAPH BELOW)

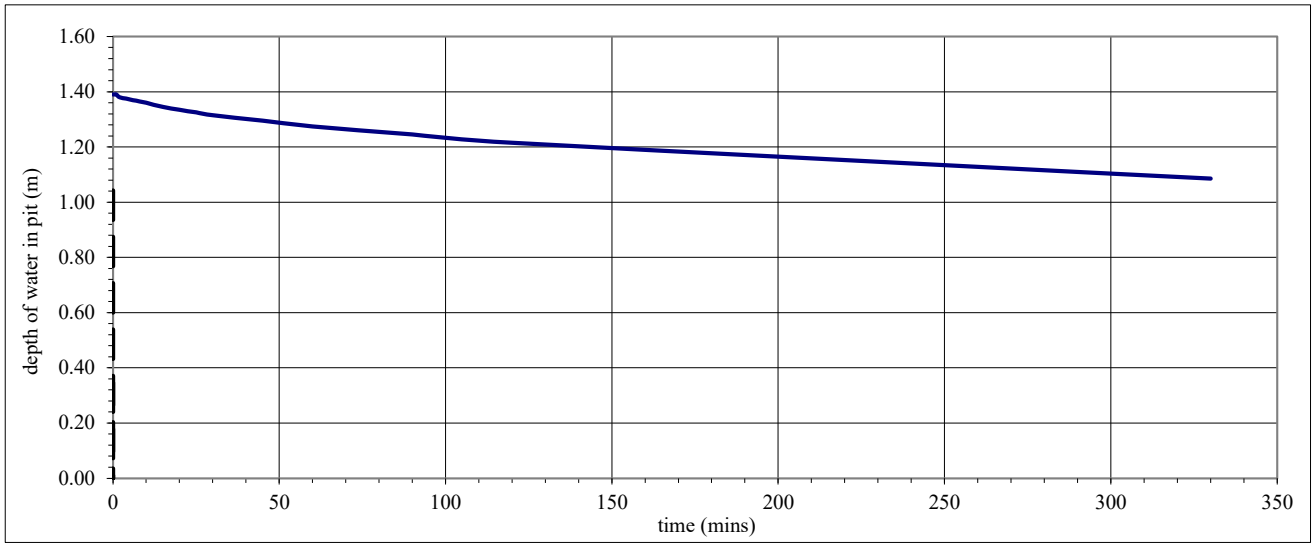
Test start
75% head of water at 1.04 m
depth to water surface (target) 0.46 m
time to reach target depth not reached

Test end
25% head of water at 0.35 m
depth to water surface (target) 1.15 m
time to reach target depth not reached

infiltration rate (q) is very low

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
	0.46	1.04	N/A				
	1.15	0.35					



CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** IT02
Coordinates 674227.20 E 712842.87 N	**Client:** NDFA		
Method: Soakaway Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 101.03 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			99.98	1.05		Grey gravelly silty fine to coarse SAND with low cobble content. Gravel is rounded fine to coarse. Cobbles are rounded.	
			99.53	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.40
Length: 1.40

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/12/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0881F
Site: NDFA Social Housing Lot 3 - Coolaghknock Glebe
Test Location: IT02
Test Date: 17 October 2023

	width (m)	length (m)
test pit top dimensions	0.30	1.50
test pit base dimensions	0.30	1.00
test pit depth (m)	1.50	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.56	0.94
1	0.56	0.94
1	0.56	0.94
2	0.58	0.92
4	0.61	0.89
6	0.64	0.86
8	0.66	0.85
10	0.67	0.83
15	0.71	0.80
20	0.72	0.78
25	0.75	0.75
30	0.77	0.73
45	0.83	0.68
60	0.89	0.62
120	1.10	0.40
180	1.23	0.27
240	1.29	0.21
300	1.31	0.19

RESULTS (FROM GRAPH BELOW)

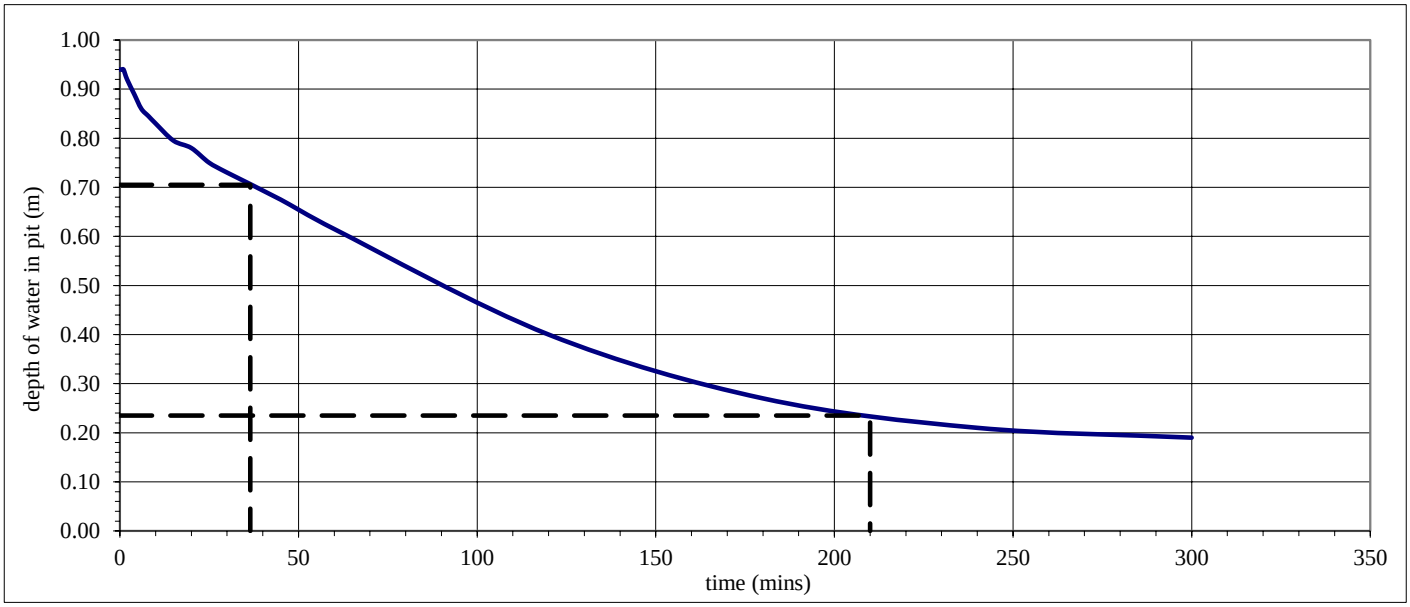
Test start
75% head of water at 0.71 m
depth to water surface (target) 0.80 m
time to reach target depth 36.5 mins

Test end
25% head of water at 0.24 m
depth to water surface (target) 1.27 m
time to reach target depth 210.0 mins

test infiltration rate (q) = 0.03 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
36.5	0.80	0.71	173.5	0.16	1.61	5.8E-04	0.035
210	1.27	0.24					



CAUSEWAY GEOTECH

Project No. 23-0881F	**Project Name:** NDFA Social Housing Lot 3 - Coolaghknock Glebe		**Trial Pit ID** IT03
Coordinates 674307.47 E 712757.77 N	**Client:** NDFA		
Method: Soakaway Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 8t Tracked Excavator	**Elevation** 99.61 mOD	**Date:** 17/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			99.31	0.30		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.	
						Grey slightly gravelly slightly silty fine to coarse SAND. Gravel is rounded fine to coarse.	
			98.11	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.40
Length: 1.40

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/12/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0881F
Site: NDFA Social Housing Lot 3 - Coolaghknock Glebe
Test Location: IT03
Test Date: 17 October 2023

	width (m)	length (m)
test pit top dimensions	0.40	1.40
test pit base dimensions	0.30	1.06
test pit depth (m)	1.50	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.21	1.29
1	0.23	1.28
1	0.24	1.26
2	0.26	1.25
4	0.30	1.20
6	0.33	1.17
8	0.36	1.14
10	0.39	1.12
15	0.44	1.06
30	0.57	0.93
60	0.71	0.79
90	0.84	0.66
180	1.15	0.35
210	1.23	0.27

RESULTS (FROM GRAPH BELOW)

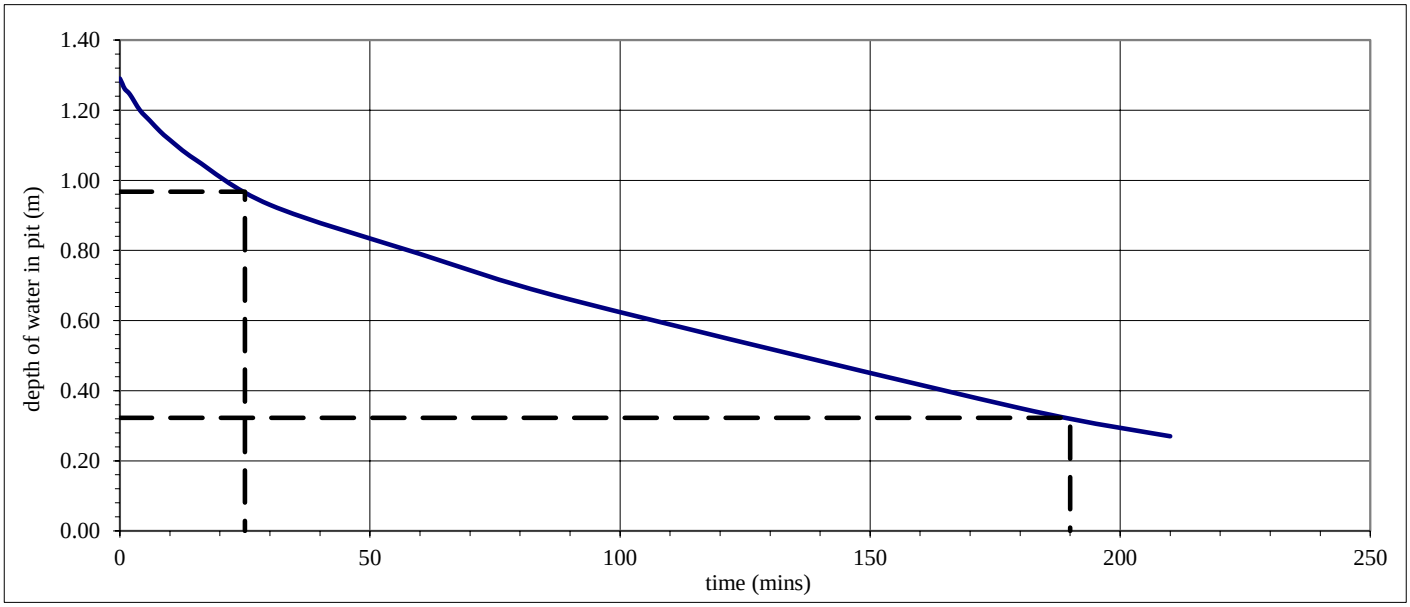
Test start
75% head of water at 0.97 m
depth to water surface (target) 0.53 m
time to reach target depth 25.0 mins

Test end
25% head of water at 0.32 m
depth to water surface (target) 1.18 m
time to reach target depth 190.0 mins

test infiltration rate (q) = 0.04 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
25	0.53	0.97	165	0.27	2.22	7.3E-04	0.044
190	1.18	0.32					



CAUSEWAY GEOTECH

APPENDIX I

GEOTECHNICAL LABORATORY TEST RESULTS

HEAD OFFICE
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SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

20 November 2023

Project Name:	NDFA Social Housing Lot 3 – Coolaghknock Glebe
Project No.:	23-0881F
Client:	NDFA
Engineer:	Malone O'Regan Consulting Engineers

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 24/10/2023 and 20/11/2023.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	10
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	4
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	10
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	4
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	3

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	pH Value of Soil		8
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		8

CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.: 23-0881F

Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe

Hole No.	Sample				Specimen Description	Density bulk / dry Mg/m3		*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Casagrande Classification
	Ref	Top	Base	Type										
TP01	3	1.00		B	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			3.9						
TP02	5	1.00		B	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			4.2						
TP03	4	1.00		B	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			5.7						
TP04	4	1.00		B	Brown sandy slightly gravelly silty CLAY.			18	74	31 -1pt	17	14		CL
TP04	5	2.00		B	Brown sandy slightly gravelly silty CLAY.			12	62	25 -1pt	14	11		CL
TP05	5	2.00		B	Brown gravelly clayey fine to coarse SAND.			4.5						
TP06	4	1.00		B	Brown sandy slightly gravelly silty CLAY.			14	60	33 -1pt	16	17		CL
TP06	5	2.00		B	Brown sandy slightly gravelly silty CLAY.			13	73	26 -1pt	15	11		CL
TP07	4	1.00		B	Grey subangular fine to coarse GRAVEL.			4.9						
TP07	5	2.00		B	Grey slightly sandy subangular fine to coarse GRAVEL.			5.7						

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

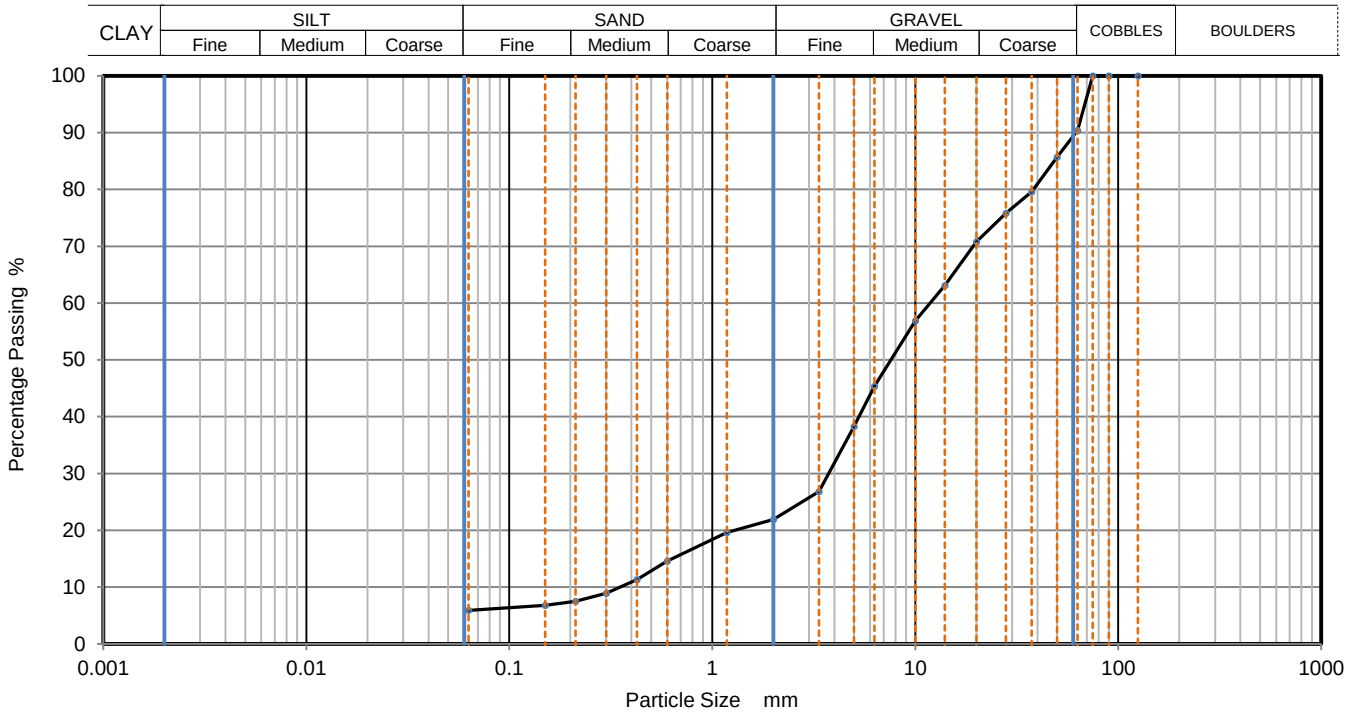
Date Printed: 20/11/2023

Approved By: Stephen Watson

UKAS TESTING 10122

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881F
Borehole/Pit No.					TP01
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	3
Specimen Description	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			Sample Depth (m) Top	1.00
				Sample Depth (m) Base	
Specimen Reference	7	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2023102499



