

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





CONTENTS

Document Control Sheet

Note on: Methods of describing soils and rocks & abbreviations used on exploratory hole logs

1	AUT	'HORITY	5
2	SCO	PE	5
3	DES	CRIPTION OF SITE	5
4	SITE	OPERATIONS	
	4.1	Summary of site works	6
	4.2	Boreholes	6
		4.2.1 Light cable percussion boreholes	6
		4.2.2 Sonic drilled boreholes	7
	4.3	Standpipe installations	7
	4.4	Trial Pits	8
	4.5	Slit trenches	8
	4.6	Infiltration tests	8
	4.7	Surveying	
	4.8	Groundwater monitoring	9
5	LAB	ORATORY WORK	9
	5.1	Geotechnical laboratory testing of soils	
	5.2	Environmental laboratory testing of soils	9
6	GRO	OUND CONDITIONS	10
	6.1	General geology of the area	10
	6.2	Ground types encountered during investigation of the site	10
	6.3	Groundwater	10
7	REF	ERENCES	11





APPENDICES

Appendix A Site and exploratory hole location plans

Appendix B Borehole logs

Appendix C Sonic sample photographs

Appendix D Trial pit logs

Appendix E Trial pit photographs

Appendix F Slit trench logs and drawings

Appendix G Slit trench photos

Appendix I Soakaway pit logs and test results
Appendix I Geotechnical laboratory test results
Appendix J Environmental laboratory test results

Appendix K SPT hammer energy measurement report





Document Control Sheet

Report No.:		23-0881F			
Project Title:		NDFA Social Ho Factual Report	using Lot 3 – Cool	laghknock Glebe	
Client:		NDFA			
Client's Repres	sentative:	Malone O'Regar	n Consulting Engir	neers	
Revision:	A00	Status:	Final for Issue	Issue Date:	22 nd January 2024
Prepared by:		Reviewed by:		Approved by:	
Radiel	White	hia.	Ross.	Jam O	log.
Rachel White B.A. (Mod.) Geo	science	Sean Ross BSc MSc PGeo M	1IEI	Darren O'Maho BSc MSc MIEI E	

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.
В	Bulk disturbed sample.
LB	Large bulk disturbed sample.
SB	Sonic bulk disturbed sample.
D	Small disturbed sample.
С	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.
$\overline{}$	Water strike: initial depth of strike.
T	Water strike: depth water rose to.
Abbreviations relating to	o 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.



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 (mbg	gl)	
Date	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.



APPENDIX A SITE AND EXPLORATORY HOLE LOCATION PLANS





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: 20/12/2023

Scale:

1:10000



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



APPENDIX B
BOREHOLE LOGS



	A) c	AUSEW	/ / \\			ct No.			cial Housing Lot 3 - Cool	aghknock Glel	pe B	orehole I
		—GEOT	ECH		23-0	881F	Client:					BH01
Meth	and I	Plant Used	Top (m) Ba	so (m)	Coord	inates	Client's	Rep: Malone	O'Regan Consulting Engi I	neers T		Shoot 1 of
Cable Per		Dando 2000		0.90			Final De	epth: 0.90 m	Start Date: 10/11/2023	Driller: KF		Sheet 1 of Scale: 1:40
						6.50 E 5.55 N	Elevatio	n: 99.70 mOD	End Date: 10/11/2023	Logger: SR		FINAL
Depth (m)	Sample / Tests	Field Records	Cas De (r	ing Water oth Depth	Level mOD	Depth (m)	Legend	1	Description	<u>. </u>	Water	Backfill
50	ES1				99.60	0.10			eyish brown sandy clayey sub: I low cobble content. Sand is fi ular.			
					98.80	- 0.90			End of Borehole at 0.90m			
						- - - - - -						
						- - - - -						3
						- - - -						3
						- - - -						
						- - - -						<u> </u>
						- - - -						5
						- - - -						6
						- - - -						-
						-						
	Water 9	Strikos		منالمون	g Details		Remarks					
k at (m) (Time (min) Rose to (e (hh:mm)	Inspection	n pit hand dug to 1.20 dwater encountered.	m.			
Casing [Details Diameter	Water Added From (m) To (m)					Terminat	tion Reason		lact	Update	ed 💻
		1	1	1	1					1 =30.		

		CAUSEW	СН			Project	881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe Client: NDFA Client's Rep: Malone O'Regan Consulting Engineers	Borehole ID BH01A
Metho Sonic Dri		Plant Used Fraste CRS-XL Duo	Top (m) 0.00	Base (10.2		Coord	inates	Final Depth: 10.20 m Start Date: 13/12/2023 Driller: RC	Sheet 1 of 2 Scale: 1:50
	_					67402 71299		Elevation: 99.87 mOD End Date: 13/12/2023 Logger: AM	FINAL
Depth (m)	Sample / Tests	Field Records		Casing W Depth D (m)		Level mOD	Depth (m)	Legend Description	Mackfill Backfill
0.00		13-12-2023		0.00		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.	0.5
1.20 - 1.65 1.20 - 2.00 1.20 - 2.70 1.20 - 1.65	D1 B13 SB2 SPT (S)	N=16 (8,8/5,4,4,3)		1.20 0		98.67	1.20	Medium dense greyish brown sandy subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.	1.5
2.00 - 2.70 2.70 - 3.15	B14				9	97.87	2.00	Medium dense greyish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to coarse of various lithologies.	2.0
2.70 - 4.20 2.70 - 3.15 2.90 - 3.50 3.50 - 4.20	SB4	N=11 (4,4/3,3,2,3)		2.70 0.		96.37	3.50		3.0
4.20 - 4.50 4.20 - 4.65	B17 D5							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.	4.0
4.20 - 5.70 4.20 - 4.65 4.50 - 5.00 5.00 - 5.65	SB6 SPT (S) B18 B19	N=16 (3,3/4,5,4,3)		4.20 0		95.37	4.50	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.	5.0
5.65 - 5.70 5.70 - 6.15 5.70 - 7.20 5.70 - 6.15 6.10 - 6.70	B21	N=36 (5,5/8,10,9,9)		5.70 0.	50 9	93.77	6.10	5.65m to 5.70m: Stiff greyish brown gravelly CLAY 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.	6.0
6.70 - 7.20 7.20 - 7.58 7.20 - 8.70 7.20 - 7.58	D9 SB10 SPT (S)	50 (8,12/50 for 225mm)	7.20 0.		92.67	7.20	Low recovery: Dense grey subangular fine to coarse GRAVEL of various lithologies.	7.0 —
8.20 - 8.40 8.40 - 8.70 8.70 - 10.20	B23 B24 SB12					91.47 91.17	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	8.0 — — — — 8.5 —
8.70 - 8.93 8.70 - 8.93 8.70 - 8.93 9.20 - 9.40	D11 SPT (S) B25	50 (12,13/50 for 75mm		8.70 0		J1.1/	5.70	lithologies. Cobbles are of limestone. 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.	9.0
	asing to (m	r Strikes		tion pit		dug to 1 counter			
To (m) D 10.20	etails iam (mm 177	Water Added From (m) To (m) 0.00 10.20							
			Core	Barre		Flush Wat		Termination Reason Last Up Terminated at scheduled depth. 22/01.	

Meti	hod	Plant U	Jsed Jsed	Top (m)				881F	Client: Client's Final De			nsulting Engii	neers Driller:	RC	S	heet 2 o	f 2
Sonic D	rilling	Fraste CRS	-XL DUO	0.00	10	.20		7.05 E 7.27 N	Elevatio			13/12/2023	Logger:			Scale: 1: FINAL	
Depth (m)	Sample / Tests	Fie	eld Records		Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Des	cription	1	1	Water	Backfill	
10 - 10.20	Water	Strikes Time (min)	Rose to (m		arks.	oit har	90.47 89.67	10.20		Very stiff brown sar Sand is fine to coars lithologies. Cobbles	se. Gravel is su are of limesto	bangular fine to	cobble co	ntent. various			9.5 10.0 - 10.5 11.0 - 11.5 12.0 - 13.5 14.0 - 15.5 16.0 - 17.5 18.0 - 18.5
Casing	Details	Water	Added														
Го (m)	Diam (mm)	From (m)	To (m)														
10.20	177	0.00	10.20	Core	e Barı	rel	Flush	Type	Terminat	ion Reason				Last Up	odate	ed 🔳	_
		1		50.1				er						22/01,			╝

	<u>c</u>	AUSEW	/AY ECH				t No. 881F	Project Client: Client's	NDFA	cial Housing Lot 3 - Cool O'Regan Consulting Engi		ebe E	Borehole I BH02
Meth		Plant Used	Top (m)		_	Coord	inates		-		Driller: BE		Sheet 1 of :
Cable Perc	cussion	Dando 2000	0.00	1.65		57410	0.53 E	Final De	eptn: 1.60 m	Start Date: 11/11/2023	Driller: BE		Scale: 1:40
							3.44 N	Elevatio	on: 106.90 mOD	End Date: 11/11/2023	Logger: SR		FINAL
Depth (m)	Sample / Tests	Field Records	5	Depth De		Level mOD	Depth (m)	Legend		Description		Water	Backfill
							-		TOPSOIL				
.40	В4				10	06.50	0.40		Greyish brown sand	ly subangular fine to coarse Gl	RAVEL. Sand is f	ine	0
50	ES1						-		to coarse.				۰
							-						
00 00	D3 ES2						-						1
20 - 1.60 20 - 1.65	B5	N=38 (8,8/9,8,7,14) Ha	ammer SN	1 20 0		05.70	1.20			rn sandy clayey subangular find ntent. Sand is fine to coarse.	e to coarse GRA	VEL	
20 1.05	5 (0)	= 0895		1.20		05.30	- 1.60	0.00	with low cobble col	iterit. Sand is fine to coarse.			1
)5.30)5.25	1:69	0 0	Grey BOULDER. Recogravel.	covered through percussive dr	illing as angular		
							-			End of Borehole at 1.60m			2
							-						
							-						2
							-						
							- - -						3
							-						
							-						3
							-						
							-						
							-						4
							-						
							-						4
							-						
							-						5
							-						
							-						5
							-						
							-						
							-						6
							-						
							-						6
							-						
							-						1 1
							-						
							-						
, , , , , ,		r Strikes	\ 5	Chisel			0.1	Remarks				'	· · ·
ick at (m) C	asing to (m	Time (min) Rose to (m) From 1.6		Го (m) 1.65		(hh:mm) 0:45		n pit hand dug to 1.20 us groundwater strikes	lm. s - water added during drilling.			
Casing D		Water Added											
To (m) 1.20	Diameter 200	From (m) To (m) 0.40 1.60	\dashv										
								Termina	tion Reason		La	st Updat	ed
		1	1						ed on refusal.			22/01/202	