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	90		
50	86		
37.5	80		
28	76		
20	71		
14	63		
10	57		
6.3	45		
5	38		
3.35	27		
2	22		
1.18	20		
0.6	15		
0.425	11		
0.3	9		
0.212	8		
0.15	7		
0.063	6		

Dry Mass of sample, g	17967

Sample Proportions	% dry mass
Cobbles	9.6
Gravel	68.5
Sand	16.0
Fines <0.063mm	6.0

Grading Analysis		
D100	mm	
D60	mm	11.8
D30	mm	3.74
D10	mm	0.352
Uniformity Coefficient		34
Curvature Coefficient		3.4

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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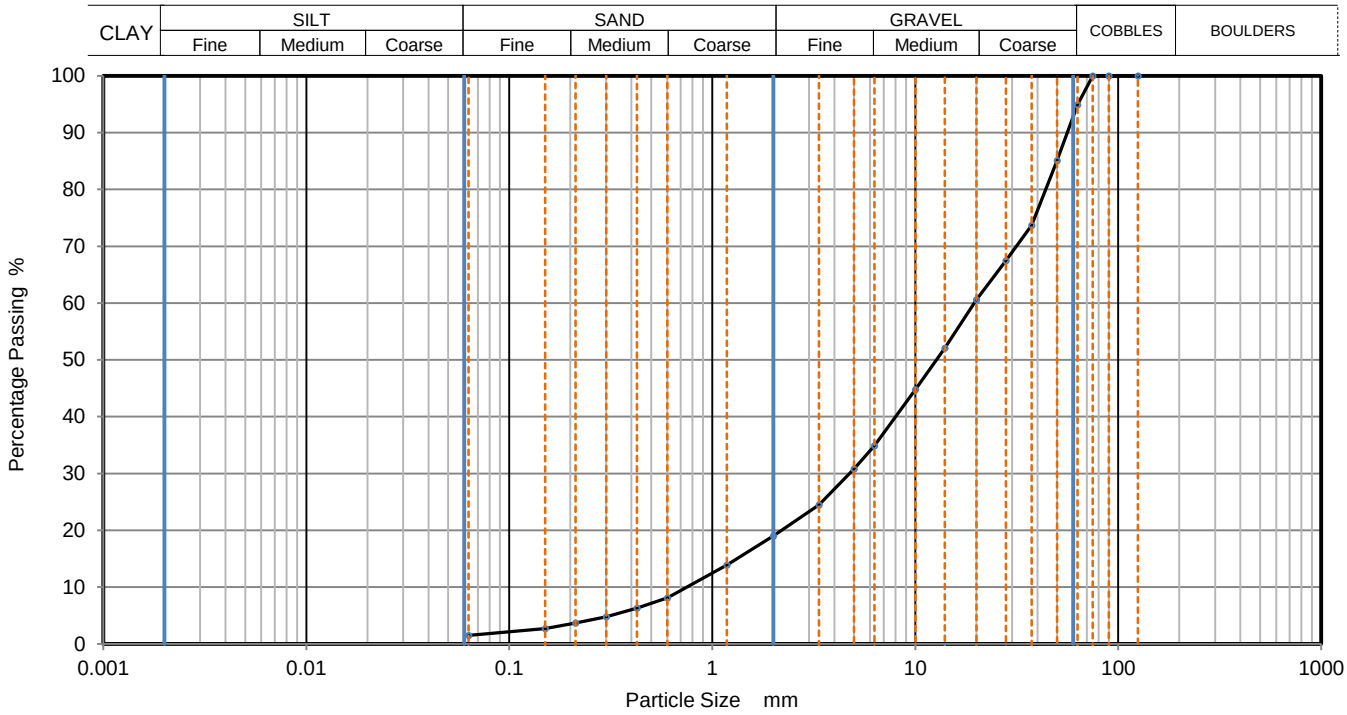
UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP02
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		5
Specimen Description	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024100



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	95		
50	85		
37.5	74		
28	68		
20	61		
14	52		
10	45		
6.3	35		
5	31		
3.35	25		
2	19		
1.18	14		
0.6	8		
0.425	6		
0.3	5		
0.212	4		
0.15	3		
0.063	2		

Dry Mass of sample, g	19069

Sample Proportions	% dry mass
Cobbles	5.1
Gravel	75.9
Sand	17.5
Fines <0.063mm	1.0

Grading Analysis		
D100	mm	
D60	mm	19.5
D30	mm	4.75
D10	mm	0.75
Uniformity Coefficient		26
Curvature Coefficient		1.5

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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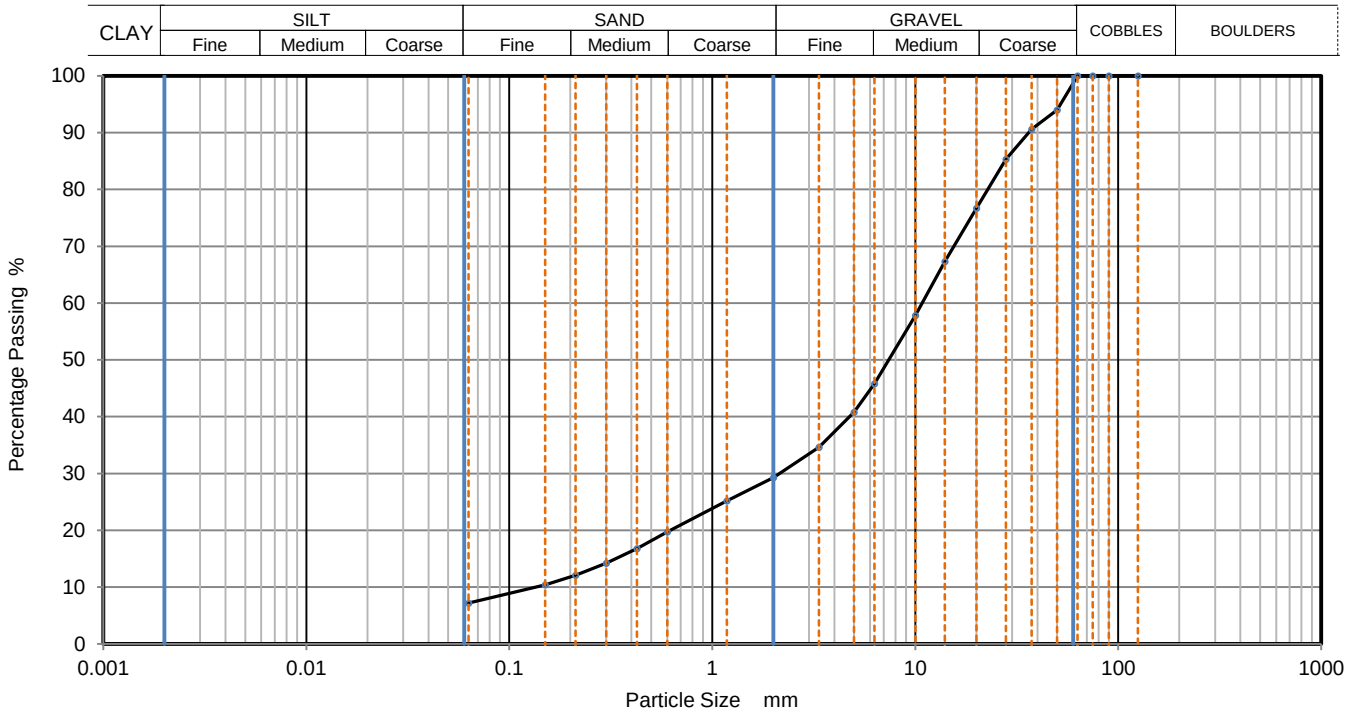
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F
				Borehole/Pit No.		TP03
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		4
Specimen Description	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			Sample Depth (m)	Top	1.00
					Base	
Specimen Reference	7	Specimen Depth	1 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID		Caus20231024101



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	94		
37.5	91		
28	85		
20	77		
14	67		
10	58		
6.3	46		
5	41		
3.35	35		
2	29		
1.18	25		
0.6	20		
0.425	17		
0.3	14		
0.212	12		
0.15	10		
0.063	7		

Dry Mass of sample, g	15323

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	70.7
Sand	22.1
Fines <0.063mm	7.0

Grading Analysis		
D100	mm	
D60	mm	10.8
D30	mm	2.14
D10	mm	0.133
Uniformity Coefficient		81
Curvature Coefficient		3.2

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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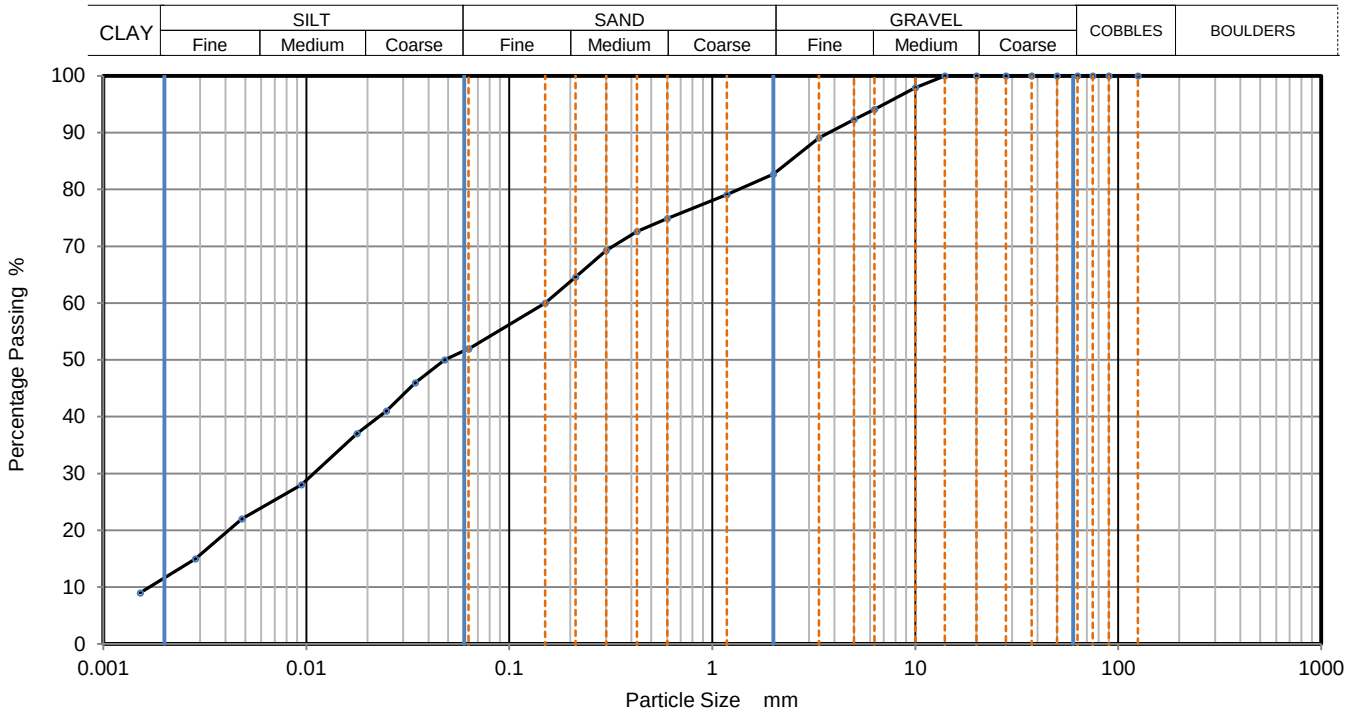
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		4
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus20231024102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	52
90	100	0.04803	50
75	100	0.03443	46
63	100	0.02482	41
50	100	0.01778	37
37.5	100	0.00946	28
28	100	0.00481	22
20	100	0.00284	15
14	100	0.00152	9
10	98		
6.3	94		
5	92		
3.35	89		
2	83		
1.18	79		
0.6	75	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	69		
0.212	65		
0.15	60		
0.063	52		

Dry Mass of sample, g	510

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	17.3
Sand	30.8
Silt	40.2
Clay	11.7

Grading Analysis		
D100	mm	
D60	mm	0.15
D30	mm	0.011
D10	mm	0.00165
Uniformity Coefficient		91
Curvature Coefficient		0.49

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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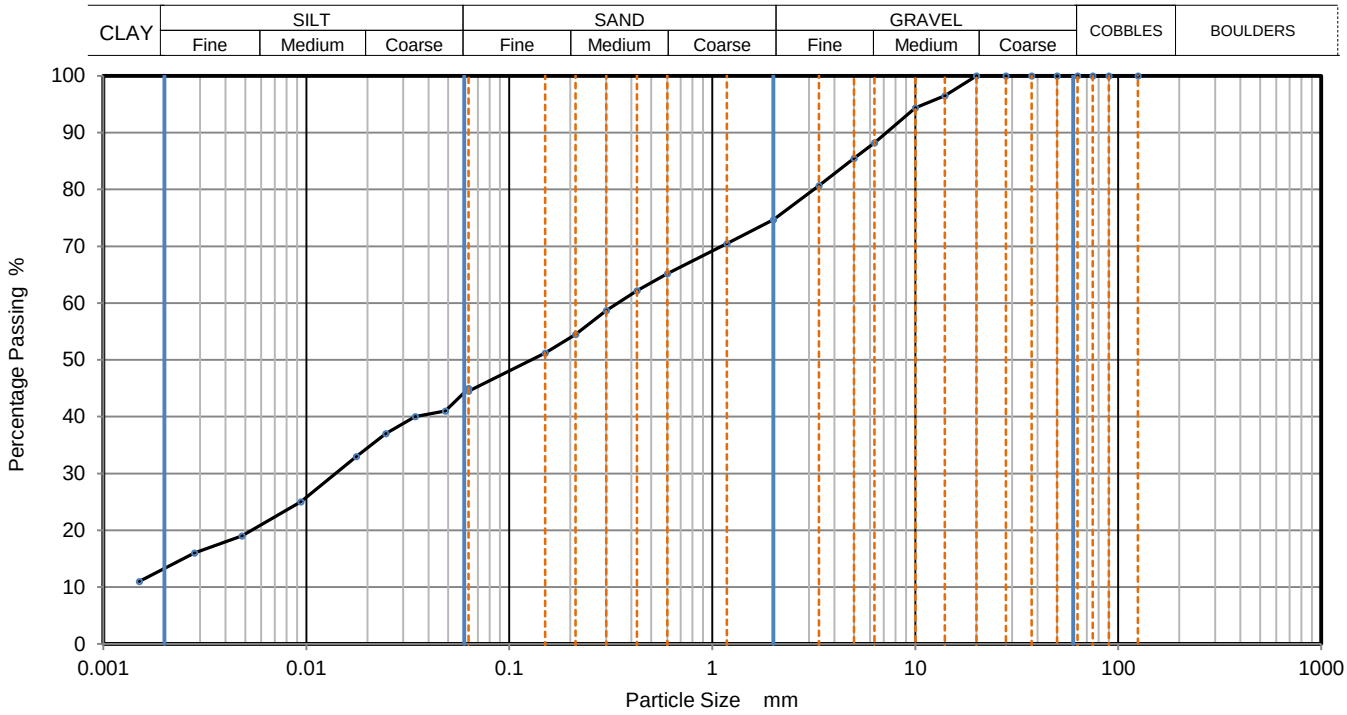
UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		5
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	2.00
						Base	
Specimen Reference	6	Specimen Depth	2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus20231024103