	C	AUSEW				ct No. 881F	Project Client:	Name: NDFA Social Housing L NDFA	LOU 3 - COOIAGHKHOC		rehole ID BH02A
		GLOTI	LCII				Client's	Rep: Malone O'Regan Cons	sulting Engineers		
Metho Sonic Dri		Plant Used Fraste CRS-XL Duo	Top (m) 0.00	Base (m) 10.20	67410	2.79 E	Final De		· ·	RC So	eet 1 of 2 cale: 1:50
						5.35 N	Elevatio	: 105.58 mOD End Date : 1	.4/12/2023 Logger:		FINAL
Depth (m)	Sample / Tests	Field Records 14-12-2023		Casing Depth Depth (m) C.00 Dry	Level mOD	Depth (m)	Legend	Descrip	otion	Water	Backfill
.00		14-12-2023		0.00 Bry	105.28	0.30	0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	Greyish brown very sandy subround low cobble content. Sand is fine to c			0.5
20 - 1.65 20 - 1.70 20 - 2.70	D1 B13 SB2	N 42 /5 5 /4 4 2 2 \		4 20 0 50	104.38	1.20		Medium dense greyish brown slight fine to coarse GRAVEL of various lith 1.40m to 1.50m: Very clayey: borderline CLAY			1.5
20 - 1.65 70 - 2.30	SPT (S) B14	N=13 (5,5/4,4,3,2)		1.20 0.60	103.88	1.70		Medium dense greyish brown fine to fine to coarse GRAVEL of various lith 1.80m to 2.00m: Very clayey: borderline CLAY		ingular	2.0
2.30 - 2.70 2.70 - 3.15 2.70 - 4.20 2.70 - 3.15	D3 SB4	N=6 (1,1/2,2,1,1)		2.70 0.60	103.28	2.30		Loose brown slightly gravelly fine to subangular fine to coarse of various			2.5
3.20 - 3.70 3.70 - 4.20	B16	11-0 (1,1/2,2,1,1)		2.70 0.00	102.38	3.20		Loose greyish brown sandy subangu various lithologies with low cobble c Cobbles are subrounded of limeston	content. Sand is fine to c		3.5
.20 - 4.65 .20 - 4.70 .20 - 5.70 .20 - 4.65 .70 - 5.10	D5 B18 SB6 SPT (S) B19	N=10 (2,2/3,3,2,2)		4.20 0.60	101.38	4.20	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Medium dense greyish brown sandy GRAVEL of various lithologies with lo coarse. Cobbles are subrounded of I	ow cobble content. Sand	d is fine to	4.0
5.10 - 5.70 5.70 - 6.15 5.70 - 7.20	B20 D7 SB8				100.48	5.10		Medium dense greyish brown slight Gravel is subangular to subrounded lithologies.			5.0
.70 - 6.15 .40 - 7.20	SPT (S) B21	N=16 (3,3/5,5,3,3)		5.70 0.60	99.18	6.40	, a , a , a , a , a , a , a , a , a , a	Medium dense greyish brown sandy GRAVEL of various lithologies with Ic coarse. Cobbles are subrounded of I	ow cobble content. Sand		6.0
2.20 - 7.65 2.20 - 8.70 2.20 - 7.65 2.60 - 8.10	B22	N=22 (2,6/6,7,5,4)		7.20 0.60							7.0
3.70 - 10.20 3.70 - 9.15 3.70 - 9.20	SB12 D11 B24	N=27 (9 9/40 41 9 9)		8 70 0 60	96.88	8.70		Dense greyish brow sandy clayey sul of various lithologies with low cobbl Cobbles are subrounded of various I	le content. Sand is fine t		9.0
.70 - 9.15 .20 - 9.70	SPT (S) B25	N=37 (8,8/10,11,8,8)		8.70 0.60			- 10 ° 10 ° 10 ° 10 ° 10 ° 10 ° 10 ° 10				
, , ,		Strikes	Rema					<u> </u>			
Casing De		Water Added From (m) To (m)		tion pit ha pundwater	-						
10.20	177	0.00 10.20	Core	Barrel	Flush	Туре	Terminat	on Reason		Last Updated	
		1	-2.0							1	

	1					Proje	ct No.	Project Na	ime: NDFA So	cial Housing	g Lot 3 - Cool	aghknock (Glebe I	Borehole II
	C	AUSEV	VA	Y		23-0	881F	Client:	NDFA					BH02A
		GEOT	ECI	Н				Client's Re	ep: Malone	O'Regan Co	nsulting Engi	neers		
Metho Sonic Dr		Plant Used Fraste CRS-XL Duc			ase (m)		inates	Final Depth			14/12/2023	Driller: R	С	Sheet 2 of 2 Scale: 1:50
							2.79 E 5.35 N	Elevation:	105.58 mOD	End Date:	14/12/2023	Logger: A	.М	FINAL
Depth (m)	Sample /	Field Record	ds	C	Casing Water Depth Depth (m) (m)	Level	Depth (m)	Legend		Desc	cription		Water	Backfill
(m) .70 - 10.20	B26	FIELD MECOTO			repth Depth (m)	95.38	10.20	Legend			hole at 10.20m		MA	9.5 10.6 10.5 11.6 12.6 12.5 13.6 14.6 15.6 15.6 16.6 17.6 17.6 18.6 17.6 18.6 18.6 18.6 18.6 18.6 18.6 18.6 18
							-							18.5
	Water	Strikes	R	lemarl	(S	<u> </u>	<u> </u>							
Casing D	Casing to (m	Time (min) Rose to Water Added	(m) In	nspectio	on pit ha	nd dug to encounter	1.20m. red.							
To (m) [Diam (mm) 177	From (m) To (m 0.00 10.20	0	Core B	Barrel	Flush	Туре	Termination	Reason				Last Updat	ed I
		1				Wat	er	Terminated at	scheduled depth				22/01/202	

							ect No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe	
		CAUSE	MA	Y		23-	0881F	Client: NDFA	ВН03
		——GEO	TEC	.H				Client's Rep: Malone O'Regan Consulting Engineers	
Metho		Plant Used Dando 2000		p (m) l 0.00	Base (m 3.50		rdinates	Final Depth: 3.50 m Start Date: 09/11/2023 Driller: BE	Sheet 1 of 1 Scale: 1:40
							085.00 E 075.10 N	Elevation: 102.68 mOD End Date: 10/11/2023 Logger: SR	FINAL
Depth (m)	Sample / Tests	Field Reco	ords		Casing Wate Depth Dept (m) (m)	h	Depth (m)	Legend Description	at Backfill
	Tests ES1 B4 D3 ES2 B7 B5 SPT (C) B6 D10 B8 SPT (C) D11 B9 SPT (C)	N=31 (6,7/7,8,7,9) (0895) N=34 (8,8/9,8,8,9) (0895) N=31 (6,8/7,9,8,7) (0895) 50 (25 for 30mm/50)	Hamme Hamme	:r SN = ;: :r SN = ;:	1.20 Dr. 2.00 Dr.	102.13 101.43	(m)	TOPSOIL Greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Dense greyish brown very sandy slightly clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded. End of Borehole at 3.50m	Backfill 0.5 1.0 1.0 4.0 4.0 4.0 6.5 6.6 7.0
ck at (m) c		r Strikes	to (m)			ng Detai		Remarks	
ruck at (m) Ca	asing to (m	Water Added	d	From (r 0.50	n) To		is me (hh:mm) 04:00	Remarks Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.	
	222	0.50							
To (m) [200	0.50 3.5	50					Termination Reason Last Up	odated

		SALICENA	/^*			ect No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe	Borehole
		CAUSEM	AY		23-0	0881F	Client: NDFA	ВН04
		GEOT	ЕСП				Client's Rep: Malone O'Regan Consulting Engineers	
Metho Cable Percu		Plant Used Dando 2000	Top (m)	Base (m 7.50		dinates 96.98 E	Final Depth: 7.50 m Start Date: 23/10/2023 Driller: BE	Sheet 1 of Scale: 1:4
						54.60 N	Elevation: 101.31 mOD End Date: 24/10/2023 Logger: SR	FINAL
Depth (m)	Sample / Tests	Field Records		Casing Water Depth Dept (m) (m)	h Leve.	Depth (m)	Legend Description	Backfill
.50	B4 ES1				101.21	0.10	TOPSOIL Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	
.00 .00 .20 - 1.50 .20 - 1.65 .20 - 1.65 .50 - 1.70	D3 ES2 B5 B7 SPT (C) B6	N=11 (2,3/3,3,3,2)		1.20 Dr	100.11	1.20	Medium dense locally loose greyish brown gravelly very silty fine to coarse SAND. Gravel is subangular fine to medium.	
.00 .00 - 2.45 .00 - 2.45	D9 B8 SPT (C)	N=8 (2,2/2,2,2,2)		2.00 Dr	y 98.91	- 2.40	Loose light grey gravelly slightly silty fine to coarse SAND. Gravel is	
.70	B10					-	subrounded fine to medium.	
3.00 3.00 - 3.45 3.00 - 4.00 3.00 - 3.45	D13 D11 B12 SPT (S)	N=18 (2,3/4,4,5,5)		3.00 Dr	98.31 y	3.00	Medium dense light grey gravelly slightly silty fine to coarse SAND. Gravel is subrounded fine to medium.	
6.00 6.00 - 4.45 6.00 - 5.00 6.00 - 4.45	D14 D16 B15 SPT (S)	N=19 (1,3/4,5,5,5)		4.00 Dr	97.31 y	4.00	Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine.	-
5.00 5.00 - 5.45 5.00 - 6.50 5.00 - 5.45	D19 D17 B18 SPT (S)	N=18 (2,4/4,5,5,4)		5.00 Dr	у			
5.00 5.20 5.50 - 7.50 5.50 - 6.67	D21 B20 B22 SPT (C)	50 (25 for 125mm/50	for 45mm	6.50 0.0	94.81	- 6.50	Dense grey sandy silty subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.	-
7.00	D23					-		
uck at (m) Ca		r Strikes a) Time (min) Rose to (i	m) From 6.2	(m) To	ng Detail o (m) Tir 7.50	s ne (hh:mm) 02:00	Remarks Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.	
Casing De To (m) D 7.50 D	etails Diameter 200	Water Added From (m) To (m) 6.20 7.50					Termination Reason Last Up	
							Termination Reason Last Up	

XX		ALICE	A/A	V			ect No.		Name: NDFA So	ciai Housin	g Lot 3 - Cool	agnknock	ыере	Borehol	
8		AUSE\ GEO	TEC	H		23-0	0881F	Client:	NDFA					BH0	4
								Client's	Rep: Malone	O'Regan Co	nsulting Engi	neers			
Meth ole Pero	od cussion	Plant Used Dando 2000		(m) Ba	se (m) 7.50		dinates 96.98 E	Final De	pth: 7.50 m	Start Date:	23/10/2023	Driller:	BE	Sheet 2 Scale: 1	
							54.60 N	Elevatio	n: 101.31 mOD	End Date:	24/10/2023	Logger:	SR	FINA	۱L
epth (m)	Sample / Tests	Field Reco	ords	Cas De (r	ing Water oth Depth	Level mOD	Depth (m)	Legend	'	Des	cription		Water	Backfil	ı
						93.81	- - 7.50	× × ×		End of Bore	ehole at 7.50m				7.
															8.
															ľ
															8
							-								
							-								9
							-								
							-								
							-								9
							-								
							[10
							-								
							[10
							-								
							-								11
							-								11
							-								
							-								
							-								12
							-								
							-								12
							-								
							-								
							F								13
							[
							-								13
							Ŀ								14
							-								
							-								
							-								14
at (m) C	Water Starting to (m)	Strikes Time (min) Rose t	to (m) F			Detail	S ne (hh:mm)	Remarks	pit hand dug to 1.20	lm					
,,	5 /- (***)	, .,, .,		6.20	7.5		02:00		s groundwater strike:		d during drilling.				
m)	Details Diameter	Water Adde	(m)												
50	200	6.20 7.5						Terminat	ion Reason			T	Last Upda	ted T	_
									d on refusal.				22/01/202		_

						Proje	ct No.	Project	: Name: NDFA So	icial Housing Lot 3 - Cool	aghknock Gle	be Bo	rehole IE
		CAUSEW	/AY			23-0	881F	Client:	NDFA				BH05
	_	——GEOT	ECH					Client's	Rep: Malone	O'Regan Consulting Engir	neers		
Meth	od	Plant Used	Top (m)	Base	e (m)	Coord	linates					Sh	eet 1 of 1
able Perd	cussion	Dando 2000	0.00	5.8	80	67405	54.07 E	Final De	epth: 5.80 m	Start Date: 24/10/2023	Driller: BE	Sc	cale: 1:40
)7.56 N	Elevatio	98.61 mOD	End Date: 25/10/2023	Logger: SR		FINAL
Depth (m)	Sample , Tests	/ Field Records	i	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Description		Water	Backfill
00 - 1.00	B4					98.41	- 0.20		TOPSOIL	II CLAY C. I. C.			
							-		subangular fine to n	ravelly CLAY. Sand is fine to coa medium.	irse. Gravei is		
.50	ES1						-						0.5
							-						
00	B5					97.61	1.00		Firm brown slightly	sandy slightly gravelly CLAY. Sa	and is fine to		1.0
00 00	D3 ES2						-			brounded fine to medium.			
20 - 1.65 20 - 2.00	D6 B7						-						
20 - 1.65	- 1	N=12 (3,3/3,3,3,3) Har	mmer SN =	1.20	Dry		-						1.5
		0895											
00	D10												2.0
00 - 2.45 00 - 3.00	D8 B12						Ĺ						
00 - 2.45		N=12 (2,2/3,3,3,3) Har 0895	mmer SN =	2.00	Dry		[2.5
													2.
00	B11						-						3.
00 - 3.45 00 - 4.00	D9 B13						-						
00 - 3.45		N=13 (3,3/3,4,3,3) Har 0895	mmer SN =	3.00	Dry								
							[3.
00	D14						Ĺ						4.
00 - 5.00 00 - 4.45	B15 SPT (S)	N=12 (3,3/3,3,3,3) Har	nmer SN =	4.00	Dry		Ĺ						
		0895					_						

00 00 - 5.45	D16 D17						_						5.0
00 - 5.80	B18						=						
00 - 5.45	SPT (S)	N=10 (2,3/3,2,2,3) Har 0895	mmer SN =	5.00	Dry		_						5.5
							_						
80 - 5.82	SPT (C)) 50 (25 for 5mm/50 for Hammer SN = 0895	15mm)	5.80	Dry	92.81 92.81	5.80		A .	mestone. Recovered through c	hiselling as angu	ular /	
		11ammer 3N = 0893				JZ. 61	_		\gravel.	End of Borehole at 5.80m		_/	6.0
							-						
							-						6.5
							-						
							-						
							_						7.
							-						
	\A/a+a	er Strikes		Chic	منالو	g Details		Remarks					
ıck at (m) C		m) Time (min) Rose to (m)	To (m) Tim	e (hh:mm)		i n pit hand dug to 1.20	Dm.			
			5.80)	5.8	30	01:00			s - water added during drilling.			
Casing D		Water Added											
5.80	Diamete 200	r From (m) To (m)	\dashv										
								Terminat	tion Reason		Las	t Updated	
			1	1				T	d on refusal.		1	2/01/2024	

						Proi	ect No.	Project	: Name: NDFA So	cial Housin	g Lot 3 - Cool	laghknock	Glebe Bo	orehole ID
	8	CAUSEW	/AY				0881F	Client:	NDFA		6 2010 000.			BH06
		GEOT	ECH					Client's		O'Regan Co	nsulting Engi	neers		26
Meth	od	Plant Used	Top (m)	Base	e (m)	Coor	rdinates	Chemes				1	SI	heet 1 of 1
Cable Per		Dando 2000	0.00	_	.00			Final De	epth: 5.00 m	Start Date:	07/11/2023	Driller:	BF I	Scale: 1:40
							211.26 E 909.53 N	Elevatio	on: 101.26 mOD	End Date:	08/11/2023	Logger:	SR	FINAL
Depth (m)	Sample / Tests	Field Records	i	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Des	cription		Water	Backfill
.00 - 1.00	В3						-		TOPSOIL					
						100.96	0.30		Soft brown slightly			and is fine to	coarse.	
.50	ES1						-		Gravel is subrounde	ed fine to coar	se.			0.5 -
							-							
.00	D6					100.26	1.00		Soft becoming firm	orangish brov	vn slightly grave	lly sandy CLA	AY. Sand	1.0
00 00 - 1.20	ES2 B4								is fine to coarse. Gr					
20 - 1.65 20 - 2.00	D5 B8						-							1.5 -
20 - 1.65	SPT (S)	N=6 (1,0/1,2,2,1)		1.20	Dry		-							
							-							
.00	B11 D12						-							2.0 —
.00 - 2.65 .00 - 2.80	D7 B9						-							
.00 - 2.45		N=8 (1,1/2,2,2,2) Ham	ımer SN =	2.00	Dry		-							2.5 -
.80	B10	0895				98.46	- 2.80							
80 00 - 3.45	D13					98.40	2.80		Stiff brown slightly Gravel is subangula			and is fine to	coarse.	3.0 —
00 - 4.00	B17								Graver is subuniquia	· ····c to ····cu·				3.0
00 - 3.45	SPT (S)	N=21 (3,5/5,6,5,5) Hai 0895	mmer SN =	3.00	Dry									
														3.5
							-							
.00	D15						-							4.0 —
.00 - 4.45 .00 - 5.00	D14 B18						-							
00 - 4.45		N=28 (6,8/8,6,7,7) Hai	mmer SN =	4.00	Dry		-							
		0895					ŀ							4.5 -
							-							
.00	D16	50 /05 (40 /50 (25 \			96.26	5.00			End of Bore	ehole at 5.00m			5.0 —
00 - 5.04	SPI (S)	50 (25 for 10mm/50 for Hammer SN = 0895	or 25mm)	5.00	Dry		[
														5.5 -
							-							
							-							
							-							6.0 -
							-							
							-							6.5 -
							Ī							
							-							7.0
							-							/
							-							
		r Strikes				g Detail		Remarks						
uck at (m) C	Casing to (n	n) Time (min) Rose to (m) From 5.0			(m) Tii 00	me (hh:mm) 01:00		n pit hand dug to 1.20 Is groundwater strike		ed during drilling	_		
							·		o. oaawater strike			-		
Casing D	Details	Water Added	\dashv											
	Diameter 200		\exists											
3.00	200							Terminat	tion Reason				Last Update	d I
								Terminate	d on refusal.				22/01/2024	VCS
								.c.mmate	5				, 01, 2024	<u>allo</u>

Company Comp	B		AUSEW	/ΔΥ			ct No.	Project Client:		cial Housing Lot 3 - Cool	aghknock Gl	ebe B	orehole II BH07
Method Plant Used Top (m) Susse (m) Coordinates College Percussion Dando 2000 O.00 1.00	8		——GEOT	ECH		23-0	0011			O'Regan Consulting Engi	neers		БПО7
Cable Percussion Dando 2000 0.00 1.20 Final Depth: 1.20 m Start Date: 07112/03 Driller: FF Scale: 1:	Metho	od	Plant Used	Top (m)	Base (m)	Coord	dinates		-				Sheet 1 of 1
								Final De	pth: 1.20 m	Start Date: 07/11/2023	Driller: KF		Scale: 1:40
Water Strikes Water Strikes Chaelling Details Water Strikes Chaelling Details Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine to coarse GRAVEL Denne groyish brown sandy sithy subrounded fine t								Elevatio	n: 99.88 mOD	End Date: 07/11/2023	Logger: SR		FINAL
So S1 S7 (5) N=60 (6,7/10.13.15.22) 1,000 0.00 98.68 1,20 S7 (5) N=60 (6,7/10.13.15.22) 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 1,000 0.00 0.00 1,000 0.00 0.00 0.00 1,000 0.00 0.00 0.00 0.00 0.00 0.00 0.0			ole / Field Records Casing W. Depth De (m) (n)	Casing Depth (m) (m)			Legend		Description		Water	Backfill	
SST							-		Greyish brown sand				0.
Lock at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) Time (hh:mm) Casing Details To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20 To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) Time (hh:mm) Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.)	ES2	N=60 (5,7/10,13,15,22)	1.00 0.00		-	**************************************	with low cobble cor	ntent. Sand is fine to coarse. Co	to coarse GRAN obbles are	/EL	1.
Lack at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) Time (hh:mm) Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling. Casing Details Water Added To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20							- - - - -						2.
Casing Details Water Added To (m) Diameter From (m) To (m) To (m) To (m) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) To (m)							- - - - -						2.
Casing Details O(m) Diameter From (m) To (m) Diameter From (m) To (m) Diameter From (m) Diameter From (m) To (m) T							- - - -						3.
Casing Details Water Added To (m) Diameter From (m) To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20 To (m) Time (hh:mm) To (m) Time (hi:mm) To (m)							- - - -						3.
Casing Details Water Added To (m) Diameter From (m) To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20 To (m) Time (hh:mm) To (m) Time (hi:mm) To (m)							- - - -						4.
Casing Details O(m) Diameter From (m) To (m) Diameter From (m) To (m) Diameter From (m) Diameter From (m) To (m) T							- - - -						5.
Casing Details Water Added To (m) Diameter From (m) To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20 To (m) Time (hh:mm) To (m) Time (hi:mm) To (m)							- - - -						5.
Casing Details Water Added To (m) Diameter From (m) To (m) To (m) To (m) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) To (m)							- - - -						6.
Casing Details Water Added To (m) Diameter From (m) To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20 To (m) Time (hh:mm) To (m) Time (hi:mm) To (m)							- - - -						6.
Casing Details To (m) Diameter From (m) To (m) Time (min) Rose to (m) Time (m) To (m) Diameter From (m) To (m) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm)							-						
Casing Details Water Added To (m) Diameter From (m) To (m) To (m) To (m) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) Time (hh:mm) To (m) Time (hh:mm) To (m) Time (hh:mm) To (m) To (m)													
To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20	ck at (m) Ca			m) From (Inspection	pit hand dug to 1.20				
To (m) Diameter From (m) To (m) 1.00 200 0.00 1.20	Casing D	etails	Water Added										
	(m) [Diameter	From (m) To (m)										
Termination Reason Last Updated Terminated on refusal and move to position BH07A. 22/01/2024													

		CAUSEV	Υ ΔΥ			Project 23-0		Client:		icial Housing Lot 3 - Cool	Spinifick C		orehole l BH07A
	_	GEOT	ECH					Client's		O'Regan Consulting Engi	neers		2110771
Metho	od	Plant Used	Top (m)	Base	(m)	Coord	inates		-				Sheet 1 of
able Perc	ussion	Dando 2000	0.00	1.5	_	67417	6 88 F	Final De	epth: 1.50 m	Start Date: 07/11/2023	Driller: KF	-	Scale: 1:4
						71286	4.60 N	Elevatio	on: 100.53 mOD	End Date: 08/11/2023	Logger: SF		FINAL
Depth (m)	Sample / Tests	Field Record	s	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Description		Water	Backfill
						99.53	- 0.10		Dense greyish brow with low cobble cor	dy silty subrounded fine to coa . Sand is fine to coarse. Cobble on sandy silty subrounded fine ttent. Sand is fine to coarse. C	es are subroun	ded.	
0 - 1.54	SDT (C)	50 (25 for 15mm/50 f	for 20mm)	1 50	Dry	99.03	- - - 1.50	a×, a×,	subrounded.	End of Borehole at 1.50m			
uck at (m) Ca		r Strikes	(m) From 1.5	(m)	To (i				n pit hand dug to 1.20	Om. s - water added during drilling.			
	Diameter												
1.50	200	0.10 1.50						Termina	tion Reason		L	ast Updat	ed 🔳
								Terminate				22/01/202	

S		AUSEW	ΔΥ			Project 23-0		Client:	: Name: NDFA So NDFA	Ciai nousiii	5 201 3 6001	ag	K GICBC		orehole BH071	
		GEOTI				23-0	0011				h: e :				DI IO71	,
****		District Land		.			•	Client's	s Rep: Malone	O'Regan Co	nsulting Engi	neers				
Metho Sonic Dril		Plant Used Fraste CRS-XL Duo	Top (m) 0.00	10.2		Coord	inates	Final De	epth: 10.20 m	Start Date:	12/12/2023	Driller:	RC		heet 1 o Scale: 1:	
	Ū					67417									Jeale. 1.	
						71285	8.66 N	Elevatio	n: 99.97 mOD	End Date:	13/12/2023	Logger:	AM		FINAL	-
Depth (m)	Sample / Tests	Field Records		Casing V Depth D (m)	Vater lepth (m)	Level mOD	Depth (m)	Legend		Des	cription			Water	Backfill	
						99.67	0.30		TOPSOIL							
						33.07	0.50	0 0 0 0 0 0	Dark greyish brown with low cobble cor							0.5
								0 0								
								9 9 9								1.0
.20 - 1.65	D1					98.77	1.20	g 0	Medium dense grey	ish hrown sar	udy slightly clave	v subroun	ded fine			ı
.20 - 1.70 .20 - 2.70	B13 SB2								to coarse GRAVEL o							1.5
20 - 2.70		N=23 (4,4/6,8,4,5)		1.20 0	.40				Sand is fine to coars	se. Cobbles ar	e rounded.					13
70 - 2.20	B14															ı
20 272	D15					07.77	3.22									2.0
.20 - 2.78	B15					97.77	2.20	× × ×	Dense dark greyish							1
								× × ×	GRAVEL of various I subrounded.	ıtnoiogies. Sai	iu is πhe to coan	se. cobble	s are			2.5
.70 - 3.15 .70 - 3.20	D3 B16						E	×××								ı
.70 - 3.20	SB4							×××								3.0
70 - 3.15 20	SPT (S) B17	N=48 (8,14/12,15,15,6))	2.70 0	.40	96.77	3.20	°×°°	Dense greyish brow	n verv sandv	uhangular to su	hrounded	fine to			İ
20 - 3.70	B18								coarse GRAVEL of li	mestone, silts	tone and sandsto	one with lo				3.5
70 - 4.20	B19							9 9 9	content. Sand is fine subrounded of lime			-				•
									subrounded or nine	storic, sittstor	c and sandstone					İ
20 4.65	D.F.							9 9								4.0
20 - 4.65 20 - 4.70	D5 B20							9 9 9								İ
20 - 5.70	SB6	== /.= /.=						9 9 0								4.5
.20 - 4.65 .70 - 5.20	SPT (S) B21	N=50 (10,14/12,12,13,	13)	4.20 0	.40			0 0								İ
								0 0								5.0
.20 - 5.70	B22					94.77	5.20		Medium dense grey	ish brown sar	ıdv slightly clave	v suhangu	lar fine to			ı
									coarse GRAVEL of v							5.5
.70 - 6.10	B23						Ē									l
.70 - 6.15	D7															l
.70 - 7.20 .70 - 6.15	SB8 SPT (S)	N=23 (4,4/6,6,5,6)		5.70 0	.40	93.87	6.10		Stiff brown slightly a	gravelly sandy	CLAY. Sand is fin	e to coars	e. Gravel			6.0
.10 - 6.65	B24	- () / -/-/-/							is angular to subrou							
.65 - 7.20	B25					93.32	6.65		sandstone.							6.5
.03 - 7.20	B23					33.32	0.03	9 0	Dense greyish brow coarse GRAVEL of li							
							E	9 9 9	content. Sand is fine				ow coppie			7.0
.20 - 7.35	D9								subrounded of lime	stone and silt	stone.					ı
.20 - 7.70 .20 - 8.70	B26 SB11						-	9 9								7.5
.20 - 7.35	SPT (S)	50 (25 for 100mm/50 f	or 50mm)	7.20 0	.40											ı
.70 - 8.20	B27							9 9 9								8.0
.20 - 8.70	B28						-	9 9 9								0.0
								9 9 9								ı
70 10 00	CD42							9 9 9								8.5
.70 - 10.20 .70 - 9.00	SB12 D10							9 9 0								ı
.70 - 9.60	B29	FO /44 40 /FO 5 :=:	,	0 - 5			F	0 0 0								9.0
70 - 9.00	SPT (S)	50 (11,13/50 for 150m	m)	8.70 0	.40		Ē	8 0 0								4
	Water	· Strikes	Rema	rks												
uck at (m) Ca) Time (min) Rose to (r	n) Inspec	tion pit		d dug to 1										
			IAO RIC	zariuWd	נכו פו	ncounter	cu.									
To (m) Di 10.20	etails iam (mm) 177	Water Added To (m) To (m) 0.00 10.20														
			Core	Barre	ı	Flush	Туре	Terminat	tion Reason				Last Up	date	ed 📕	T
							,									Ť