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	45
90	100	0.04836	41
75	100	0.03443	40
63	100	0.02466	37
50	100	0.01766	33
37.5	100	0.00940	25
28	100	0.00481	19
20	100	0.00281	16
14	97	0.00150	11
10	94		
6.3	88		
5	86		
3.35	81		
2	75		
1.18	71		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	55		
0.15	51		
0.063	45		

Dry Mass of sample, g	508

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	25.3
Sand	30.2
Silt	31.2
Clay	13.3

Grading Analysis		
D100	mm	
D60	mm	0.341
D30	mm	0.0135
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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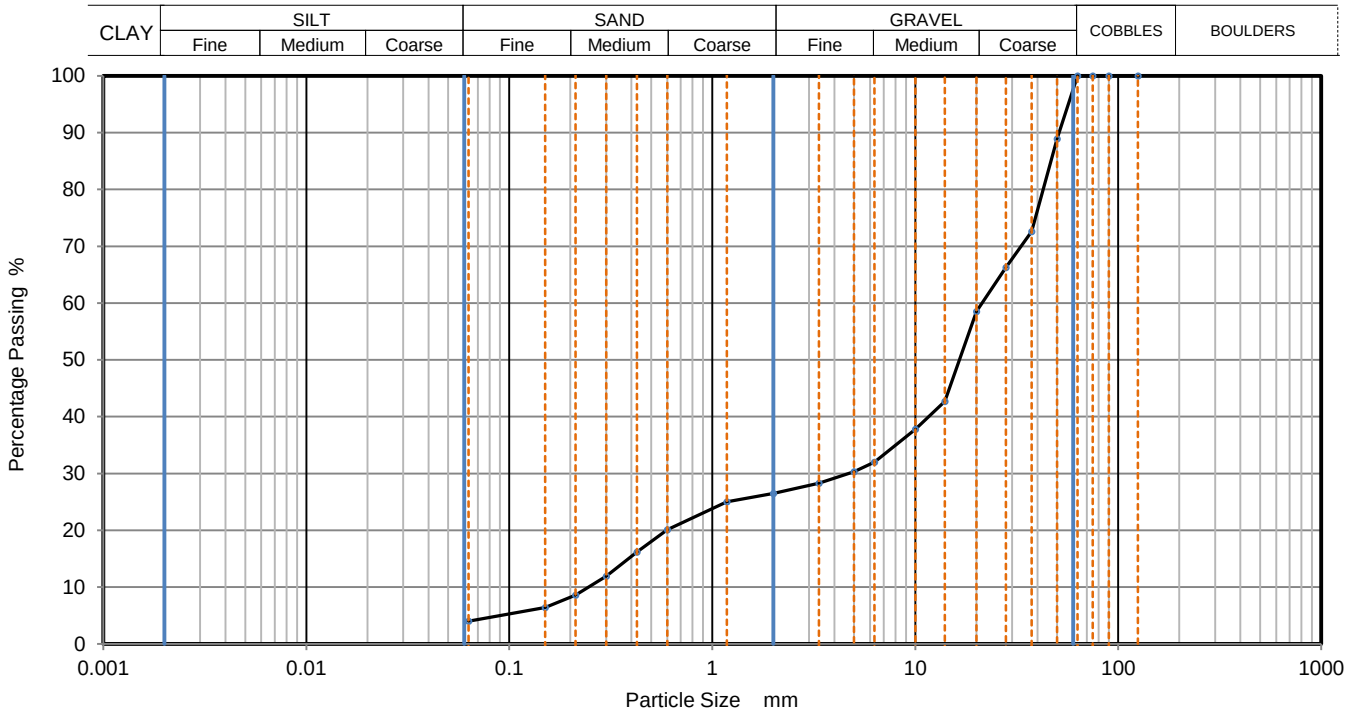
UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP05
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		5
Specimen Description	Brown gravelly clayey fine to coarse SAND.				Sample Depth (m)	Top	2.00
						Base	
Specimen Reference	6	Specimen Depth	2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	73		
28	66		
20	59		
14	43		
10	38		
6.3	32		
5	30		
3.35	28		
2	27		
1.18	25		
0.6	20		
0.425	16		
0.3	12		
0.212	9		
0.15	6		
0.063	4		

Dry Mass of sample, g	15278

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	73.5
Sand	22.5
Fines <0.063mm	4.0

Grading Analysis		
D100	mm	
D60	mm	21.3
D30	mm	4.66
D10	mm	0.246
Uniformity Coefficient		87
Curvature Coefficient		4.2

Remarks

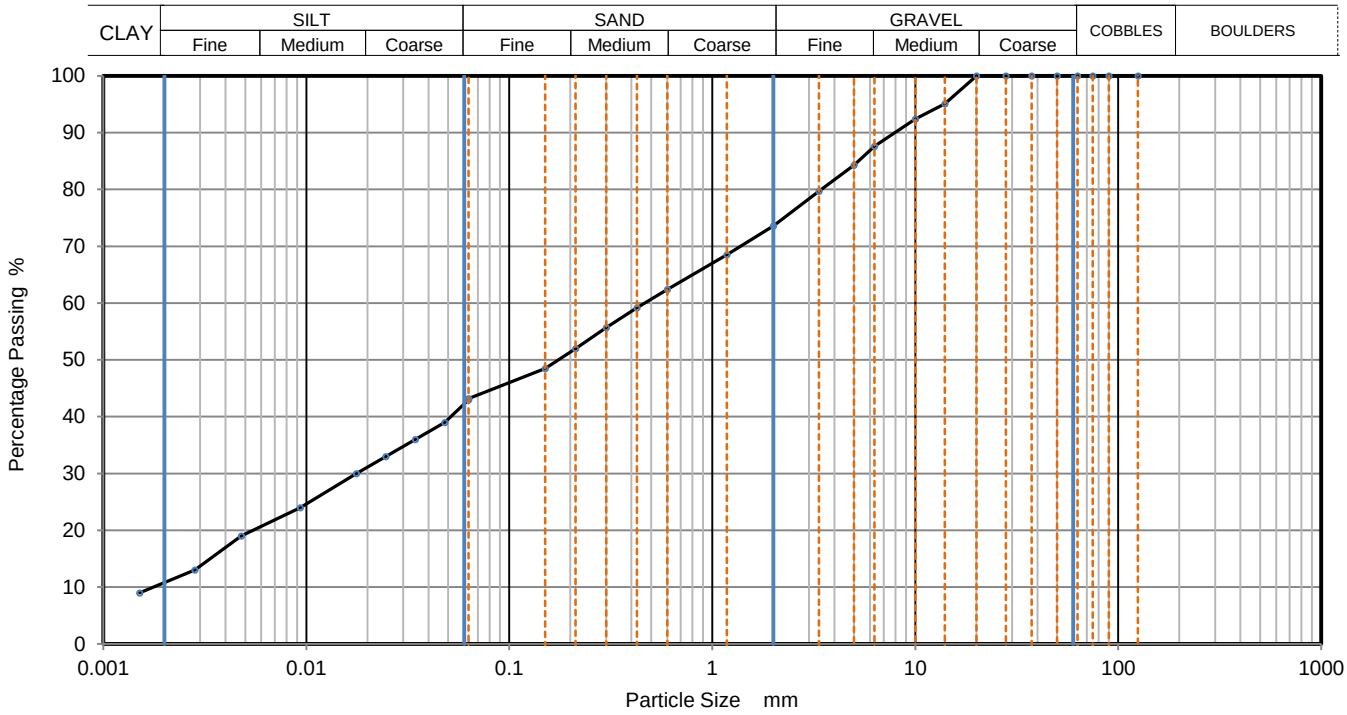
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP06
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		4
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus20231024106



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	43
90	100	0.04803	39
75	100	0.03443	36
63	100	0.02466	33
50	100	0.01766	30
37.5	100	0.00935	24
28	100	0.00479	19
20	100	0.00283	13
14	95	0.00151	9
10	92		
6.3	88		
5	84		
3.35	80		
2	74		
1.18	69		
0.6	62	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	52		
0.15	49		
0.063	43		

Dry Mass of sample, g	511

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	26.4
Sand	30.4
Silt	32.6
Clay	10.6

Grading Analysis		
D100	mm	
D60	mm	0.463
D30	mm	0.0172
D10	mm	0.00184
Uniformity Coefficient		250
Curvature Coefficient		0.35

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

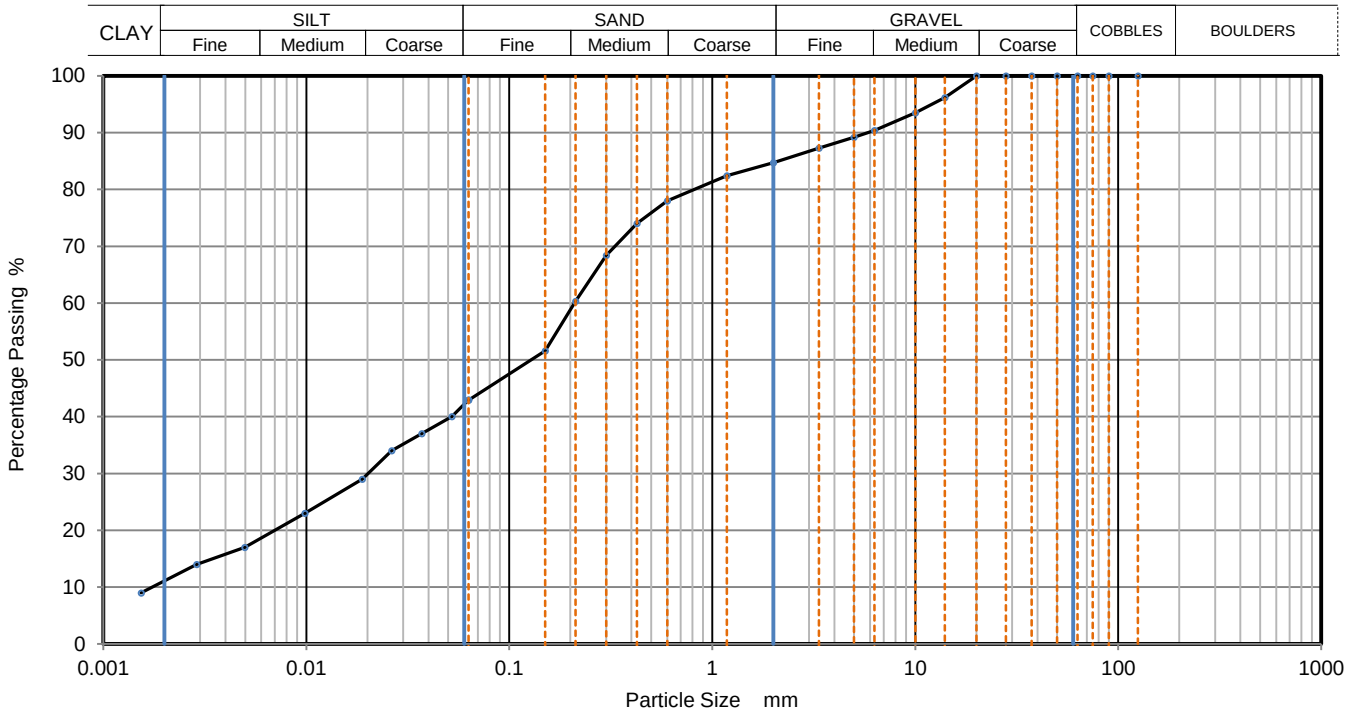
Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F
				Borehole/Pit No.		TP06
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		5
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	2.00
					Base	
Specimen Reference	6	Specimen Depth	2 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus20231024107



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	43
90	100	0.05212	40
75	100	0.03707	37
63	100	0.02636	34
50	100	0.01885	29
37.5	100	0.00984	23
28	100	0.00497	17
20	100	0.00289	14
14	96	0.00153	9
10	94		
6.3	90		
5	89		
3.35	87		
2	85		
1.18	82		
0.6	78	Particle density	(assumed)
0.425	74	2.65	Mg/m3
0.3	68		
0.212	60		
0.15	52		
0.063	43		

Dry Mass of sample, g	510

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	15.3
Sand	41.7
Silt	32.0
Clay	11.0

Grading Analysis		
D100	mm	
D60	mm	0.21
D30	mm	0.0205
D10	mm	0.0018
Uniformity Coefficient		120
Curvature Coefficient		1.1

Remarks

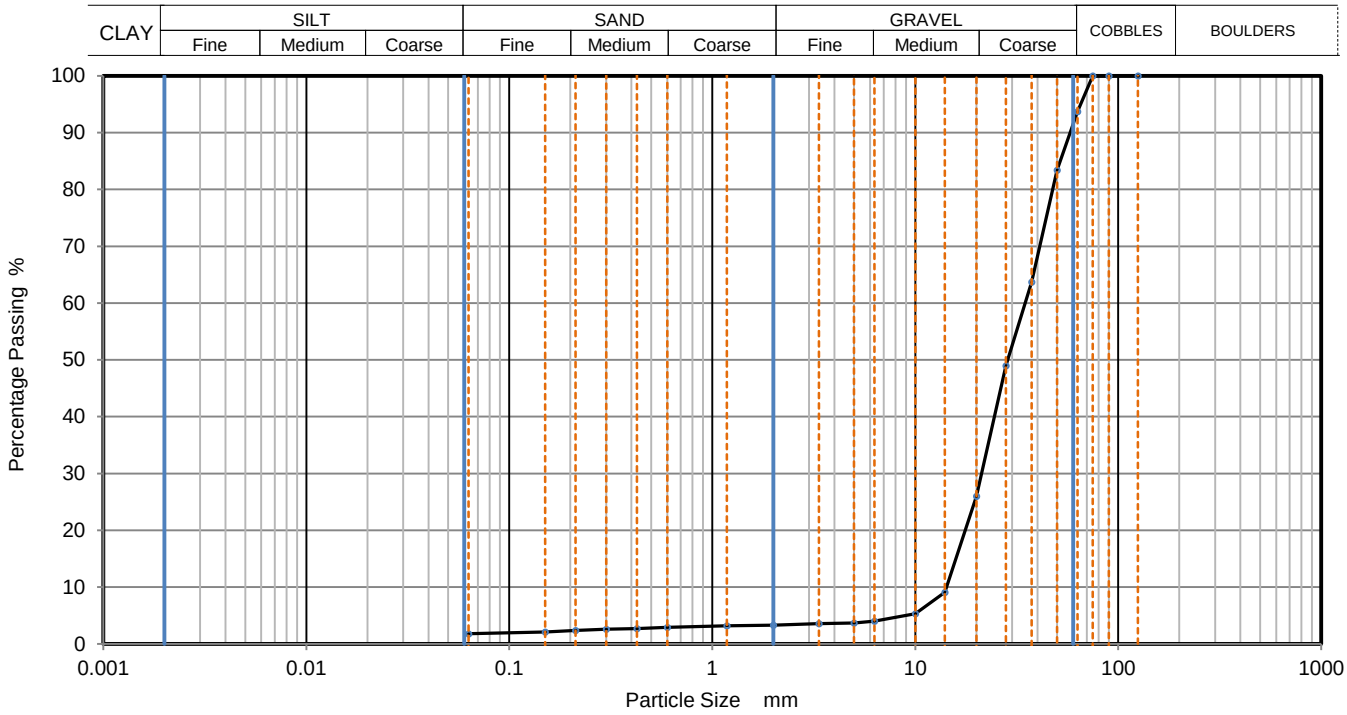
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