Metho		Plant	EOTE	Top (m)	Base	(m)	23-0	inates	Client: Client's			nsulting Engi				BH07I	
Sonic Dr		Fraste CRS		0.00	10.		67417	6.69 E	Final De			12/12/2023	Driller:		1	Scale: 1:	50
Depth	Sample /				Casing	Water	Level	8.66 N Depth	Elevatio	n: 99.97 mOD		13/12/2023	Logger:	AM	ā	FINAL	—
(m)	Tests	Fie	eld Records		Casing Depth (m)	Water Depth (m)	mOD	(m)	Legend		Des	cription			Water	Backfill	L
60 - 10.20	B30						90.37	9.60	a 9 9 9	Stiff brown slightly is angular to subrou	sandy gravelly unded fine to c	CLAY. Sand is fin coarse of limesto	e to coarse ne and sar	e. Gravel ndstone.			9.5
0.20		13-12-2023			10.2	0.40					Elia di Bole	hole at 10.20m					10.5 11.0 11.5
															12.5		
																	13.0
																	13.5
																	14.5
																	15.0
																	15.5
																	16.0
																	17.0
																	17.5
																	18.0
uck at (m) C		Strikes Time (min)	Rose to (m	Rema		it han	id dug to :	1.20m.									
							encounter										
	iam (mm)		To (m)														
10.20	177	0.00	10.20	Core	Barr	el	Flush	Type	Terminat	ion Reason				Last Up	date	d 💻	<u> </u>
					u.ı		Wat		Terminate					22/01/			,

						Proje	ct No.	Project N	Name: NDFA So	cial Housing Lot 3 - Coola	aghknock Gl	lebe Bo ı	rehole ID
		CAUSEW	AY			23-0	881F	Client:	NDFA				ВН08
		——GEOT	ECH					Client's F	Rep: Malone	O'Regan Consulting Engir	neers		
Metho	od	Plant Used	Top (m)	Base	(m)	Coord	linates		-			She	eet 1 of 2
Cable Perc	cussion	Dando 2000	0.00	8.0	00	67/12	30.90 E	Final Dep	th: 8.00 m	Start Date: 26/10/2023	Driller: BE	Sc	ale: 1:40
							18.94 N	Elevation	: 99.15 mOD	End Date: 07/11/2023	Logger: SR	F	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 ES1					98.95	- 0.20	T I	TOPSOIL MADE GROUND: Bri GRAVEL. Sand is fine	own sandy very clayey subango e to coarse.	ular fine to coa	arse	0.5
00	200					00.05	-						
0.80 0.00 0.00 0.20 - 1.65 0.20 - 1.65	B6 D3 ES2 B4 SPT (C)	N=11 (2,3/3,2,3,3) Har 0895	nmer SN =	1.20	Dry	98.35	- 0.80			m brown slightly sandy slightly ie. Gravel is subangular fine to			1.5
.00 .00 - 2.45 .00 - 2.45	D9 B7 SPT (C)	N=10 (2,3/3,2,2,3) Har 0895	nmer SN =	2.00	Dry								2.5
.00 .00 - 3.45 .00 - 3.45	D10 B8 SPT (C)	N=10 (3,3/3,3,2,2) Har 0895	nmer SN =	3.00	Dry		-						3.0
.80 - 4.60	B11					95.35	- - 3.80		MADE GPOLIND- La	rge fragments of WOOD and w	viro		
.00 .00 - 4.45 .00 - 4.60 .00 - 4.45	D12 B13 B14 SPT (C)	N=15 (2,2/4,6,3,2) Har	mmer SN =	4.00	Dry		-		MADE GROUND. La	ge nagments of WOOD and w	ile.		4.C
		0895				94.55	- - 4.60		Firm grovish hrown	slightly gravelly sandy CLAY. Sa	and is fine to		4.5
00 - 5.45 00 - 5.45	B15 SPT (C)	N=9 (2,2/2,1,3,3) Ham 0895	mer SN =	5.00	0.00		-			prounded fine to medium.	ind is fine to		5.0
						93.45	5.70						9.3
.00	D17					- 12			Dense gravelly claye to coarse.	ey fine to coarse SAND. Gravel i	is subrounded	nne	6.0
.50 .50 - 8.00 .50 - 6.82	B16 B18 SPT (C)	50 (3,10/50 for 175mn Hammer SN = 0895	n)	6.50	0.00	92.65	- 6.50 6.50		Dense greyish brow is fine to coarse.	n sandy slightly silty fine to coa	arse GRAVEL. S	Sand	6.5 7.0
							 - -	× × ×					
		2: "						<u> </u>					
ruck at (m) Ca		r Strikes n) Time (min) Rose to (i	m) From (6.50	m)	To (e (hh:mm) 02:00		oit hand dug to 1.20 groundwater strikes	m. s - water added during drilling.			
Casing D To (m) 8.00	Details Diameter 200	Water Added From (m) To (m) 5.80 8.00					-	Terminatio	on Reason		La	ast Updated	
1		1				1						-	

Name	X						oject No.	Project N	ame: NDFA So	icial Housing L	ot 3 - Cool	aghknocl	k Glebe	Borehole I
Method Plant Used Top (n) Base (m) Coordinates Supplemental Program Continues Supplemental Program Cont			CAUSEM	AY		2	3-0881F	Client:	NDFA					BH08
Application Daniel 2000			——GEOT	ECH				Client's R	ep: Malone	O'Regan Cons	ulting Engi	neers		
Time Time								Final Depti	h: 8.00 m	Start Date: 20	6/10/2023	Driller:	BE	
### Strikes Chiefling Details Strikes Chiefling Details Strikes Chiefling Details Strikes Strikes Chiefling Details Strikes Strikes Chiefling Details Strikes St								Elevation:	99.15 mOD	End Date: 0	7/11/2023	Logger:	SR	FINAL
Substitute Sub	Depth (m)		Field Records		Casing War Depth De (m) (ii	ter pth n) MC		Legend		Descrip	tion		Water	Backfill
(m) Diameter Diameter Diameter Prom (m) To (m) 00 200 5.80 8.00 Termination Reason Last Updated	ock at (m) Ca	B21 D20 SPT (C)	r Strikes Time (min) Rose to (i	m) From	8.00 o.	91. 00 ling Det	tails Time (hh:mm)	Remarks Inspection pit		om.				8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9
00 200 5.80 8.00 Termination Reason Last Updated	o (m) 🛭 🖸	Diameter	From (m) To (m)											
	8.00		5.80 8.00					Tamester **	- Deer				lect!!!	I
Terminated on refusal. 22/01/2024 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								Termination	n Reason				Last Upda	ed

Cable Percussion Dando 2000 0.00 8.00 7.71281.7.07 Final Percussion Scott Date: 08/11/0012 Ordered 1 Cable 1		C	CAUSE\	VA TEC	Y				ect No. 0881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Gle Client: NDFA Client's Rep: Malone O'Regan Consulting Engineers	BH09
Second S								6742	81.70 E		Sheet 1 of 2 Scale: 1:40
100.60			Field Reco	ords		Casing V	Water Depth	Level	Depth		
1.00 1.00).50 E	34				(m)	(m)		-	TOPSOIL Soft light brown slightly sandy slightly gravely CLAY. Sand is fine to	0.5
2.00 - 2.45 87 Column devise greyed frown very sharply slifty subrounded fine to coarse. GRAVEL Sand is fine to coarse. Gravel is subrounded fine to medium. Value	1.00 E 1.20 - 1.65 E 1.20 - 2.00 E	ES2 D5 B6 SPT (S)		Hammer	r SN = 1	1.20	Dry	99.90	1.20		1.5
3.00 - 3.05 S17	2.00 - 2.45 E	B7 B10 SPT (C)		Hammer	r SN = 2	2.00	Dry	99.10	2.00		2.2
1.00	3.00 - 3.45 B	B11 B12 SPT (C)		Hammer	r SN = 3	3.00	Dry		-		3.3
Sociation Section Se	1.00 1.00 - 4.45 1.00 - 4.45	D15 U16 SPT (C)	N=22 (4,6/5,5,6,6)					97.10	4.00		4.
5.50 - 6.95 B24 B18 SPT (C) SN = 39 (5,8/8,11,11,9) Hammer SN = 0.895 7.00 D21 Water Strikes Chiselling Details truck at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) Sn = 0.800 Casing Details Water Added To (m) Diameter From (m) To (m) 8.00 Casing Details Water Added To (m) Diameter From (m) To (m) 8.00 Casing Details Water Added To (m) Diameter From (m) To (m)	5.00 - 5.45 B	B23 B17 SPT (C)		Hammer	r SN = 5	5.00 0	0.00		-		5.
B18 SPT (C) N=39 (5,8/8,11,11,9) Hammer SN = 0895 D21 Water Strikes Chiselling Details truck at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) 8.00 Casing Details Water Added To (m) Diameter From (m) To (m) 8.00 D20 4.00 8.00 Dense brown sandy slightly sirtly subrounded fine to coarse. Cobbles are subrounded. Very stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium. Remarks Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling. Termination Reason Last Updated	5.00 E	D20									6.
truck at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) Time (hh:mm) 8.00 8.00 01:00 Casing Details Water Added To (m) Diameter From (m) To (m) 8.00 8.00	5.50 - 8.00 5.50 - 6.95	B18 SPT (C)		9) Hamn	ner 6	5.50 C	0.00		-	with low cobble content. Sand is fine to coarse. Cobbles are subrounded. Very stiff light brown slightly sandy slightly gravelly CLAY. Sand is fi to coarse. Gravel is subrounded fine to medium.	
truck at (m) Casing to (m) Time (min) Rose to (m) From (m) To (m) Time (hh:mm) 8.00 8.00 01:00 Casing Details Water Added To (m) Diameter From (m) To (m) 8.00 8.00		Water	Strikes			Chise	elling	Detail	s		
To (m) Diameter From (m) To (m)	cruck at (m) Casir	ng to (m	Time (min) Rose t		rom (n		To (r	n) Tin	me (hh:mm)	Inspection pit hand dug to 1.20m.	
Termination Reason Last Updated	To (m) Dia	ameter	From (m) To ((m)							
Terminated on refusal. 22/01/2024											

		ALICE	\ A /	۸V				ct No.		ame: NDFA So	cial Housing	g Lot 3 - Cool	aghknock	Glebe		rehole	
		CAUSE	ОТЕ	CH			23-0	881F	Client:	NDFA						BH09	,
								-	Client's R	ep: Malone	O'Regan Co T	nsulting Engi	neers				_
Metho ble Perc		Plant Used Dando 200		op (m) 0.00	Base 8.0			inates	Final Dept	h: 8.00 m	Start Date:	08/11/2023	Driller:	BE		eet 2 d cale: 1	
							67428 71283	1.70 E 4.44 N	Elevation:	101.10 mOD	End Date:	09/11/2023	Logger:	SR		FINA	
	Sample /	Field Ro	ecords		Casing Depth	Water Depth	Level	Depth (m)	Legend		Desc	ription			/ater	Backfill	Τ
Depth (m) 0 0 0 0 - 8.32	B25 D22	Field Rd 50 (21 for 120mr 200mm) Hamme	m/50 for	. 895	Casing to payth (m)	(m)	93.10	Depth (m)	Legend			hole at 8.00m			Water	Backfill	7. 8. 8. 8. 9. 10. 11. 11. 11. 12.
Casing D	asing to (m				m)	elling To (n 8.00		e (hh:mm)	No obvious g	t hand dug to 1.20 roundwater strike		d during drilling.		Last Und	ated		13
									Terminatio	n Reason				Last Upd	ated		寸

Method Cable Percussion Depth (m) Sample Tests 50 ES1	2/ Field Record	Top (m) 0.00	_	water Depth (m)	Coord 67425 71280	inates 9.46 E	Client: Client's Final De	s Rep: Malone of the state of t	O'Regan Consulting Engi Start Date: 08/11/2023 End Date: 08/11/2023	Driller: KF		BH10 Sheet 1 of Scale: 1	of 1
Depth (m) Sample Tests 50 ES1 00 B3 00 ES2	Plant Used Dando 2000	Top (m) 0.00	Casing Depth	Water Depth	67425 71280	9.46 E	Final De	epth: 1.50 m	Start Date: 08/11/2023	Driller: KF		Scale: 1	
Depth (m) Sample Tests 50 ES1 00 B3 00 ES2	Dando 2000	0.00	Casing Depth	Water Depth	67425 71280	9.46 E						Scale: 1	
(m) Tests 50 ES1 00 B3 00 ES2		s	Casing Depth (m)	Water Depth (m)	71280		Elevatio	on: 101.33 mOD	End Date: 09/11/2022	Lagram CD			
(m) Tests 50 ES1 00 B3 00 ES2		s	Casing Depth (m)	Water Depth (m)	Level				Eliu Date: 06/11/2025	Logger: SR		FINA	.L
00 B3 00 ES2					mOD	Depth (m)	Legend	'	Description		Water	Backfill	
00 B3 00 ES2		i1			101.23	0.10		TOPSOIL Dark brown sandy of fine to coarse.	clayey subangular fine to coars	e GRAVEL. Sand is			
00 ES2					100.83	- 0.50 - -	a x o o		silty subrounded fine to coarsoble are subrounded.	se GRAVEL with low			0.5
	50 (25 for 20mm/50 f	or 30mm)	1.00	Dry		- - -	a x , a x ,						1.0
					99.83	- 1.50 -			End of Borehole at 1.50m				1.5
						- - - -							2.0
						- - -							2.5
						- - - -							3.0
						-							3.5
						- - -							4.0
						- - -							45
						- - -							
						 - - -							5.0
						- - -							5.5
						- - -							6.0
						- - -							6.5
						- - - -							7.0
						-							
	ter Strikes (m) Time (min) Rose to	(m) From		elling To (g Details	(hh:mm)	Remarks				<u>'</u>		

	CAUSEWAY GEOTECH Method Plant Used Top (m) Base (iii) Sonic Drilling Fraste CRS-XL Duo 0.00 10.20					ect No. 0881F	Project Client: Client's			Lot 3 - Cool		Glebe I	Borehole BH10	
Meth	nod	Plant Used	Тор	(m) Base (r	n) Coor	dinates		-					Sheet 1 o	 of 2
		Fraste CRS-XL Du			6742	57.09 E 07.79 N	Final De		Start Date:		Driller: Logger:		Scale: 1:	:50
Depth (m)	Sample / Tests	Field Reco	rds	Casing Wat Depth Dep (m) (m	er Level	Depth (m)	Legend		Desc	ription		Water	Backfill	Т
0.00		12-12-2023		0.00 Dr	100.90	0.30		TOPSOIL Dark greyish brown with high cobble co rounded.				AVEL		0.5
1.20 - 1.65 1.20 - 1.70 1.20 - 2.70 1.20 - 1.65 1.70 - 2.20 2.20 - 2.70	D1 B13 SB2 SPT (S) B14	N=31 (8,8/8,9,9,5)		1.20 0.5	100.00	1.20		Dense greyish brow coarse GRAVEL of li coarse.						1.5
2.70 - 3.15 2.70 - 3.20 2.70 - 4.20 2.70 - 3.15 3.20 - 3.70	B17	N=43 (5,5/9,14,11,9)	2.70 0.5	98.00	3.20		Dense brownish gre angular to subround sandstone.						3.0 -
1.20 - 4.65 1.20 - 4.80 1.20 - 5.70 1.20 - 4.65 1.80 - 5.05 5.05 - 5.70	D5 B19 SB6 SPT (S) B20	N=45 (5,8/8,12,12,1	3)	4.20 0.5	97.00	4.20		Dense greyish brow coarse GRAVEL of li content. Sand is find 4.80m to 5.05m: Cobble to	mestone, siltst e to coarse.	one and sandsto	one with lov			4.5
5.70 - 6.15 5.70 - 6.20 5.70 - 7.20 5.70 - 6.15 6.20 - 6.70	D7 B22 SB8 SPT (S) B23	N=49 (5,16/15,15,10	0,9)	5.70 0.5	50									6.0
7.20 - 7.20 7.20 - 7.45 7.20 - 7.70 7.20 - 8.70 7.20 - 7.45 7.70 - 8.20 3.20 - 8.70	D9 B25 SB10 SPT (S) B26	50 (9,13/50 for 100r	nm)	7.20 0.5	94.00	7.20		Very stiff brown sar fine to coarse. Grav limestone, siltstone subrounded of lime	el is angular to and sandston	subrounded fin e. Cobbles are s	e to coarse	of		7.0 - 7.5
8.70 - 10.20 8.70 - 8.94 8.70 - 9.20 8.70 - 9.07 9.20 - 9.70	D11 B28	50 (9,15/50 for 225)	mm)	8.70 0.5	50									9.0
		r Strikes		emarks										
Casing I		Water Addec From (m) To (ii	No	spection pit h	-									
10.20	1//		C	Core Barrel	Flush	Туре	Terminat	tion Reason				Last Upda	ted	I
														_

Metho		AUS G	EOTE	CH	Base	e (m)		881F	Client: Client's Ro	-		nsulting Engi				BH10A	
Sonic Dri		Fraste CRS		0.00		.20		7.09 E	Final Deptl	10.20 m	Start Date:	12/12/2023	Driller:	RC		Scale: 1:	
								7.79 N	Elevation:	101.20 mOD	End Date:	12/12/2023	Logger:	AM	Ĺ	FINAL	-
Depth (m)	Sample / Tests	Fie	eld Records		Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Des	cription			Water	Backfill	
70 - 10.20 uck at (m) Ca	Water sising to (m)	Strikes Time (min)	Rose to (n	Rem.		bit ha	91.00	10.20			End of Bore	hole at 10.20m					9.5 10.0 - 10.5 11.0 - 11.5 12.0 - 13.5 14.0 - 15.5 16.0 - 17.5 18.0 - 18.5
ack at (III) Ca	ionig to (M)	rime (illill)	nose to (II		ction p oundv	vater	nd dug to encounter	ed.									
Casing D	etails iam (mm)	Water From (m)	Added To (m)	-													
10.20	177	110111 (111)	10 (111)														
		[Cor	e Barı	rel	Flush	Type	Termination	Poscon				Last Up	4-+-	4	-

		CAUSEV	ECH				ct No. 881F	Project Client: Client's	NDFA	cial Housing Lot 3 - Cool O'Regan Consulting Engi		ebe E	Borehole II
Metho		Plant Used Dando 2000	Top (m 0.00) Base 3.5	_	Coord	inates	Final De	epth: 3.50 m	Start Date: 08/11/2023	Driller: KF		Sheet 1 of 1 Scale: 1:40
							5.27 E 6.70 N	Elevatio	on: 99.25 mOD	End Date: 09/11/2023	Logger: SR		FINAL
Depth (m)	Sample / Tests	Field Record	s	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	1	Description	•	Water	Backfill
50	ES1					99.15 98.75	- 0.10 - - - 0.50		subrounded fine to				0.
						30.73	- 0.30	× ^ × × × × × × × × × × × × × × × × × ×	Dense grey very sar coarse GRAVEL. San	ndy slightly silty subangular to ad is fine to coarse.	subrounded fine	e to	0.
00 00 00 - 1.38	B3 ES2 SPT (C)	50 (8,12/50 for 225m	m)	1.00	Dry		-	× × × × × × × × × × × × × × × × × × ×					1.
							- - -	* * * * * * * * * * * * * * * * * * *					1.
0 0 0 - 2.39	B5 D4 SPT (C)	50 (7,10/50 for 240m	m)	2.00	0.00		- - - -	* * * * * * * * * * * * * * * * * * * *					2.
00	В7						-	* * * * * * * * * * * * * * * * * * *					3.3
0 0 0 - 3.45	D6	N=41 (7,6/10,14,7,10)	3.00	0.00		-	× × ×					
0 - 3.52	SPT (C)	50 (25 for 10mm/50 f	or 15mm)	3.30	0.00	95.75	- 3.50	××××		End of Borehole at 3.50m			3.
													4. 5. 5.
							-						
		r Strikes				Details		Remarks	;				
Casing D	Details Diameter		1.0 3.0	00	To (r 1.5 3.5	0	e (hh:mm) 00:30 01:00		n pit hand dug to 1.20 Is groundwater strike:	om. s - water added during drilling.			
3.30	200	0.50 3.50						Terminat	tion Reason		Las	st Updat	ed I
								Terminate	d on refusal.			2/01/202	

	ع (د	AUS	EW					ct No. 881F	Client:	Name: NDFA So				k Glebe	В	RC04	
					_				Client's	Rep: Malone	O'Regan Co	nsulting Engi	neers				
Meth Sonic Dr		Plant Us Fraste CRS-X		Top (m	10.			8.90 E	Final De	epth: 10.20 m	Start Date:	08/12/2023	Driller:	RC		heet 1 o Scale: 1:	
							71271	9.93 N	Elevatio	98.62 mOD	End Date:	11/12/2023	Logger:	AM		FINAL	-
Depth (m)	Sample / Tests		d Records		Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Des	cription			Water	Backfill	
.00		08-12-2023			0.00	Dry	98.32	0.30		TOPSOIL Dark greyish brown cobble content. Grarounded.							0.5
.20 - 1.65 .20 - 1.70 .20 - 2.70 .20 - 1.65	D1 B13 SB2 SPT (S)	N=15 (2,3/3,4,	4.4)		1.20 0.00 0.00	Dry	97.42	1.20		Medium dense brov SAND. Gravel is sub							1.5
20 20 70 - 2.30 30 - 2.70	B14 B15	08-12-2023 11-12-2023					96.92	1.70		Medium dense grey GRAVEL of various I coarse. Cobbles are	ithologies witl	n low cobble con					2.0 -
.70 - 3.15 .70 - 3.65 .70 - 4.20 .70 - 3.15	D3 B16 SB4 SPT (S)	N=13 (2,2/3,3,	4,3)		2.70	0.60											3.0
.65 - 3.80 .80 - 4.20	B17 B18								100 100 100 100 100 100 100 100 100 100								4.0
20 - 4.65 20 - 4.80 20 - 5.70 20 - 4.65 80 - 5.55	D5 B19 SB6 SPT (S) B20	N=40 (4,9/9,9,	10,12)		4.20	0.60											4.5
.55 - 5.70 .70 - 6.15 .70 - 6.20 .70 - 7.20 .70 - 6.15 .20 - 6.70	B21 D7 B22 SB8 SPT (S) B23	N=36 (6,6/7,9,	10,10)		5.70	0.60	93.07	5.55		Stiff to very stiff bro fine to coarse. Grav various lithologies.	el is subangula	ar to subrounded	fine to co				5.5
.70 - 7.20 .20 - 7.58	B24				7.20	0.60	91.42	7.20									7.0
20 - 8.00 20 - 8.70 20 - 7.58		50 (8,13/50 fo	r 225mm)						Very stiff reddish br content. Sand is fine various lithologies.	e to coarse. Gr	avel is subround	ed fine to				7.5
00 - 8.70	B26						90.62	8.00		Very stiff brown san Sand is fine to coars coarse of various lit	se. Gravel is su	bangular to sub	rounded fi	ne to			8.0
70 - 10.20 70 - 8.93 70 - 8.93	D11	50 (11,13/50 fo	or 75mm)	8.70	0.60											
		Strikes		-	arks			<u> </u>									<u>—</u>
Casing D	Casing to (m) Time (min) R		n) Inspe	ection p		d dug to										
10.20	177			Cor	e Barr	el	Flush	Туре	Terminat	tion Reason				Last Upo	date	d T	T
							Wat		-	d on Engineer's instru				02/05/2			۳