UKAS TESTING 10122

LAB 05R - Version 6

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP07
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		4
Specimen Description	Grey subangular fine to coarse GRAVEL.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024108



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	94		
50	83		
37.5	64		
28	49		
20	26		
14	9		
10	5		
6.3	4		
5	4		
3.35	4		
2	3		
1.18	3		
0.6	3		
0.425	3		
0.3	3		
0.212	2		
0.15	2		
0.063	2		

Dry Mass of sample, g: 16062

Sample Proportions	% dry mass
Cobbles	6.3
Gravel	90.4
Sand	1.5
Fines <0.063mm	2.0

Grading Analysis		
D100	mm	
D60	mm	34.8
D30	mm	21.2
D10	mm	14.3
Uniformity Coefficient		2.4
Curvature Coefficient		0.9

Remarks

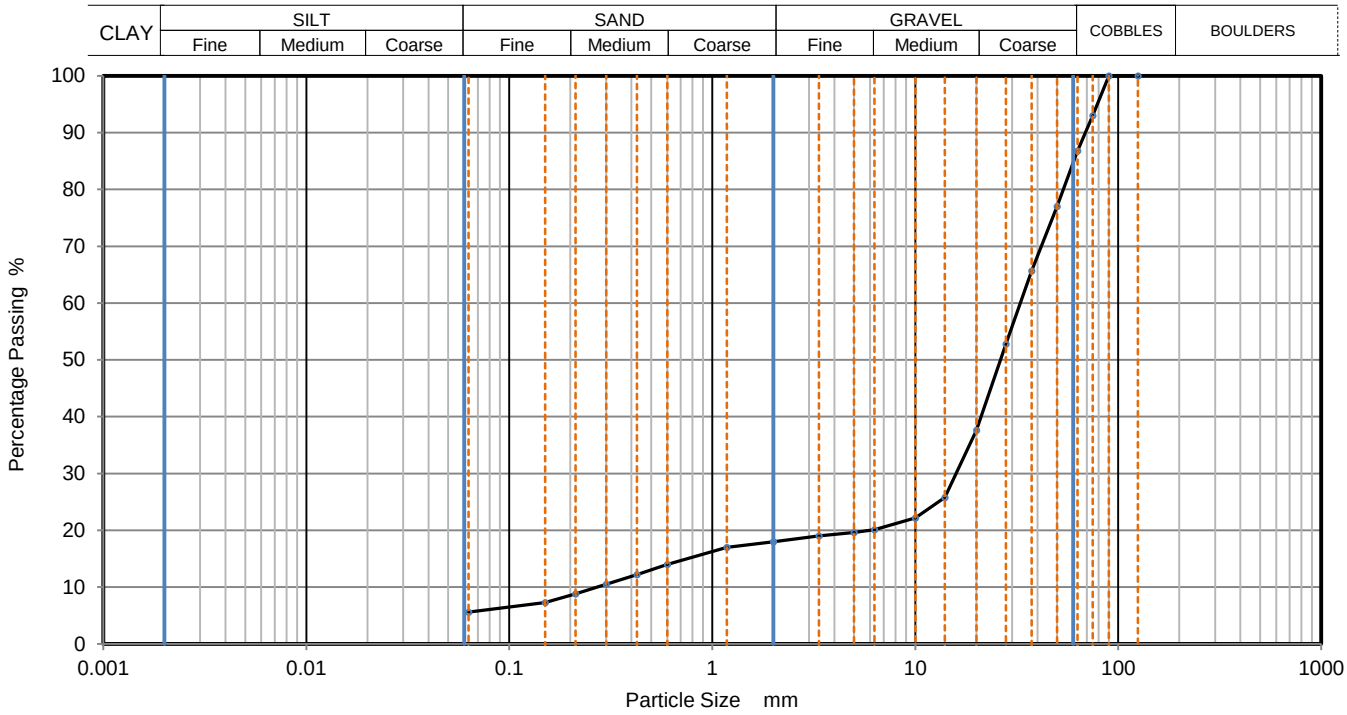
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

UKAS TESTING 10122

LAB 05R - Version 6

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		TP07
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		5
Specimen Description	Grey slightly sandy subangular fine to coarse GRAVEL.				Sample Depth (m)	Top	2.00
						Base	
Specimen Reference	6	Specimen Depth	2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024109



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	93		
63	87		
50	77		
37.5	66		
28	53		
20	38		
14	26		
10	22		
6.3	20		
5	20		
3.35	19		
2	18		
1.18	17		
0.6	14		
0.425	12		
0.3	11		
0.212	9		
0.15	7		
0.063	6		

Dry Mass of sample, g	13797

Sample Proportions	% dry mass
Cobbles	13.2
Gravel	68.7
Sand	12.4
Fines <0.063mm	6.0

Grading Analysis		
D100	mm	
D60	mm	33
D30	mm	15.9
D10	mm	0.272
Uniformity Coefficient		120
Curvature Coefficient		28

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

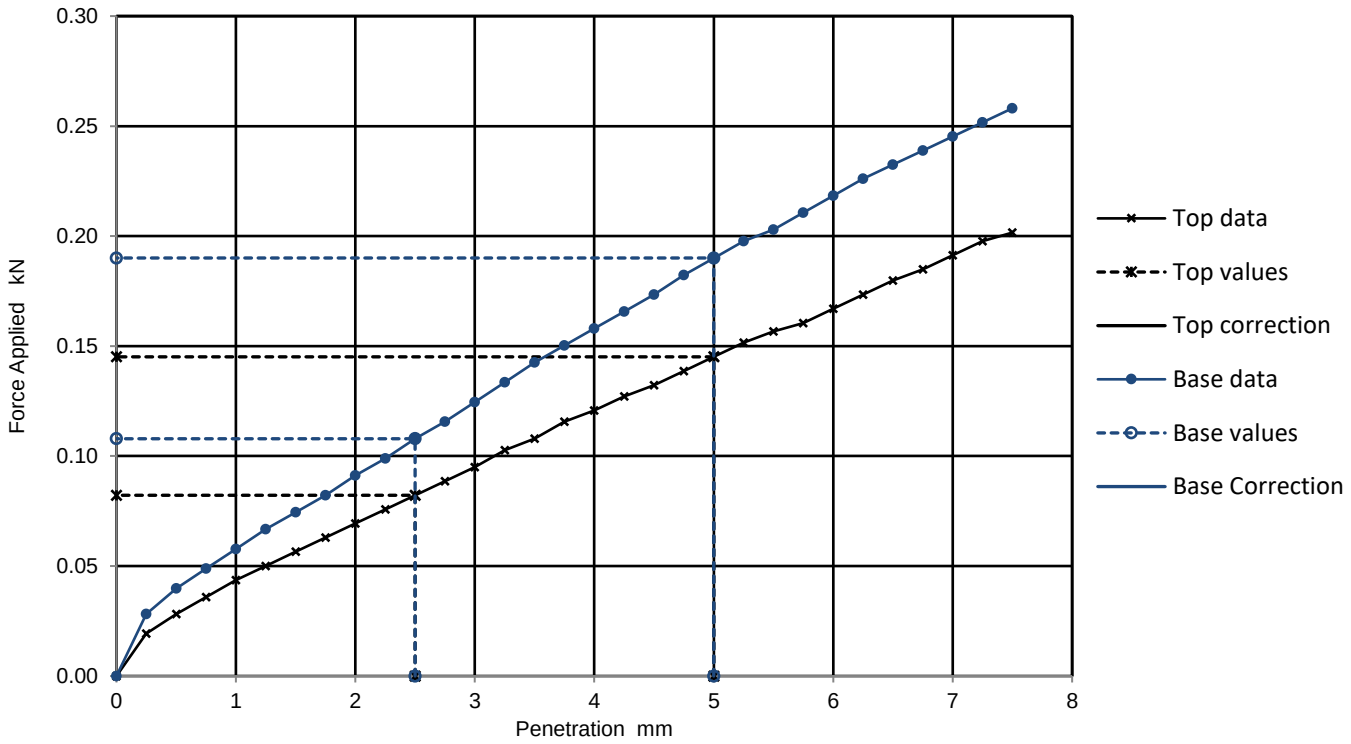
UKAS TESTING 10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881F
				Borehole/Pit No.	TP04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024102
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		5	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.71	Mg/m3		3	kPa
	Moisture content	19	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.6	0.7	0.7		19
BASE	No	0.8	1.0	1.0		18

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

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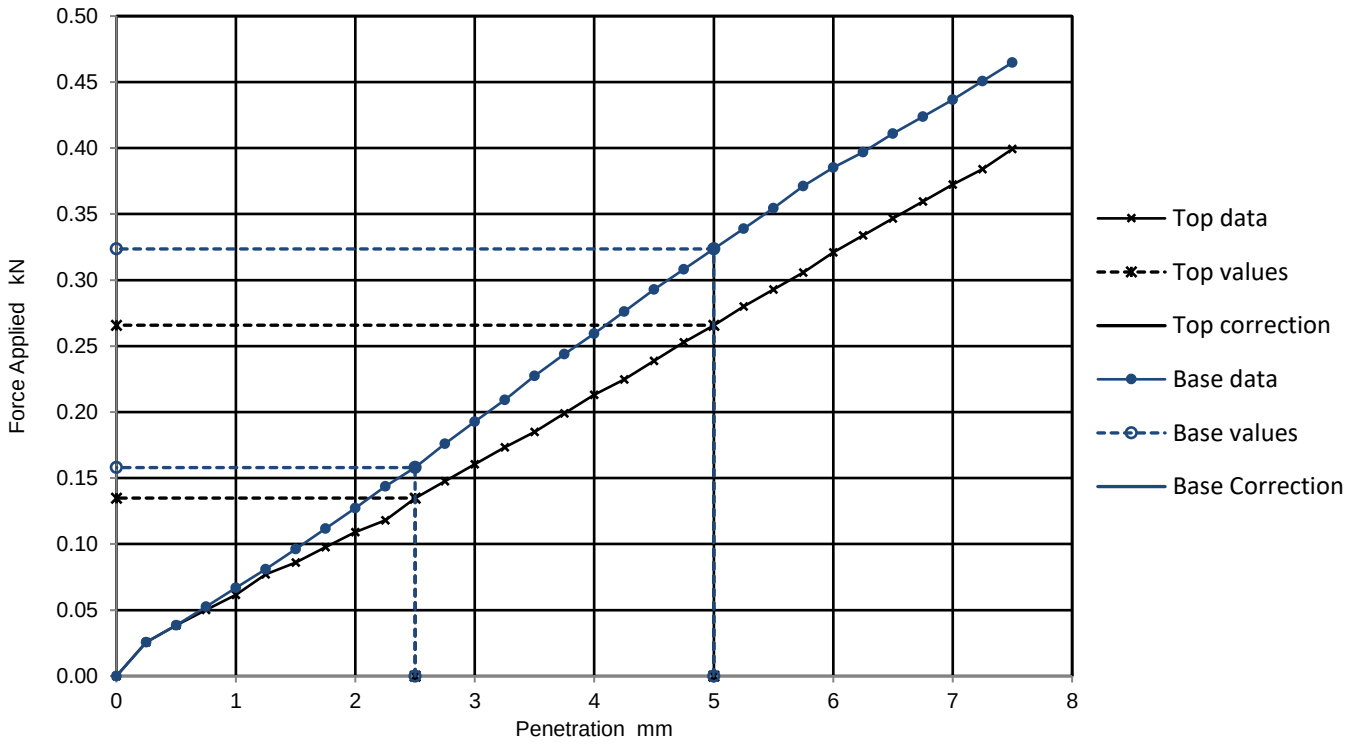
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881F
				Borehole/Pit No.	TP05
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024104
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		2	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.76	Mg/m3		3	kPa
	Moisture content	17	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.0	1.3	1.3	1.5	17
BASE	No	1.2	1.6	1.6		17

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

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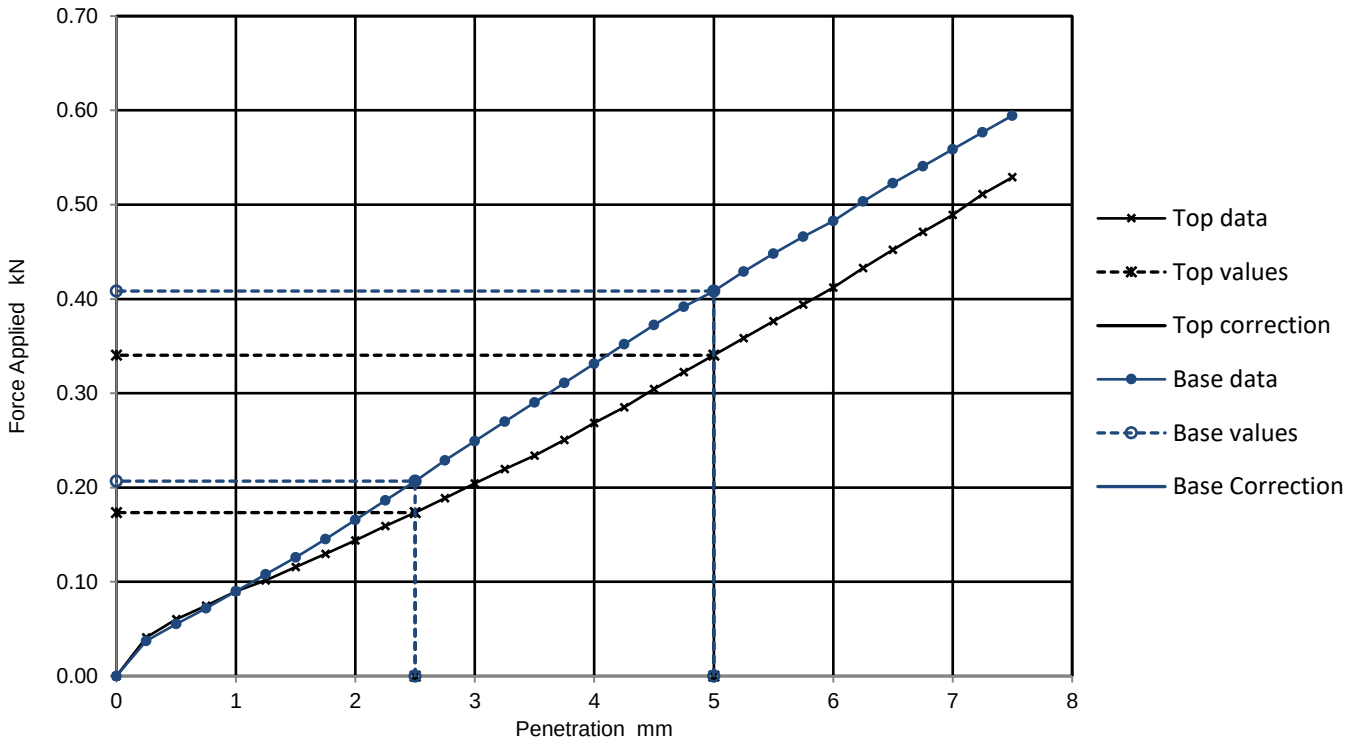
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881F
				Borehole/Pit No.	TP06
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024106
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		11	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.15	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.90	Mg/m3		3	kPa
	Moisture content	13	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.3	1.7	1.7	1.9	13
BASE	No	1.6	2.0	2.0		13