								ct No.	Project N	ame: NDFA So	ciai Housin	3 LOL 3 - COOL	agiikiiock	siene		rehole ID
	C	AUS	EW	A			23-0	881F	Client:	NDFA						RC04
		—— G	EOTE	-CH					Client's R	ep: Malone	O'Regan Co	nsulting Engi	neers			
Metho Sonic Dril		Plant Us		Top (1	n) Bas	e (m) 0.20	Coord		Final Dept	h: 10.20 m	Start Date:	08/12/2023	Driller: F	RC		eet 2 of 2 cale: 1:49
							67426 71271		Elevation:	98.62 mOD	End Date:	11/12/2023	Logger: /	M		FINAL
Depth (m)	Sample / Tests	Field	d Records		Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Desc	ription			Water	Backfill
(m)	Tests B27	Strikes			Depth (riv)	Degrid (m)	88.42	10.20	Legend			hole at 10.20m			Waa	9.5 10.6 10.6 11.6 12.5 13.6 14.6 14.5 15.6 16.6 17.6 17.5
ıck at (m) Ca	sing to (m)	Time (min) F	Rose to (n		ection ground	pit har water	nd dug to : encounter	1.20m. ed.								
				140	_b , ourid	watel	encounter	cu.								
Casing De	etails	Water A	Added	-												
To (m) Di	am (mm)		To (m)													
10.20	177			· ·	ore Bar	rel	Flush	Type	Termination	n Reason			Т	Last Upd	lated	-
1		1		"	,, c Dal		iusii	. , , , ,	.cauoi					Lust Opu	ateu	



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)

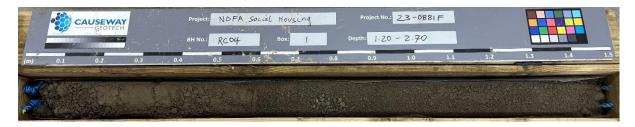


BH10A Box 5 (7.20-8.70m)





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)



APPENDIX D
TRIAL PIT LOGS



202				ect No.	Project			Т	rial Pit ID
	CAUS	EWAY		0881F		ocial Housing Lot 3 - Coolaghknock Glebe			TD04
	——-G	EOTECH	Coor	dinates	Client:				TP01
/lethod:				13.91 E		Representative:		Sh	neet 1 of 1
rial Pitting			7130	15.32 N	Malone	e O'Regan Consulting Engineers			cale: 1:25
lant:				vation	Date:	Logger	:		FINAL
t Tracked Exc	Sample /		99.94 Level	mOD Depth	17/10/				THVAL
(m)	Tests	Field Records	99.78	(m) - 0.15	Legend	Description MADE GROUND: Firm brown slightly sandy slightly gravelly CLA' fine to coarse. Gravel is subrounded fine to coarse. MADE GROUND: Grey very gravelly silty fine to coarse SAND wit cobble content and rare sheets of plastic. Gravel is rounded fine coarse. Cobbles are rounded.	th low	Water	
00 00 - 1.00	ES1 ES2 B3		99.04	0.90	4	Grey sandy silty rounded fine to coarse GRAVEL with low cobble Sand is fine to coarse. Cobbles are rounded.	e content.		1.0 —
			98.44	1.50	a	End of trial pit at 1.50m			1.5 -
				-					2.0 —
				-					2.5 -
				- - - - - - -					3.0 —
				-					3.5 -
				-					4.0 —
				-					
				-					4.5
				-					
Wate Struck at (m)	Remarks	Depth: 1.50 Width: 1.00 Length: 2.50	1 VH	narks: not possibl groundwat		ntered.			
		Stability: Unstable		nination R		a.	20/12/2		d L

				ect No.		Name:		Ti	rial Pit ID
	CAUS	EWAY		0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe			TP02
	———G	EOTECH		dinates	NDFA				1702
Method:				32.44 E	Client'	s Representative:		Sh	eet 1 of 1
rial Pitting			71298	89.26 N	Malon	e O'Regan Consulting Engineers			cale: 1:25
Plant:				vation	Date:	Logger:			FINAL
Rt Tracked Exc Depth	Sample /		106.70	Depth	17/10/				
(m)	Tests	Field Records	(mOD)	(m)	Legend	MADE GROUND: Firm brown slightly sandy gravelly CLAY with lo content. Sand is fine to coarse. Gravel is rounded fine to coarse. are rounded. MADE GROUND: Grey very gravelly slightly silty fine to coarse S/ low cobble content. Gravel is rounded fine to coarse. Cobbles ar	Cobbles AND with	Water	
.50	ES1		105.90	- 0.80		rounded. MADE GROUND: Grey sandy slightly silty rounded fine to coarse with low cobble content. Sand is fine to coarse. Cobbles are rou			0.5
1.00 1.00 - 1.00	ES2 B5		105.40	1.30		MADE GROUND: Grey very sandy silty rounded fine to coarse Gi			1.0 -
2.00	B6			-		with high cobble content. Sand is fine to coarse. Cobbles are subrounded.			1.5
2.00	ES3		104.60	2.10		MADE GROUND: Grey fine to coarse SAND.			2.5
3.00 3.00	B7 ES4		103.70	3.00		End of trial pit at 3.00m			3.0 —
									3.5 ·
				-					4.0 —
				-					4.5
									_
Wate Struck at (m)	Remarks	Depth: 3.00 Width: 1.25 Length: 2.25	HV r	narks: not possibl groundwat		ntered.			
		Stability:	Tern	nination R	eason		Last Upo	date	d 📕
		Unstable	Term	inated at so	heduled o	depth.	20/12/2	2023	ΛC

A-N			Proi	ect No.	Project	Name:		1	rial Pit ID
	CALIC			-0881F	1	Social Housing Lot 3 - Coolaghknock Glebe			
	CAUS	EWAY	Cool	rdinates	Client:				TP03
		GEOTECH			NDFA				
Method:				.76.21 E	Client's	s Representative:		S	neet 1 of 1
Trial Pitting			7128	895.69 N	Malone	e O'Regan Consulting Engineers			cale: 1:25
Plant:			Ele	vation	Date:		Logger:		
8t Tracked Exc	cavator		102.0	3 mOD	17/10/	2023	RS		FINAL
Depth	Sample /	Field Records	Level	Depth	Legend	Description		Water	
(m)	Tests		(mOD)	(m)	××××	MADE GROUND: Firm brown slightly sandy slightly gra	velly CLAY. Sand is		
				-		fine to coarse. Gravel is rounded fine to coarse.			_
			101.73	0.30					
			101.75	0.50	× ^ ×	Grey very sandy silty subrounded fine to coarse GRAVE coarse.	L. Sand is fine to		_
0.50	В3			-	××××				0.5 —
0.50	ES1				×·^·×				_
				-	×				_
				-	×·^·×				
1.00	ES2			-	×				1.0
1.00 - 1.00	B4			-	×				_
				-	×				-
				-	×				-
				[×				1.5 —
				-	×××				_
					××××				_
				-	××××				-
2.00	DE.			-	×××				
2.00	B5			-	×××				2.0 —
				-	××				_
					××				_
				-	×				_
				-	××				2.5
					××				
				-	××				_
				-	× × ×				_
3.00	В6		99.03	3.00	×:	End of trial pit at 3.00m			3.0
				-					
				_					
				-					_
									3.5 —
				-					-
				-					_
				-					
				-					4.0
				-					-
				-					_
				-					
				-					4.5
				-					-
				-					-
				-					-
				_					_
\4e\A/	er Strikes		Ren	narks:					
Struck at (m)		Depth: 3.00		groundwat	er encou	ntered.			
		Width: 0.60							
		Length: 3.00							
		Stability:	Teri	mination R	leason		Last	Update	
ĺ		Unstable	Tern	nianted at so	cheduled o	depth.	20/	12/2023	AGS

				ect No.		Name:		Trial Pit ID
	CAUS	EWAY EOTECH		0881F dinates	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe		TP04
	———G	EOTECH			NDFA			
lethod:				58.32 E 23.78 N	1	Representative:	S	heet 1 of 1
ial Pitting						e O'Regan Consulting Engineers		Scale: 1:25
lant: t Tracked Exc	cavator			vation 3 mOD	Date: 17/10/	Logger: 2023 RS		FINAL
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water	
.50	B3		98.53	0.30		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. S fine to coarse. Gravel is subrounded fine to coarse. Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coar Gravel is rounded fine to medium.	Sand is	
50	ES1			- - - - - - -				1.0 —
00 - 1.00	B4		97.63	1.20		Soft greyish brown slightly sandy slightly gravelly CLAY. Sand is fine coarse. Gravel is subrounded fine to medium.	e to	1.5 —
00 - 2.00	B5			- - - - - - - - - - - - - - - - - - -				2.0 —
								2.5 -
00	B6		95.83	3.00		End of trial pit at 3.00m		3.0 —
				- - - - - -				3.5 -
				- - - - - - -				4.0 —
				- - - - - - -				4.5 -
				-				
Wate Struck at (m)	Remarks	Depth: 3.00 Width: 0.60 Length: 3.00		narks: groundwat	er encou	ntered.	_	
		Stability:		mination R			20/12/202	

lethod: rial Pitting lant: t Tracked Exca Depth (m)	CAUS G	EWAY EOTECH		0881F dinates		Social Housing Lot 3 - Coolaghknock Glebe		
lethod: ial Pitting lant: t Tracked Exca	G	ЕОТЕСН	Coor	dinates				
ial Pitting lant: t Tracked Exca				umates	Client: NDFA			TP05
ial Pitting lant: t Tracked Exca			6742	21.07 E		s Representative:		heet 1 of 1
ant: Tracked Exca			7128	04.56 N	1	e O'Regan Consulting Engineers		Scale: 1:25
Depth			Ele	vation	Date:	Logger:		
				7 mOD	17/10/	2023 RS		FINAL
	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with lov	v Water	
.50	B3 ES1			-		cobble content. Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles are rounded.		0.5 -
.50	B4		98.37	- 0.60		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to coarse.		1.0
00	ES2		97.82	1.15	× × × × × × × × × × × × × × × × × × ×	Grey very sandy slightly silty rounded fine to coarse GRAVEL. Sand is fine to coarse.	:	1.0
				-				1.5 -
00 - 2.00	B5			- - - - - - - - - - - -	× × × × × × × × × × × × × × × × × × ×			2.0 -
.00	B6		95.97	3.00		End of trial pit at 3.00m		3.0 -
				-				3.5
				-				
								4.0 -
				- - - - - - -				4.5
				-				
Water Strikes Struck at (m) Remarks Width: 0.60 Length: 3.00			HVı	 narks: not possibl groundwat		I intered.		1
		Stability:	Terr	nination R	leason	Last U	Jpdate	ed 🔳 🔳
	1	1						

202				ect No.	1	: Name:		Trial Pit ID
	CAUS	EWAY EOTECH		0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe		TP06
	———G	EOTECH		dinates	NDFA			1700
1ethod:				35.38 E	Client'	s Representative:		Sheet 1 of 1
rial Pitting				46.26 N		e O'Regan Consulting Engineers		Scale: 1:25
lant: t Tracked Ex	rcavator			vation 1 mOD	Date: 17/10/	Logger: 2023 RS		FINAL
Depth	Sample /	Field Records	Level	Depth	Legend	Description	Water	
(m)	Tests		96.96	(m)		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. fine to coarse. Gravel is rounded fine to coarse. Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to co	. Sand is	0.5
50 00 00 - 1.00	ES1 ES2 B4			-		Gravel is rounded fine to coarse.		1.0 -
			96.11	1.30	**** **** **** **** ****	Brown gravelly very silty fine to coarse SAND. Sand is fine to coar Gravel is rounded fine to coarse.	rse.	1.5
.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 roun		2.0 -
.00	B6		94.41	3.00		End of trial pit at 3.00m		3.0 -
				-				3.5
				-				4.0 -
				-				4.5
Wat	er Strikes	Depth: 3.00		narks:	1			1
Struck at (m)) Remarks	Width: 0.60		not possib groundwat		ntered.		
		Length: 3.00					1-20-5	I
		Stability:		nination R			Last Updat	
		Stable	Term	ninated at so	cheduled o	lepth.	20/12/202	3 /////

202				ect No.		Name:		Tri	al Pit ID
一大	CAUS	EWAY EOTECH		0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe		,	TP07
	———G	EOTECH		dinates	NDFA				1707
lethod:				34.60 E	Client's	Representative:		She	et 1 of 1
rial Pitting				40.51 N		e O'Regan Consulting Engineers		Sc	ale: 1:25
lant: t Tracked Ex	cavator		101.38	vation	Date: 17/10/	Logger: RS	:	ſ	INAL
Depth	Sample /	Field Records	Level	Depth	Legend	Description		Water	
(m)	Tests		(mOD)	(m)		Firm brown slightly sandy slightly gravelly CLAY with low cobble Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles rounded.	content.	×	0.5 -
.50	ES1		100.68	0.70		Brown slightly sandy slightly silty rounded fine to coarse GRAVE low cobble content. Sand is fine to coarse. Cobbles are rounded	L with		0.3
.00 .00 - 1.00	ES2 B4		100.08	- - - - 1.30	4 X 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grey sandy slightly silty rounded fine to coarse GRAVEL with low content. Sand is fine to coarse. Cobbles are rounded.	v cobble		1.0 -
				-		content. Sand is fine to coarse. Cobbles are rounded.			1.5 -
.00	B5								2.0 –
.00	В6		98.38	- - - 3.00	3	End of trial pit at 3.00m			3.0 -
				-					3.5
				- - - - - -					4.0 -
									4.5
			<u> </u>						
Water StrikesDepth:3.00Struck at (m)RemarksWidth:0.60Length:2.00			HV r	narks: not possibl groundwat		ntered.			
		Stability:	Tern	nination R	leason		Last Upd	lated	
		Unstable	Term	inated at so	cheduled o	lepth.	20/12/2	023	ΔG