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

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LAB 11R - Version 6

Certificate of Analysis

Certificate Number	23-26103	*Issued:*	10-Nov-23

Client Causeway Geotech
8 Drumahiskey Road
Ballymoney
County Antrim
BT53 7QL

Our Reference	23-26103
Client Reference	23-0881F
Order No	(not supplied)
Contract Title	COOLAGHKNOCK GLEBE
Description	8 Soil samples.
Date Received	04-Nov-23
Date Started	06-Nov-23
Date Completed	10-Nov-23
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

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-26103
Client Ref 23-0881F
Contract Title COOLAGHKNOCK GLEBE

			Lab No	2258379	2258380	2258381	2258382	2258383	2258384	2258385	2258386
			.Sample ID	TP01	TP02	TP03	TP04	TP04	TP05	TP06	TP07
			Depth	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00
			Other ID	3	5	4	4	5	5	4	4
			Sample Type	B	B	B	B	B	B	B	B
			Sampling Date	31/10/2023	31/10/2023	31/10/2023	31/10/2023	31/10/2023	31/10/2023	31/10/2023	31/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Inorganics											
pH	DETSC 2008#		pH	8.6	9.0	8.7	7.7	8.4	8.6	8.3	8.8
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	13	14	13	< 10	< 10	12	< 10	< 10

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-26103
Client Ref 23-0881F
Contract COOLAGHKNOCK GLEBE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2258379	TP01 1.00 SOIL	31/10/23	PT 500ml		
2258380	TP02 1.00 SOIL	31/10/23	PT 500ml		
2258381	TP03 1.00 SOIL	31/10/23	PT 500ml		
2258382	TP04 1.00 SOIL	31/10/23	PT 500ml		
2258383	TP04 2.00 SOIL	31/10/23	PT 500ml		
2258384	TP05 2.00 SOIL	31/10/23	PT 500ml		
2258385	TP06 1.00 SOIL	31/10/23	PT 500ml		
2258386	TP07 1.00 SOIL	31/10/23	PT 500ml		

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

HEAD OFFICE
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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

21 November 2023

Project Name:	NDFA Social Housing Lot 3 – Coolaghknock Glebe
Project No.:	23-0881F
Client:	NDFA
Engineer:	Malone O'Regan Consulting Engineers

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 02/11/2023 and 21/11/2023.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe

Report Reference: Schedule 2

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	4
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	4
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	5
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	5
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	2

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	pH Value of Soil		2
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		2

Summary of Classification Test Results

Project No.	Project Name
23-0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe

Hole No.	Sample				Specimen Description	Density bulk	Density dry	w	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
	Ref	Top	Base	Type		Mg/m3		%	%	%	%	%	Mg/m3	
BH04	4	0.00	1.20	B	Brown sandy slightly gravelly silty CLAY.			26	82	33 -1pt	21	12		CL
BH04	18	5.00	6.50	B	Brown sandy slightly gravelly silty CLAY.			17	93	25 -1pt	15	10		CL
BH05	12	2.00	3.00	B	Brown sandy slightly gravelly silty CLAY.			10	66	23 -1pt	15	8		CL
BH05	13	3.00	4.00	B	Brown sandy slightly gravelly silty CLAY.			11	61	22 -1pt	15	7		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed

21/11/2023

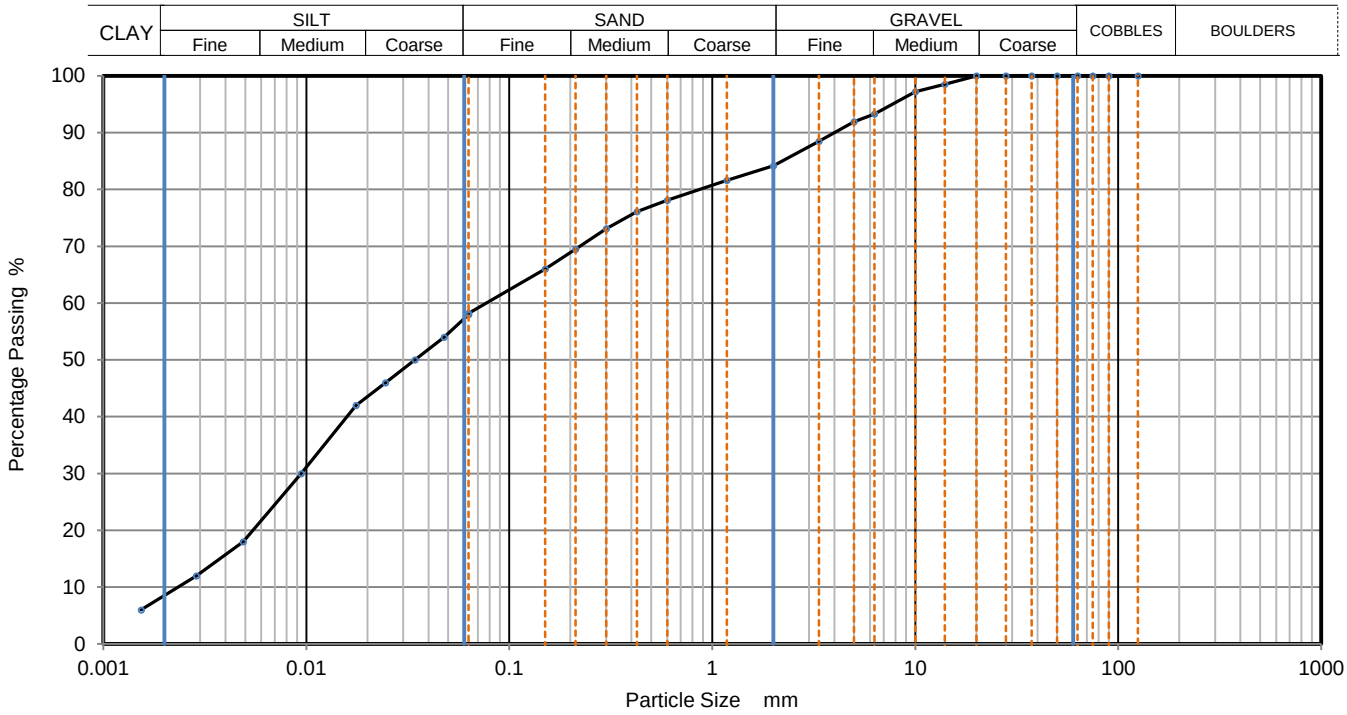
Approved By

Stephen Watson

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F
				Borehole/Pit No.		BH04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		4
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	0.00
					Base	1.20
Specimen Reference	7	Specimen Depth	0 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus2023110228



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	58
90	100	0.04779	54
75	100	0.03426	50
63	100	0.02456	46
50	100	0.01760	42
37.5	100	0.00944	30
28	100	0.00489	18
20	100	0.00287	12
14	99	0.00153	6
10	97		
6.3	93		
5	92		
3.35	89		
2	84		
1.18	82		
0.6	78	Particle density	(assumed)
0.425	76	2.65	Mg/m3
0.3	73		
0.212	70		
0.15	66		
0.063	58		

Dry Mass of sample, g	308

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	15.8
Sand	26.0
Silt	49.6
Clay	8.6

Grading Analysis		
D100	mm	
D60	mm	0.0772
D30	mm	0.00938
D10	mm	0.00232
Uniformity Coefficient		33
Curvature Coefficient		0.49

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

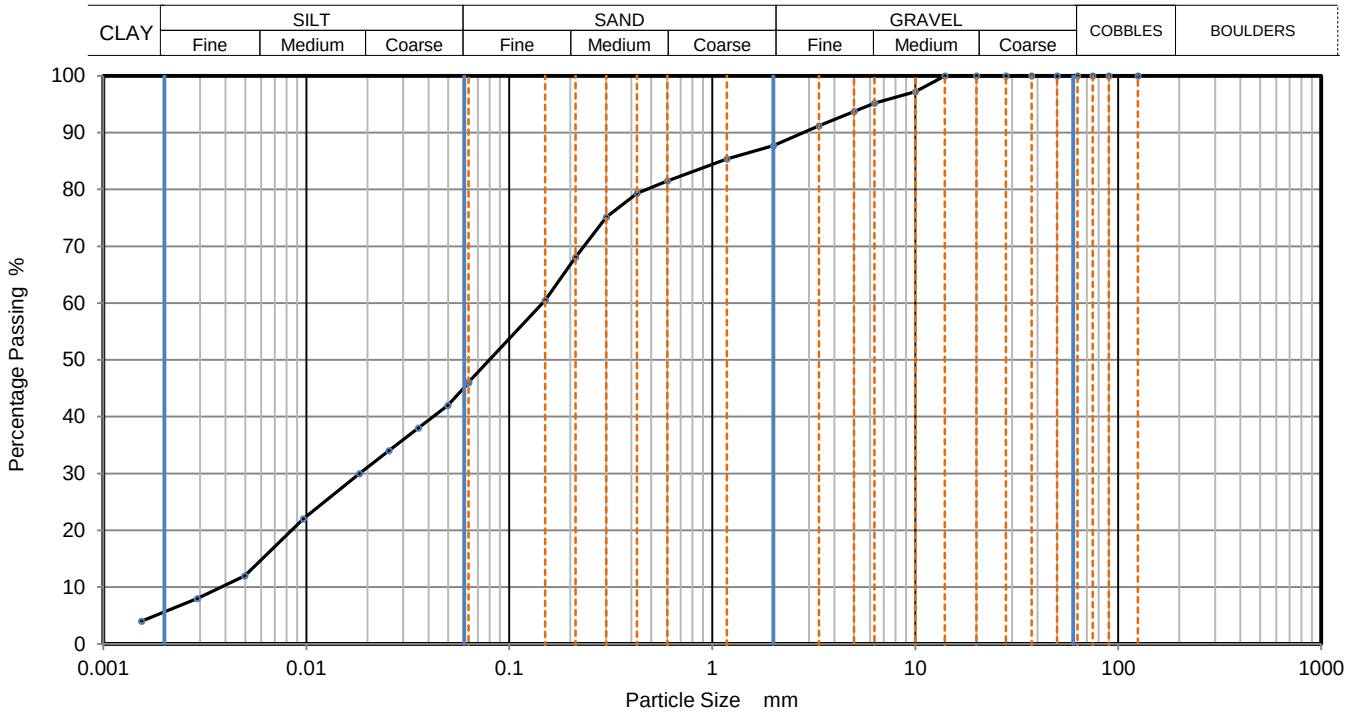
Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		BH04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		8
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	2.00
						Base	2.45
Specimen Reference	2	Specimen Depth	2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023110229



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	46
90	100	0.04977	42
75	100	0.03565	38
63	100	0.02553	34
50	100	0.01827	30
37.5	100	0.00966	22
28	100	0.00497	12
20	100	0.00290	8
14	100	0.00154	4
10	97		
6.3	95		
5	94		
3.35	91		
2	88		
1.18	85		
0.6	82	Particle density	(assumed)
0.425	79	2.65	Mg/m3
0.3	75		
0.212	68		
0.15	61		
0.063	46		

Dry Mass of sample, g	323

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	12.3
Sand	41.7
Silt	40.3
Clay	5.7

Grading Analysis		
D100	mm	
D60	mm	0.146
D30	mm	0.0182
D10	mm	0.00378
Uniformity Coefficient		39
Curvature Coefficient		0.6

Remarks

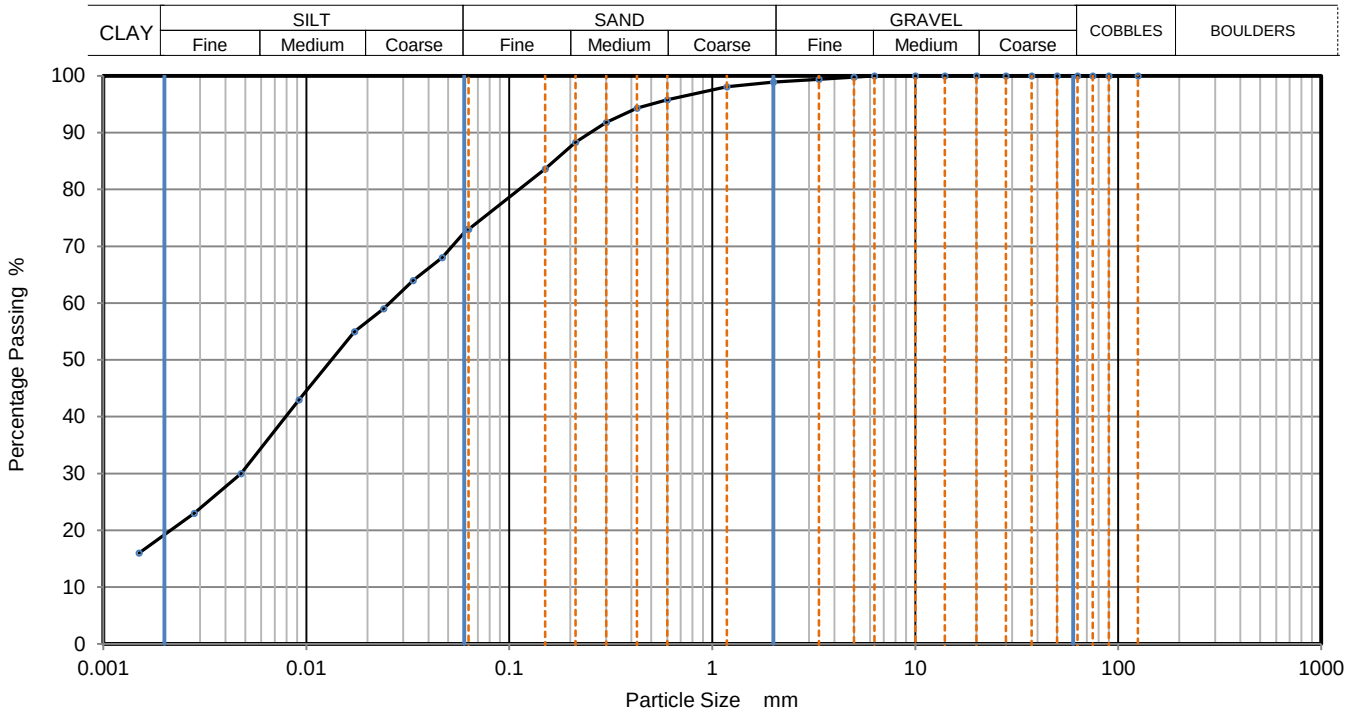
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F
				Borehole/Pit No.		BH04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		18
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	5.00
					Base	6.50
Specimen Reference	6	Specimen Depth	5 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus2023110230



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06195	73
90	100	0.04676	68
75	100	0.03355	64
63	100	0.02406	59
50	100	0.01725	55
37.5	100	0.00920	43
28	100	0.00477	30
20	100	0.00281	23
14	100	0.00150	16
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.6	96	Particle density	(assumed)
0.425	94	2.65	Mg/m3
0.3	92		
0.212	88		
0.15	84		
0.063	73		

Dry Mass of sample, g: 329

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	1.1
Sand	25.9
Silt	53.9
Clay	19.1

Grading Analysis		
D100	mm	
D60	mm	0.0253
D30	mm	0.00485
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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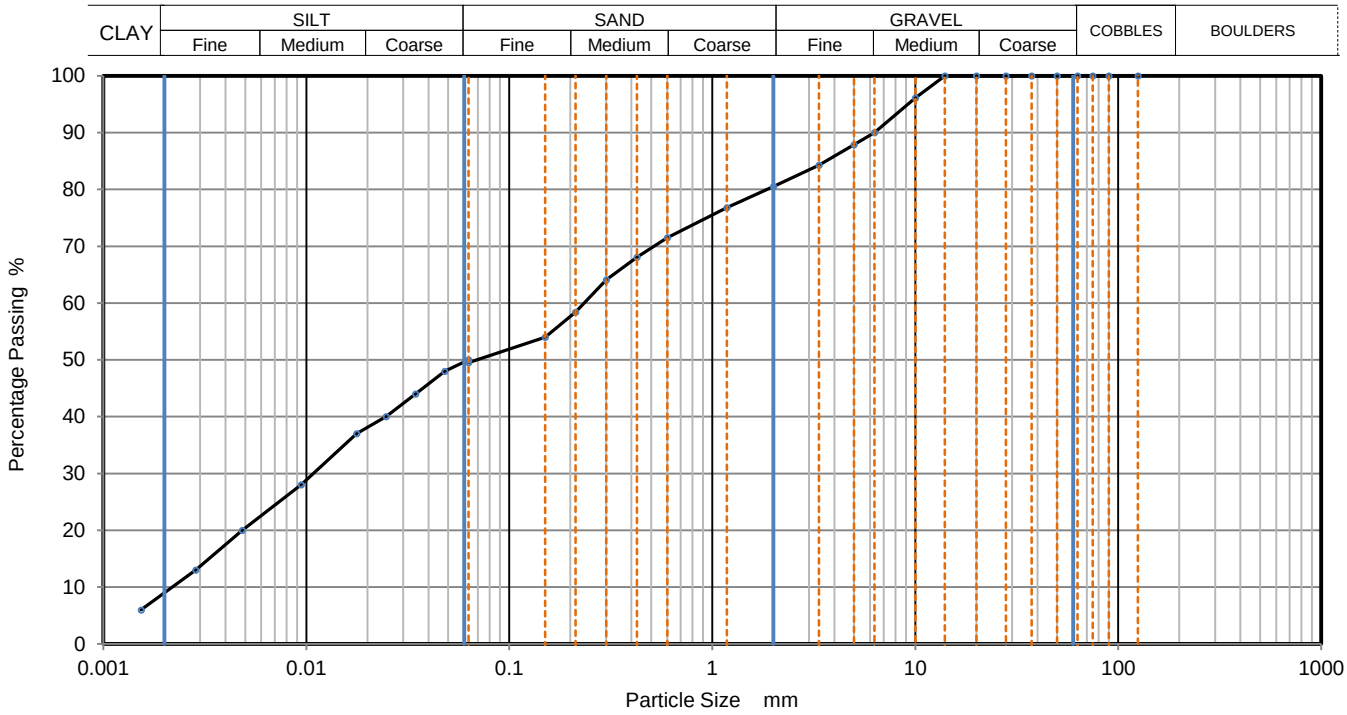
10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F
				Borehole/Pit No.		BH05
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		12
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	2.00
					Base	3.00
Specimen Reference	6	Specimen Depth	2 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus2023110232



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	50
90	100	0.04812	48
75	100	0.03450	44
63	100	0.02472	40
50	100	0.01771	37
37.5	100	0.00944	28
28	100	0.00483	20
20	100	0.00285	13
14	100	0.00153	6
10	96		
6.3	90		
5	88		
3.35	84		
2	81		
1.18	77		
0.6	72	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	64		
0.212	58		
0.15	54		
0.063	50		

Dry Mass of sample, g	534

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	19.5
Sand	31.0
Silt	40.9
Clay	8.6

Grading Analysis		
D100	mm	
D60	mm	0.233
D30	mm	0.0112
D10	mm	0.00224
Uniformity Coefficient		100
Curvature Coefficient		0.24

Remarks

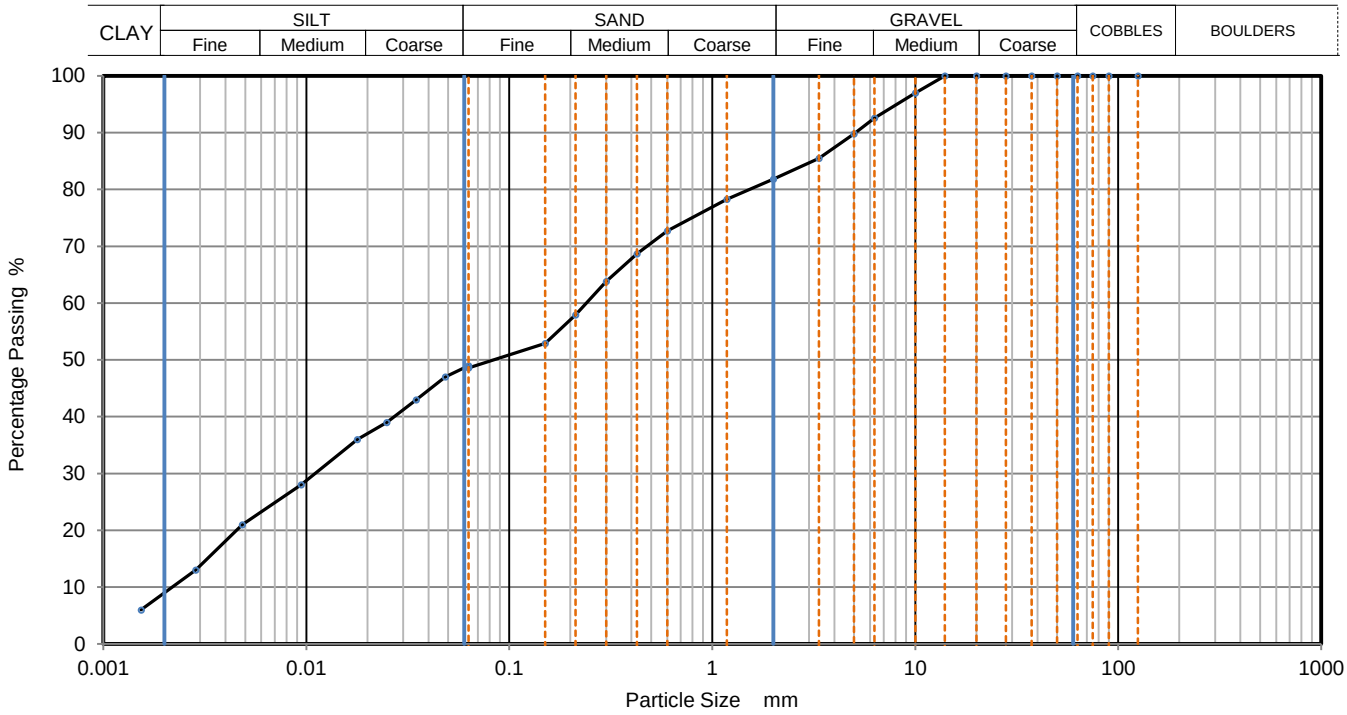
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881F
					Borehole/Pit No.		BH05
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		13
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	3.00
						Base	4.00
Specimen Reference	6	Specimen Depth	3	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023110233



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	49
90	100	0.04846	47
75	100	0.03473	43
63	100	0.02489	39
50	100	0.01783	36
37.5	100	0.00944	28
28	100	0.00483	21
20	100	0.00285	13
14	100	0.00153	6
10	97		
6.3	93		
5	90		
3.35	86		
2	82		
1.18	78		
0.6	73	Particle density	(assumed)
0.425	69	2.65	Mg/m3
0.3	64		
0.212	58		
0.15	53		
0.063	49		

Dry Mass of sample, g: 510

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.2
Sand	33.2
Silt	39.8
Clay	8.8

Grading Analysis		
D100	mm	
D60	mm	0.24
D30	mm	0.0111
D10	mm	0.00221
Uniformity Coefficient		110
Curvature Coefficient		0.23

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

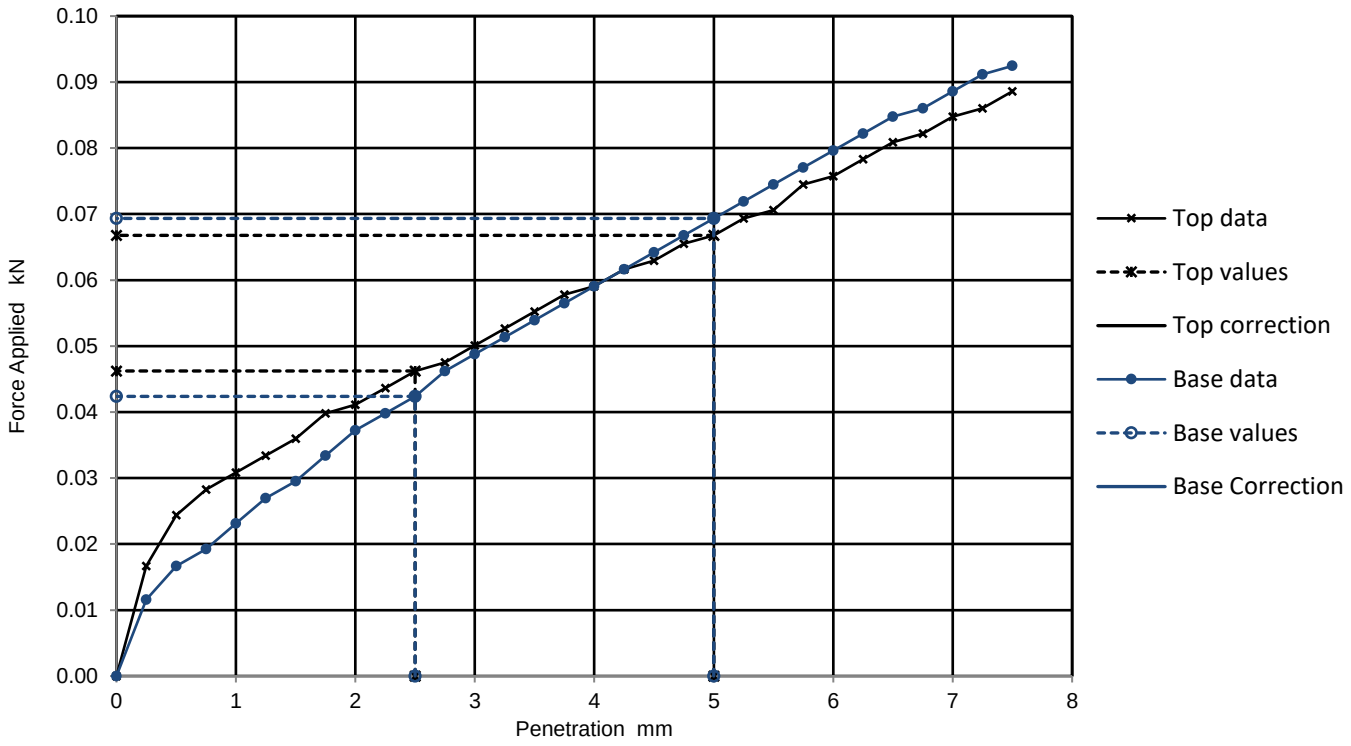
UKAS TESTING 10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881F
				Borehole/Pit No.	BH04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023110228
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.95	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.59	Mg/m3		3	kPa
	Moisture content	23	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.4	0.3	0.4	0.4	23
BASE	No	0.3	0.4	0.4		22

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

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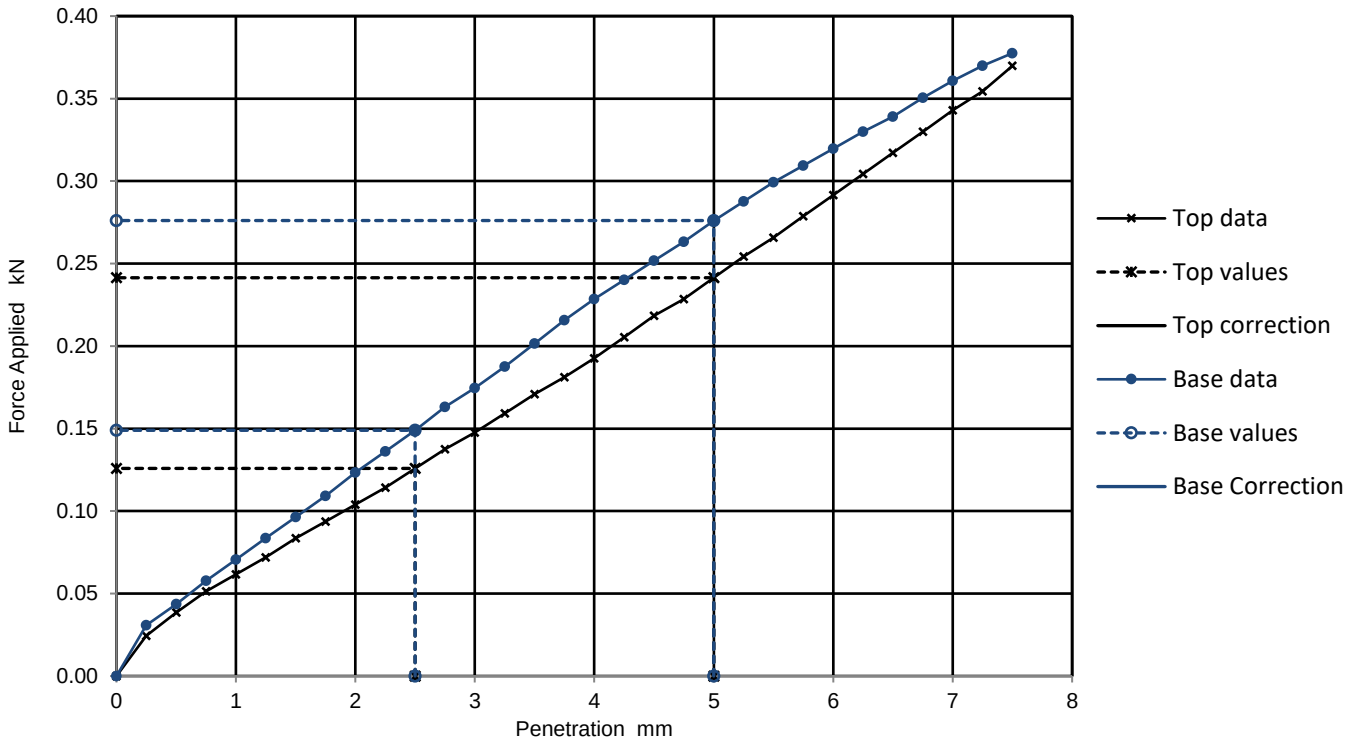
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881F
				Borehole/Pit No.	BH05
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.	5
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023110231
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		3	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.67	Mg/m3		3	kPa
	Moisture content	19	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.0	1.2	1.2	1.3	19
BASE	No	1.1	1.4	1.4		20

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

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LAB 11R - Version 6

Certificate of Analysis

Certificate Number	23-26601	*Issued:*	16-Nov-23

Client Causeway Geotech
8 Drumahiskey Road
Ballymoney
County Antrim
BT53 7QL

Our Reference	23-26601
Client Reference	23-0881F
Order No	(not supplied)
Contract Title	COSLAGHKNOCK GLEBE
Description	2 Soil samples.
Date Received	11-Nov-23
Date Started	13-Nov-23
Date Completed	16-Nov-23
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

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-26601
Client Ref 23-0881F
Contract Title COSLAGHKNOCK GLEBE

			Lab No	2261155	2261156
			.Sample ID	BH04	BH05
			Depth		1.00
			Other ID	4	5
			Sample Type	B	B
			Sampling Date	09/11/2023	09/11/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	8.0	7.8
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	13	19

Information in Support of the Analytical Results

Our Ref 23-26601
Client Ref 23-0881F
Contract COSLAGHKNOCK GLEBE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2261155	BH04 SOIL	09/11/23	PT 500ml		
2261156	BH05 1.00 SOIL	09/11/23	PT 500ml		

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

CAUSEWAY GEOTECH

APPENDIX J

ENVIRONMENTAL LABORATORY TEST RESULTS

Certificate of Analysis

Certificate Number	23-25555	*Issued:*	06-Nov-23

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-25555
Client Reference	23-0881F
Order No	(not supplied)
Contract Title	COOLNAGHKNOCK GLEBE
Description	8 Soil samples, 8 Leachate samples.
Date Received	30-Oct-23
Date Started	30-Oct-23
Date Completed	06-Nov-23
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

Kirk Bridgewood
General Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

			Lab No	2254876	2254877	2254878	2254879	2254880	2254881
			.Sample ID	TP01	TP02	TP02	TP02	TP04	TP05
			Depth	0.50	0.50	1.00	3.00	0.50	1.00
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%	6.2	5.2	5.6	4.2	16	13
Metals									
Antimony	DETSC 2301*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	4.8	8.5	4.5	4.8	7.3	7.5
Barium	DETSC 2301#	1.5	mg/kg	45	30	41	42	68	75
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	1.1	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	1.1	0.8	2.7	1.0	1.0	1.0
Chromium	DETSC 2301#	0.15	mg/kg	8.5	8.7	6.2	6.1	15	15
Chromium III	DETSC 2301*	0.15	mg/kg	8.5	8.7	6.2	6.1	15	15
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	10	8.0	9.7	8.0	12	8.8
Lead	DETSC 2301#	0.3	mg/kg	10	21	11	14	26	23
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.05	< 0.05	0.10	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.5	< 0.4	1.1	< 0.4	0.8	0.6
Nickel	DETSC 2301#	1	mg/kg	13	13	13	13	20	30
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5	0.8	0.7
Zinc	DETSC 2301#	1	mg/kg	56	81	82	70	89	95
Inorganics									
pH	DETSC 2008#		pH	8.5	8.6	8.6	8.8	7.6	7.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.4	1.0	1.5	1.2	1.4	0.5
Sulphide	DETSC 2024*	10	mg/kg	20	52	15	52	43	20
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03	0.04	0.04	0.03	0.05	0.03
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

			Lab No	2254876	2254877	2254878	2254879	2254880	2254881
			.Sample ID	TP01	TP02	TP02	TP02	TP04	TP05
			Depth	0.50	0.50	1.00	3.00	0.50	1.00
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.7	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	1.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.9	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.6	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	5.6	< 1.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

			Lab No	2254882	2254883
			.Sample ID	TP06	TP07
			Depth	0.50	0.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	17/10/2023	17/10/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Moisture Content	DETSC 1004	0.1	%	15	15
Metals					
Antimony	DETSC 2301*	1	mg/kg	1.1	1.6
Arsenic	DETSC 2301#	0.2	mg/kg	8.8	12
Barium	DETSC 2301#	1.5	mg/kg	62	92
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	1.2	2.9
Chromium	DETSC 2301#	0.15	mg/kg	15	23
Chromium III	DETSC 2301*	0.15	mg/kg	15	23
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14	20
Lead	DETSC 2301#	0.3	mg/kg	29	26
Mercury	DETSC 2325#	0.05	mg/kg	0.13	0.12
Molybdenum	DETSC 2301#	0.4	mg/kg	1.0	0.9
Nickel	DETSC 2301#	1	mg/kg	24	59
Selenium	DETSC 2301#	0.5	mg/kg	0.7	0.8
Zinc	DETSC 2301#	1	mg/kg	93	130
Inorganics					
pH	DETSC 2008#		pH	7.8	7.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.4	0.5
Sulphide	DETSC 2024*	10	mg/kg	28	20
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.06	0.03
Petroleum Hydrocarbons					
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

			Lab No	2254882	2254883
			.Sample ID	TP06	TP07
			Depth	0.50	0.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	17/10/2023	17/10/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

			Lab No	2254884	2254885	2254886	2254887	2254888	2254889	2254890	2254891
			.Sample ID	TP01	TP02	TP02	TP02	TP04	TP05	TP06	TP07
			Depth	0.50	0.50	1.00	3.00	0.50	1.00	0.50	0.50
			Other ID								
			Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
			Sampling Date	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Preparation											
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y	Y
Inorganics											
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	< 0.02	0.02	0.03	0.02	0.04	0.02	< 0.02

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP01 0.50

Sample Numbers 2254876 2254884
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.4	3	5	6
DETSC 2003# Loss On Ignition	%	0.75	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.5	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	4.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.49	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	1.8	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.97	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.23	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.29	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	780	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1	10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2500	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	9.4
DETSC 2009 Conductivity uS/cm	46.4
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.932
Volume of Eluate VE1*	0.88

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP02 0.50

Sample Numbers 2254877 2254885
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.0	3	5	6
DETSC 2003# Loss On Ignition	%	0.96	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.39	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.88	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.3	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	660	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	29000	290	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2900	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	9.1
DETSC 2009 Conductivity uS/cm	40.7
* Temperature*	18.0
Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.095
Stage 1	
Volume of Leachant L2*	0.942
Volume of Eluate VE1*	0.89

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP02 1.00

Sample Numbers 2254878 2254886
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.5	3	5	6
DETSC 2003# Loss On Ignition	%	0.81	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	4.8	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.17	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.16	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	5.7	0.057	4	50	200
DETSC 2055 Chloride as Cl	850	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1700	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	18000	180	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2800	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	8.7
DETSC 2009 Conductivity uS/cm	25.3
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.939
Volume of Eluate VE1*	0.88

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP02 3.00

Sample Numbers 2254879 2254887
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.2	3	5	6
DETSC 2003# Loss On Ignition	%	0.85	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.28	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.66	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.13	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	8.5	0.085	4	50	200
DETSC 2055 Chloride as Cl	650	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2600	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	9.0
DETSC 2009 Conductivity uS/cm	46.6
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.954
Volume of Eluate VE1*	0.9

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP04 0.50

Sample Numbers 2254880 2254888
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.4	3	5	6
DETSC 2003# Loss On Ignition	%	4.6	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	10.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	5.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.26	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.81	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.4	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	700	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	210	2.1	10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	19000	190	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	8.2
DETSC 2009 Conductivity uS/cm	27.2
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.101

Stage 1

Volume of Leachant L2*	0.994
Volume of Eluate VE1*	0.94

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP05 1.00

Sample Numbers 2254881 2254889
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.5	3	5	6
DETSC 2003# Loss On Ignition	%	2.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.61	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.46	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.15	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	32	0.32	4	50	200
DETSC 2055 Chloride as Cl	840	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.8
DETSC 2009 Conductivity uS/cm	52.7
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.943
Volume of Eluate VE1*	0.89

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP06 0.50
Sample Numbers 2254882 2254890
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.4	3	5	6
DETSC 2003# Loss On Ignition	%	5.3	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.37	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	6.5	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.16	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	870	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	240	2.4	10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	44000	440	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.6
DETSC 2009 Conductivity uS/cm	62.4
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.102

Stage 1

Volume of Leachant L2*	0.997
Volume of Eluate VE1*	0.94

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE
Sample Id TP07 0.50

Sample Numbers 2254883 2254891
Date Analysed 06/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.5	3	5	6
DETSC 2003# Loss On Ignition	%	3.2	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.7	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.41	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	1.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.55	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.74	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1.1	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.48	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4	50	200
DETSC 2055 Chloride as Cl	2000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2200	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.6
DETSC 2009 Conductivity uS/cm	52.4
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.102

Stage 1

Volume of Leachant L2*	0.998
Volume of Eluate VE1*	0.94

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-25555
Client Ref 23-0881F
Contract Title COOLNAGHKNOCK GLEBE

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2254876	TP01 0.50	SOIL	NAD	none	Shannon Hope
2254877	TP02 0.50	SOIL	NAD	none	Shannon Hope
2254878	TP02 1.00	SOIL	NAD	none	Shannon Hope
2254879	TP02 3.00	SOIL	NAD	none	Shannon Hope
2254880	TP04 0.50	SOIL	NAD	none	Shannon Hope
2254881	TP05 1.00	SOIL	NAD	none	Shannon Hope
2254882	TP06 0.50	SOIL	NAD	none	Shannon Hope
2254883	TP07 0.50	SOIL	NAD	none	Shannon Hope

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-25555
Client Ref 23-0881F
Contract COOLNAGHKNOCK GLEBE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254876	TP01 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254877	TP02 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254878	TP02 1.00 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254879	TP02 3.00 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254880	TP04 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254881	TP05 1.00 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254882	TP06 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254883	TP07 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2254884	TP01 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254885	TP02 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254886	TP02 1.00 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254887	TP02 3.00 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254888	TP04 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254889	TP05 1.00 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254890	TP06 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254891	TP07 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar 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

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	EH_CU_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

Certificate of Analysis

Certificate Number	23-25930	*Issued:*	13-Nov-23

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-25930
Client Reference	23-0881F
Order No	(not supplied)
Contract Title	COOLNAGHKOCK GLEBE
Description	3 Soil samples, 3 Leachate samples.
Date Received	02-Nov-23
Date Started	02-Nov-23
Date Completed	13-Nov-23
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

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE

	Lab No	2257358	2257359	2257360
	.Sample ID	BH05	BH08	BH04
	Depth	0.50	0.50	0.50
	Other ID	1	1	1
	Sample Type	ES	ES	ES
	Sampling Date	25/10/2023	26/10/2023	23/10/2023
	Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
Moisture Content	DETSC 1004	0.1	%	15	21	15
Metals						
Antimony	DETSC 2301*	1	mg/kg	1.1	1.0	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	8.5	8.2	6.1
Barium	DETSC 2301#	1.5	mg/kg	57	63	41
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	1.3	1.1	1.3
Chromium	DETSC 2301#	0.15	mg/kg	19	19	13
Chromium III	DETSC 2301*	0.15	mg/kg	19	19	13
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	20	17	13
Lead	DETSC 2301#	0.3	mg/kg	99	24	16
Mercury	DETSC 2325#	0.05	mg/kg	0.07	0.07	0.06
Molybdenum	DETSC 2301#	0.4	mg/kg	1.3	0.8	0.6
Nickel	DETSC 2301#	1	mg/kg	33	26	24
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	87	82	74
Inorganics						
pH	DETSC 2008#		pH	7.8	7.6	8.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.3	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.7	1.6	0.9
Sulphide	DETSC 2024*	10	mg/kg	32	< 10	32
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.06	0.06	0.03
Petroleum Hydrocarbons						
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE

			Lab No	2257358	2257359	2257360
			.Sample ID	BH05	BH08	BH04
			Depth	0.50	0.50	0.50
			Other ID	1	1	1
			Sample Type	ES	ES	ES
			Sampling Date	25/10/2023	26/10/2023	23/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6
PCBs						
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE

			Lab No	2257361	2257362	2257363
			.Sample ID	BH05	BH08	BH04
			Depth	0.50	0.50	0.50
			Other ID	1	1	1
			Sample Type	ES	ES	ES
			Sampling Date	25/10/2023	26/10/2023	23/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Inorganics						
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	< 0.02	< 0.02

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE
Sample Id BH05 1 0.50

Sample Numbers 2257358 2257361
Date Analysed 13/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.7	3	5	6
DETSC 2003# Loss On Ignition	%	4.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.29	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	4.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.9	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.21	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.28	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	740	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	130	1.3	10	150	500
DETSC 2055 Sulphate as SO4	2300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	35000	350	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2100	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.4
DETSC 2009 Conductivity uS/cm	49.7
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.921
Volume of Eluate VE1*	0.87

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE
Sample Id BH08 1 0.50

Sample Numbers 2257359 2257362
Date Analysed 13/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	4.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.79	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	5.8	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.8	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.17	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	950	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	29000	290	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2100	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	41.3
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.095

Stage 1

Volume of Leachant L2*	0.927
Volume of Eluate VE1*	0.87

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE
Sample Id BH04 1 0.50

Sample Numbers 2257360 2257363
Date Analysed 13/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.9	3	5	6
DETSC 2003# Loss On Ignition	%	1.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.32	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.84	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.092	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	770	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	42000	420	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	59.5
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.093

Stage 1

Volume of Leachant L2*	0.917
Volume of Eluate VE1*	0.86

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-25930
Client Ref 23-0881F
Contract Title COOLNAGHKOCK GLEBE

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2257358	BH05 1 0.50	SOIL	NAD	none	Ben Rose
2257359	BH08 1 0.50	SOIL	NAD	none	Ben Rose
2257360	BH04 1 0.50	SOIL	NAD	none	Ben Rose

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-25930
Client Ref 23-0881F
Contract COOLNAGHKOCK GLEBE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2257358	BH05 0.50 SOIL	25/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2257359	BH08 0.50 SOIL	26/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2257360	BH04 0.50 SOIL	23/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2257361	BH05 0.50 LEACHATE	25/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2257362	BH08 0.50 LEACHATE	26/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2257363	BH04 0.50 LEACHATE	23/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

Key: G-Glass P-Plastic J-Jar 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

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	EH_CU_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

Certificate of Analysis

Certificate Number	23-28026	*Issued:*	18-Dec-23

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-28026
Client Reference	23-0881F
Order No	(not supplied)
Contract Title	Coolnaghknock Glebe
Description	7 Soil samples, 7 Leachate prepared by DETS samples.
Date Received	29-Nov-23
Date Started	29-Nov-23
Date Completed	18-Dec-23
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

Kirk Bridgewood
General Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe

			Lab No	2269028	2269029	2269030	2269031	2269032	2269033	2269034
			.Sample ID	BH06	BH02	BH07	BH03	BH10	BH11	BH09
			Depth	0.50	0.50	0.50	1.00	1.00	0.50	0.50
			Other ID	1	1	1	2	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	22	0.48	15	7.1	13	14	17
Metals										
Antimony	DETSC 2301*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1
Arsenic	DETSC 2301#	0.2	mg/kg	6.8	1.8	6.3	4.0	6.0	7.2	9.8
Barium	DETSC 2301#	1.5	mg/kg	63	44	37	27	29	43	40
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	1.0	0.3	1.1	0.8	1.3	1.4	2.3
Chromium	DETSC 2301#	0.15	mg/kg	17	3.7	12	7.3	13	12	21
Chromium III	DETSC 2301*	0.15	mg/kg	17	3.7	12	7.3	13	12	21
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	13	5.8	14	10	11	18	21
Lead	DETSC 2301#	0.3	mg/kg	24	2.2	18	8.8	16	21	41
Mercury	DETSC 2325#	0.05	mg/kg	0.07	< 0.05	0.07	< 0.05	0.06	0.07	0.10
Molybdenum	DETSC 2301#	0.4	mg/kg	0.7	1.2	0.5	< 0.4	0.6	0.7	1.0
Nickel	DETSC 2301#	1	mg/kg	19	8.2	20	9.5	18	28	46
Selenium	DETSC 2301#	0.5	mg/kg	0.6	0.9	< 0.5	< 0.5	< 0.5	< 0.5	0.5
Zinc	DETSC 2301#	1	mg/kg	91	14	68	52	56	66	170
Inorganics										
pH	DETSC 2008#		pH	7.9	9.1	8.1	9.0	8.2	8.0	7.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	< 0.1	0.1	< 0.1	0.1	0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.0	5.3	2.2	1.6	1.1	0.8	< 0.5
Sulphide	DETSC 2024*	10	mg/kg	16	16	38	20	< 10	< 10	32
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.08	0.09	0.07	0.04	0.07	0.02	< 0.01
Petroleum Hydrocarbons										
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe

				Lab No	2269028	2269029	2269030	2269031	2269032	2269033	2269034
				.Sample ID	BH06	BH02	BH07	BH03	BH10	BH11	BH09
				Depth	0.50	0.50	0.50	1.00	1.00	0.50	0.50
				Other ID	1	1	1	2	2	1	1
				Sample Type	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg		< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg		< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg		< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg		< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg		< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00
Benzene	DETSC 3321#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg		< 10	< 10	< 10	< 10	< 10	< 10	< 10
PAHs											
Naphthalene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg		0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg		0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg		< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs											
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenols											
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		1.1	< 0.3	1.1	0.7	1.1	4.1	2.8

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe

			Lab No	2269035	2269036	2269037	2269038	2269039	2269040	2269041
			.Sample ID	BH06	BH02	BH07	BH03	BH10	BH11	BH09
			Depth	0.50	0.50	0.50	1.00	1.00	0.50	0.50
			Other ID	1	1	1	2	2	1	1
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y
Inorganics										
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.02	< 0.02	< 0.02	0.03	0.04	< 0.02	0.03

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH06 1 0.50

Sample Numbers 2269028 2269035
Date Analysed 18/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.0	3	5	6
DETSC 2003# Loss On Ignition	%	3.9	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.9	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.1	0.011	0.5	2	25
DETSC 2306 Barium as Ba	2.9	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.7	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.93	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.5	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.8	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	24	0.24	4	50	200
DETSC 2055 Chloride as Cl	420	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1700	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	21000	210	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2600	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.4
DETSC 2009 Conductivity uS/cm	30.1
* Temperature*	17.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.995
Volume of Eluate VE1*	0.945

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH02 1 0.50

Sample Numbers 2269029 2269036
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	5.3	3	5	6
DETSC 2003# Loss On Ignition	%	0.41	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	9.1	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1	0.01	0.5	2	25
DETSC 2306 Barium as Ba	1.9	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.29	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.43	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.23	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.9	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4	50	200
DETSC 2055 Chloride as Cl	220	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	890	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	15000	150	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.4
DETSC 2009 Conductivity uS/cm	20.7
* Temperature*	17.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.995
Volume of Eluate VE1*	0.945

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH07 1 0.50

Sample Numbers 2269030 2269037
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.2	3	5	6
DETSC 2003# Loss On Ignition	%	3.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.1	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.3	0.013	0.5	2	25
DETSC 2306 Barium as Ba	5.8	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.88	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.9	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.18	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	2.5	0.025	4	50	200
DETSC 2055 Chloride as Cl	630	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	35000	350	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.5
DETSC 2009 Conductivity uS/cm	50.4
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.923
Volume of Eluate VE1*	0.87

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH03 2 1.00

Sample Numbers 2269031 2269038
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	0.64	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	9.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.3	0.013	0.5	2	25
DETSC 2306 Barium as Ba	1.9	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.48	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.68	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	360	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	26000	260	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.6
DETSC 2009 Conductivity uS/cm	36.6
* Temperature*	17.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.093

Stage 1

Volume of Leachant L2*	0.922
Volume of Eluate VE1*	0.87

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH10 2 1.00

Sample Numbers 2269032 2269039
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.1	3	5	6
DETSC 2003# Loss On Ignition	%	2.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.3	0.013	0.5	2	25
DETSC 2306 Barium as Ba	2.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.45	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.82	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1.2	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.092	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	780	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	840	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	35000	350	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.5
DETSC 2009 Conductivity uS/cm	49.7
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.949
Volume of Eluate VE1*	0.9

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH11 1 0.50

Sample Numbers 2269033 2269040
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.8	3	5	6
DETSC 2003# Loss On Ignition	%	2.6	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.6	0.016	0.5	2	25
DETSC 2306 Barium as Ba	3.4	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.42	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.83	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.099	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.4	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	470	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	540	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.6
DETSC 2009 Conductivity uS/cm	52.9
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.095

Stage 1

Volume of Leachant L2*	0.933
Volume of Eluate VE1*	0.885

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe
Sample Id BH09 1 0.50

Sample Numbers 2269034 2269041
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	< 0.5	3	5	6
DETSC 2003# Loss On Ignition	%	1.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.9	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	5.3	0.053	0.5	2	25
DETSC 2306 Barium as Ba	8.5	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	2.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	4	0.04	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.85	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	3	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	480	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	41000	410	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2700	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	58.4
* Temperature*	17.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.975
Volume of Eluate VE1*	0.921

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-28026
Client Ref 23-0881F
Contract Title Coolnaghknock Glebe

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2269028	BH06 1 0.50	SOIL	NAD	none	Ben Barsby
2269029	BH02 1 0.50	SOIL	NAD	none	Ben Barsby
2269030	BH07 1 0.50	SOIL	NAD	none	Ben Barsby
2269031	BH03 2 1.00	SOIL	NAD	none	Ben Barsby
2269032	BH10 2 1.00	SOIL	NAD	none	Ben Barsby
2269033	BH11 1 0.50	SOIL	NAD	none	Ben Barsby
2269034	BH09 1 0.50	SOIL	NAD	none	Ben Barsby

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-28026
Client Ref 23-0881F
Contract Coolnaghknock Glebe

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2269028	BH06 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2269029	BH02 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2269030	BH07 0.50 SOIL		GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	

Information in Support of the Analytical Results

Our Ref 23-28026
Client Ref 23-0881F
Contract Coolnaghknock Glebe

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2269031	BH03 1.00 SOIL		GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2269032	BH10 1.00 SOIL		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2269033	BH11 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	

Information in Support of the Analytical Results

Our Ref 23-28026
Client Ref 23-0881F
Contract Coolnaghknock Glebe

2269034	BH09 0.50 SOIL		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied, ANC (1095 days), Boron (365 days), BTEX / C5-C10 (14 days), Chromium, Hexavalent (365 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), ICP WS Boron (182 days), Metals ICP (182 days), Metals ICP Prep (182 days), Kone Cr6 (30 days), Loss on Ignition (730 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2269035	BH06 0.50 LEACHATE		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269036	BH02 0.50 LEACHATE		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269037	BH07 0.50 LEACHATE		GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied	
2269038	BH03 1.00 LEACHATE		GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied	
2269039	BH10 1.00 LEACHATE		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269040	BH11 0.50 LEACHATE		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269041	BH09 0.50 LEACHATE		GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	

Key: G-Glass P-Plastic J-Jar 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

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic >EC40-EC44	EH_2D_AL
Aliphatic C5-C44	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic >EC40-EC44	EH_2D_AR
Aromatic C5-C44	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C44	EH_2D+HS_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

CAUSEWAY GEOTECH

APPENDIX K

SPT HAMMER ENERGY MEASUREMENT REPORT

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref:	0895.
Test Date:	18/02/2023
Report Date:	20/02/2023
File Name:	0895..spt
Test Operator:	RWS

Instrumented Rod Data

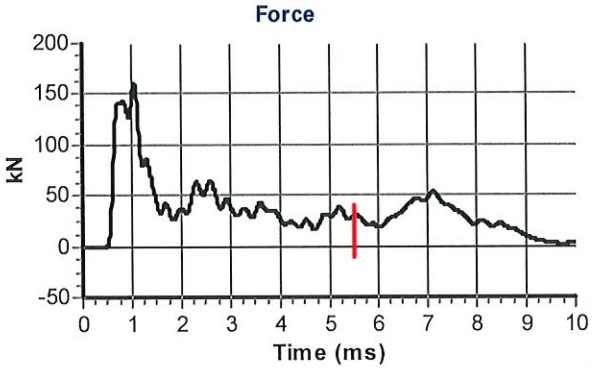
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.7
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

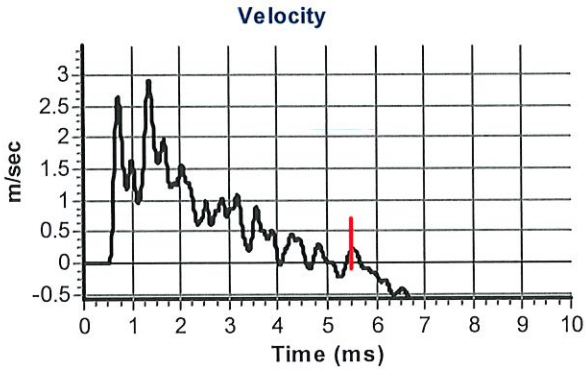
SPT Hammer Information

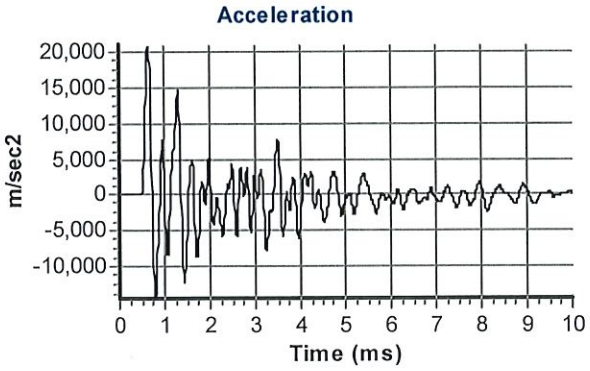
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

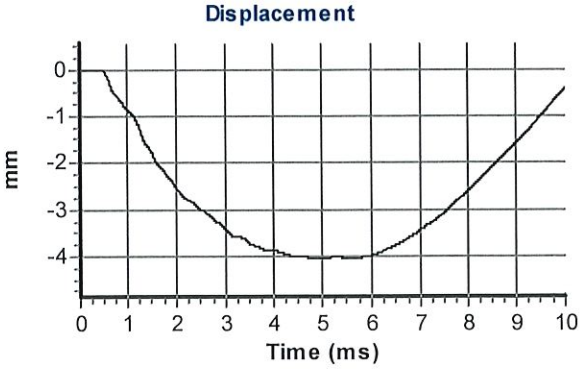
Comments / Location

CAUSEWAY









Calculations

Area of Rod A (mm2):	996
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	309

Energy Ratio E_r (%): **65**

Signed: Bob Stewart

Title: Technician

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref:	1353
Test Date:	13/09/2023
Report Date:	20/09/2023
File Name:	1353.spt
Test Operator:	TJ

Instrumented Rod Data

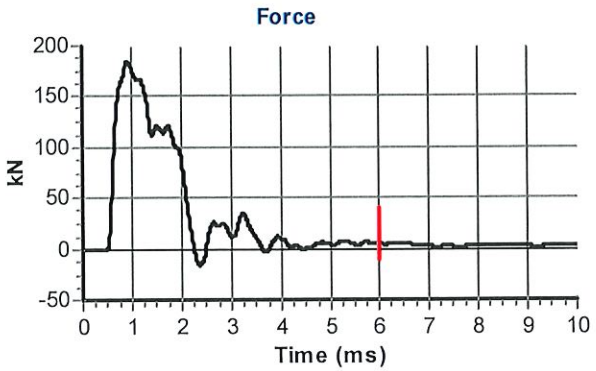
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.6
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

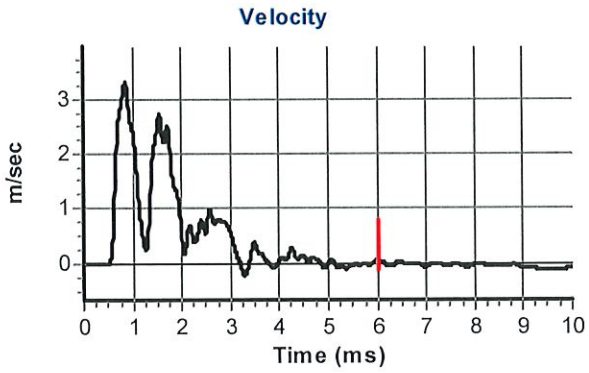
SPT Hammer Information

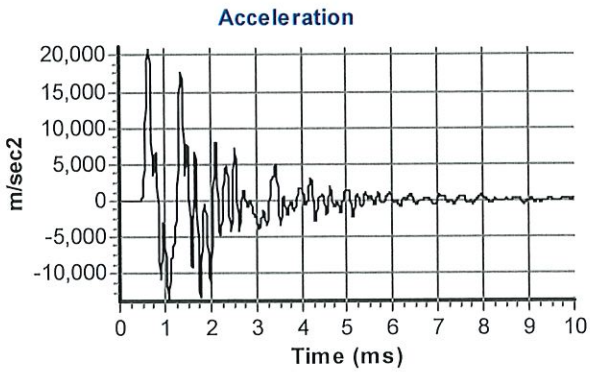
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	29.7

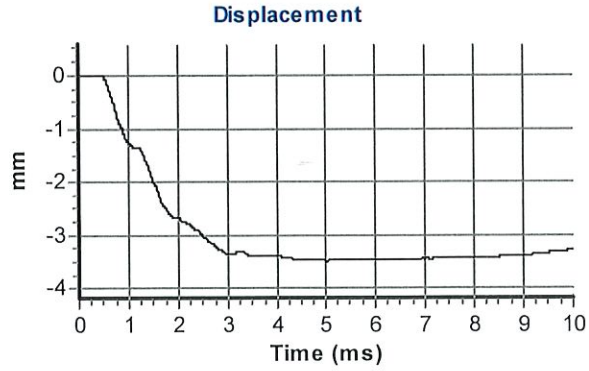
Comments / Location

Midleton









Calculations

Area of Rod A (mm2):	983
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	393

Energy Ratio E_r (%): **83**

Signed: Tom

Title: Technician

The recommended calibration interval is 12 months