APPENDIX E TRIAL PIT PHOTOGRAPHS







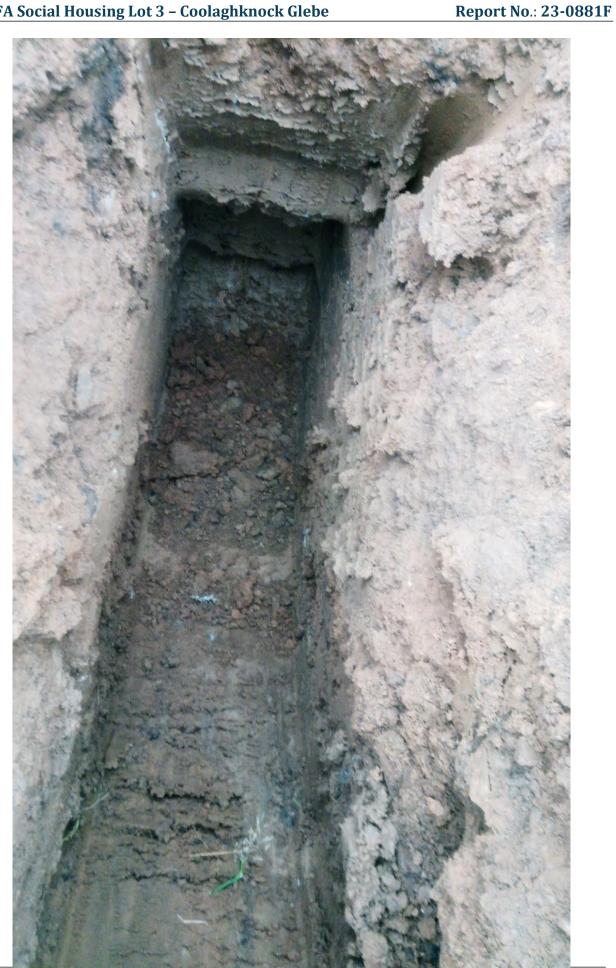
















TP01



TP01





TP01





TP01



TP01





TP01



TP01





TP01





TP02





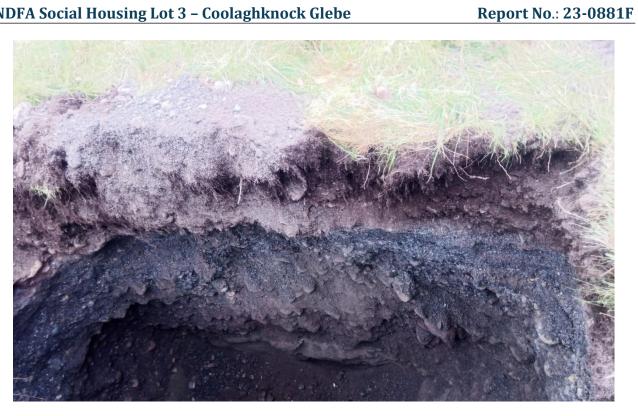
TP02





TP02





TP02



TP02





TP02



TP02





TP03



TP03





TP03





TP03



TP03



TP03





TP03



TP04



TP04





TP04



TP04





TP04



TP04



TP04



TP05



TP05





TP05





TP05





TP05



TP05





TP06



TP06





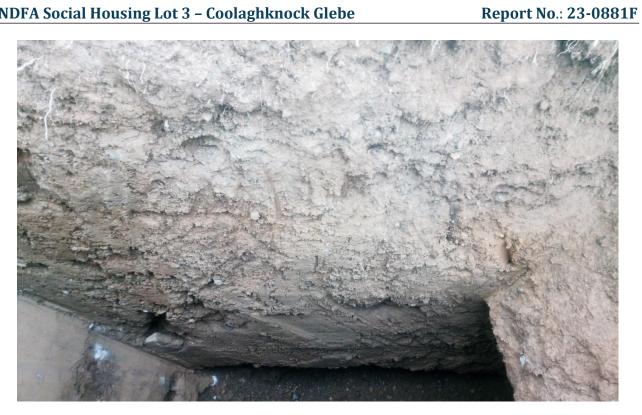
TP06





TP06





TP06



TP06





TP06





TP07



TP07





TP07





TP07





TP07



TP07



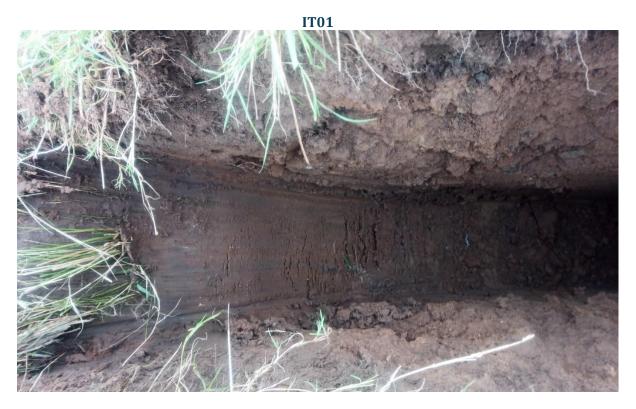


TP07





IT01



IT01





IT01



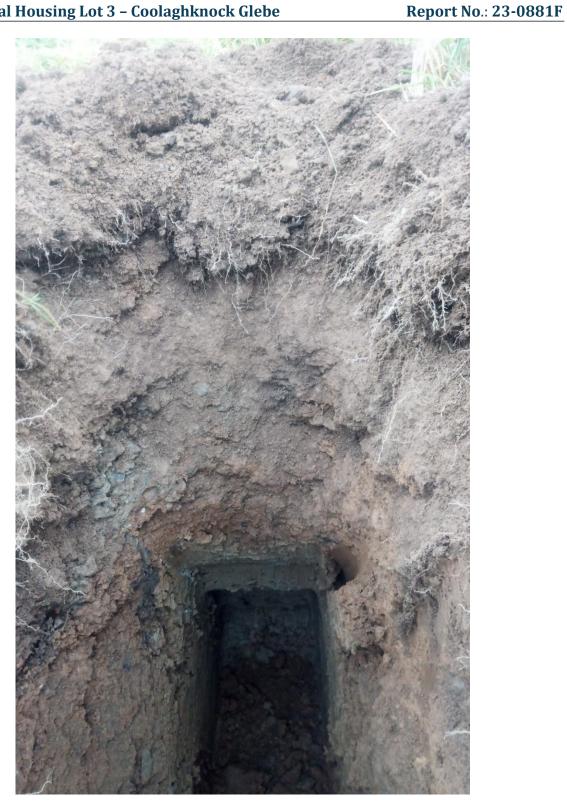
IT01





IT01





IT01





IT01





IT02





IT02





IT02



IT02





IT02



IT02





IT02





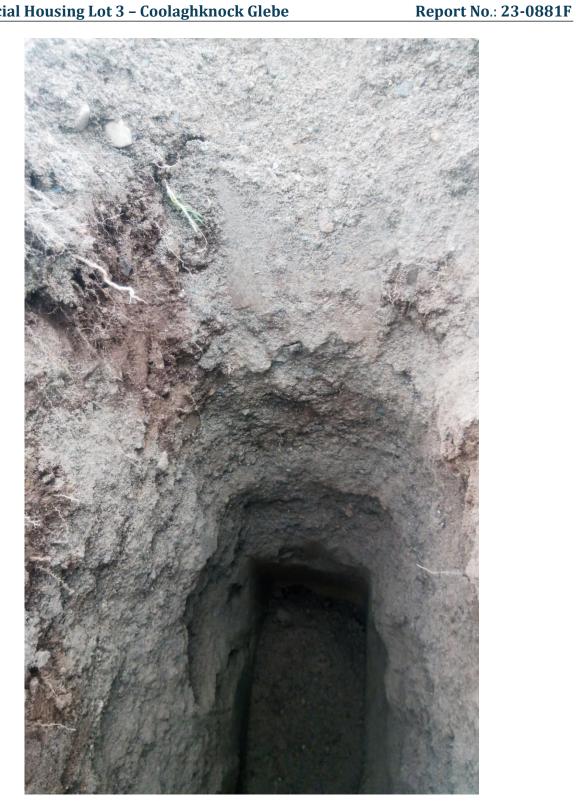




IT03

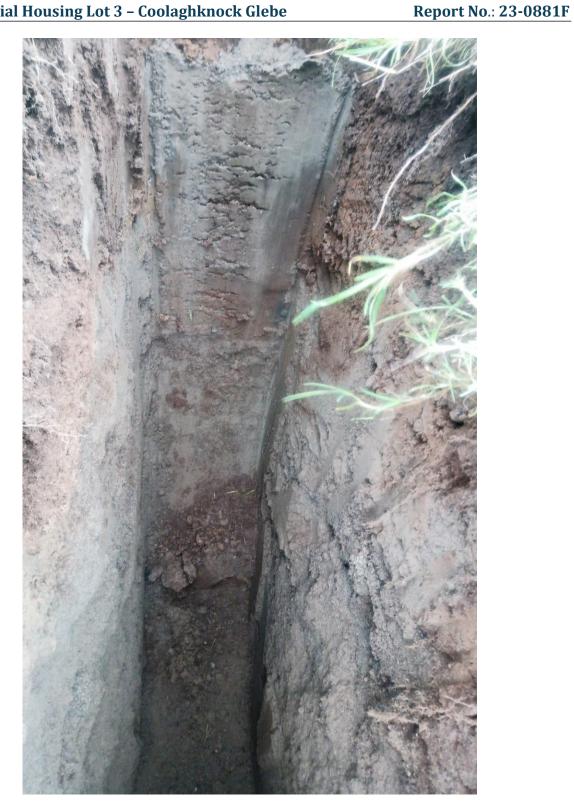


Report No.: 23-0881F



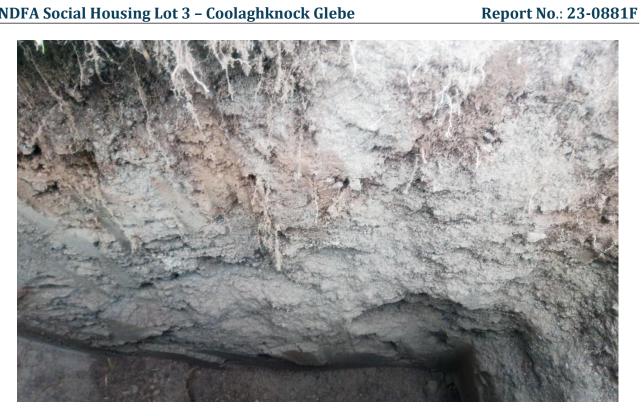
IT03





IT03





IT03



IT03





IT03

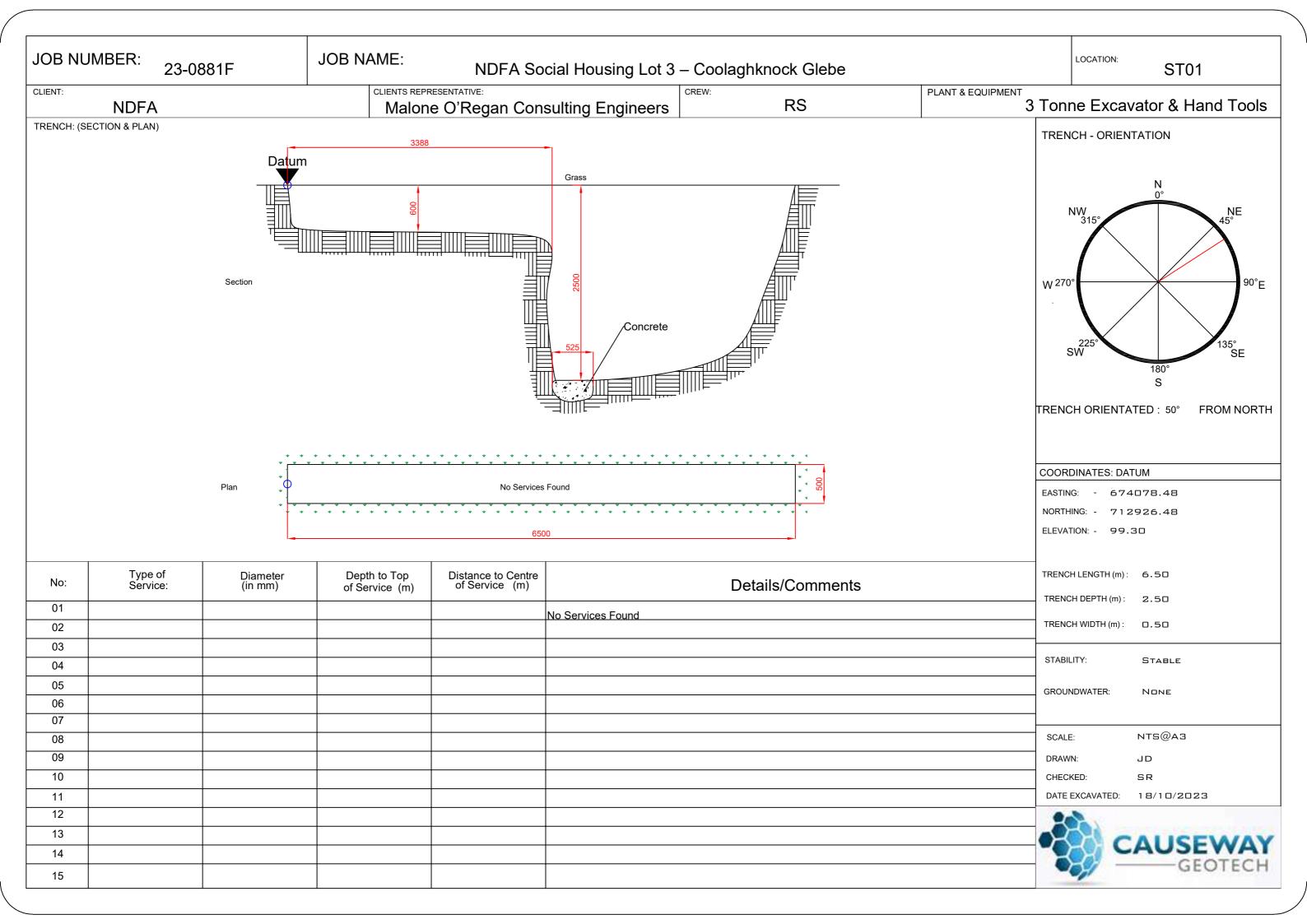




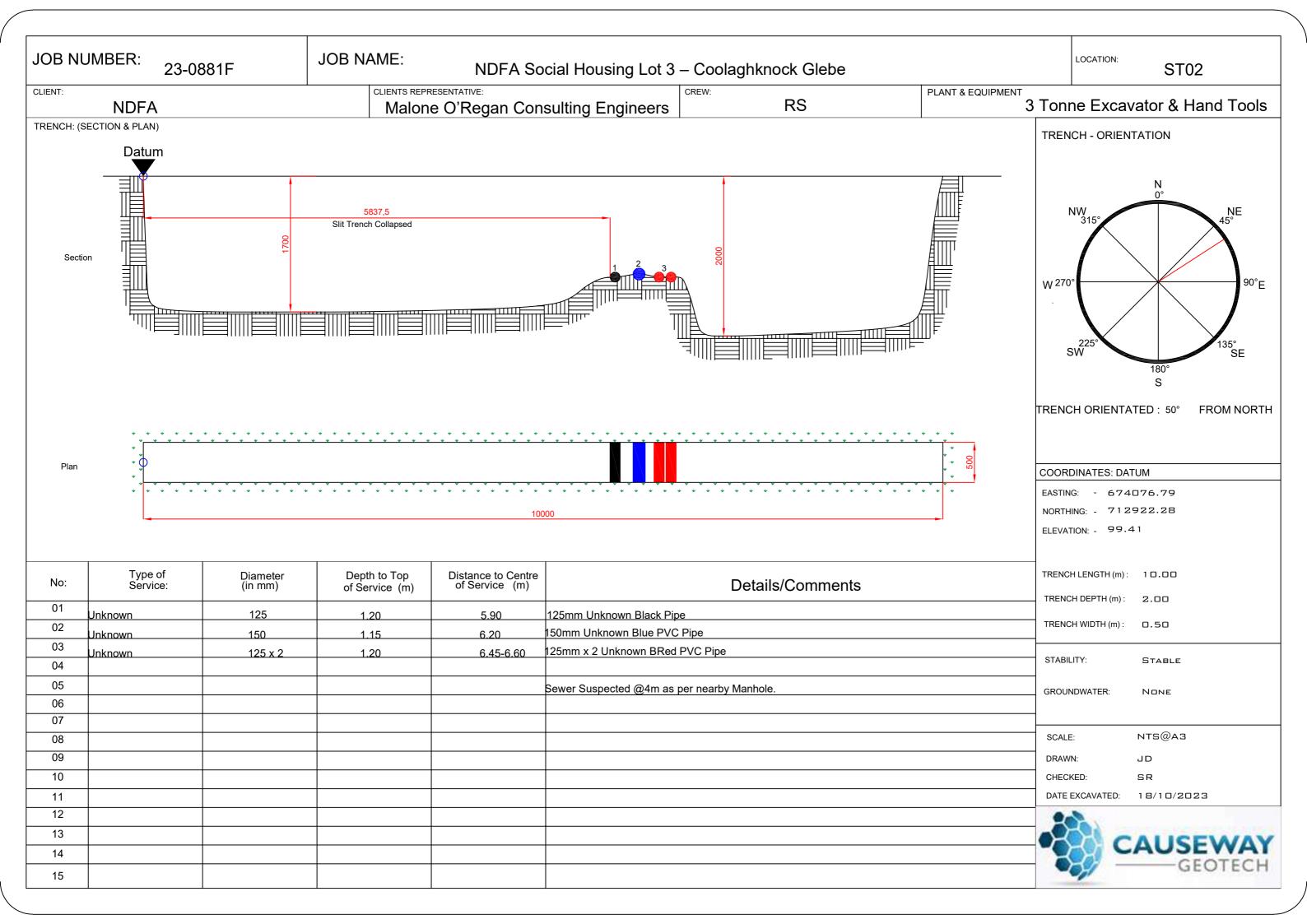
APPENDIX F SLIT TRENCH LOGS AND DRAWINGS



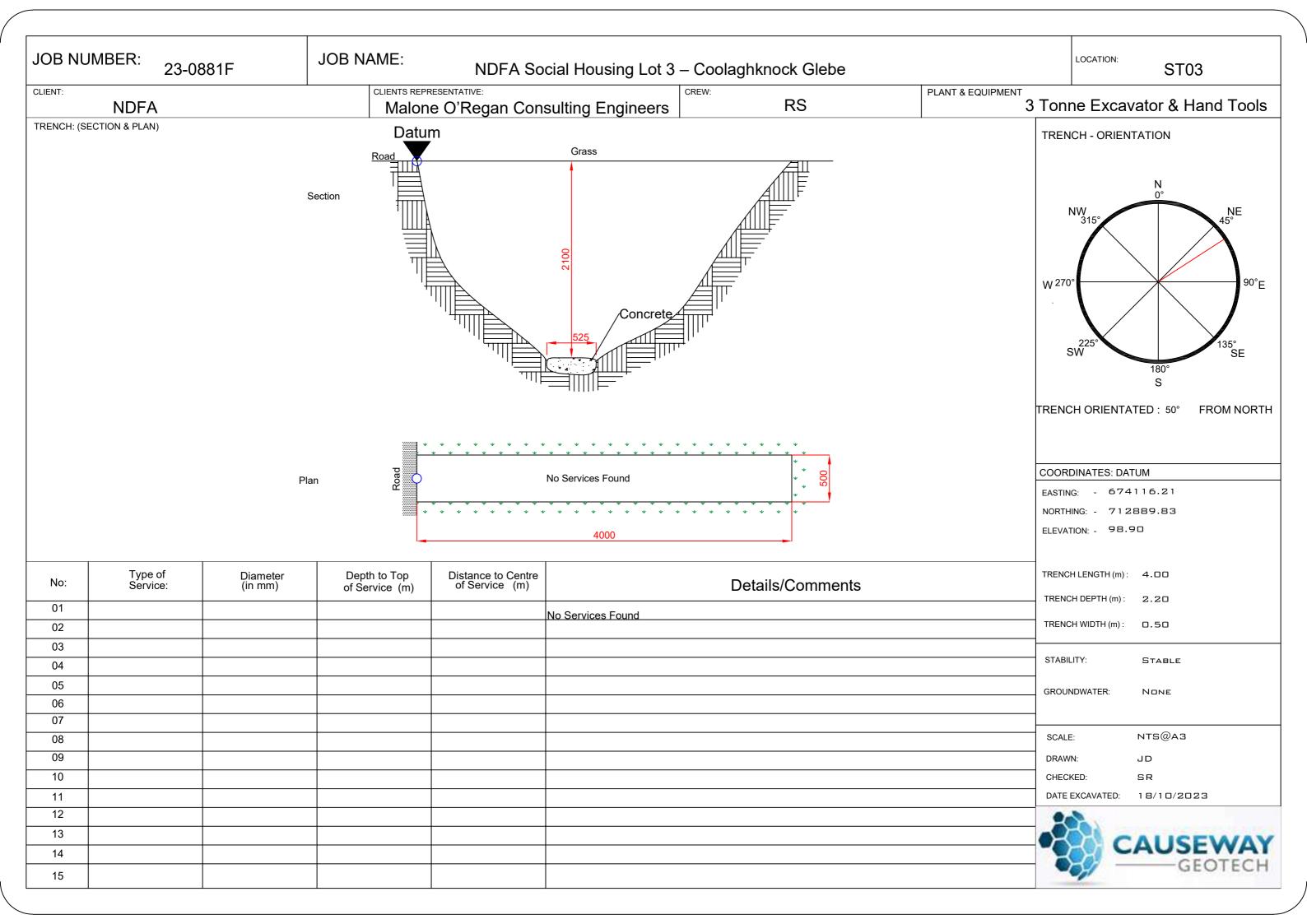
0-0			Proj	ect No.	Project	Name:		Tria	al Pit ID	
	CALIC	EVA/AV		0881F		Social Housing Lot 3 - Coolaghknock Glebe				
CAUSEWAY GEOTECH			Coordinates		Client:		ST01			
					NDFA					
Method:					1	s Representative:		She	et 1 of 1	
Slit Trenching						Malone O'Regan Consulting Engineers				
Plant:						Date: Logger:		F	INAL	
8t Tracked Exca					18/10/	2023 R:			IIIVAL	
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water		
				-		MADE GROUND: Firm brown slightly sandy slightly grave fine to coarse. Gravel is rounded fine to coarse.	ily CLAY. Sand is		4	
				-					_	
			99.00	0.30		MADE GROUND: Grey sandy silty angular fine to coarse (-	
				Ė		high cobble content. Sand is fine to coarse. Cobbles are s	ubangular.		0.5 —	
				[0.5	
			98.60	0.70		Stiff brown slightly sandy slightly gravelly SILT with low or	abble content		_	
					× × × ×	Sand is fine to coarse. Gravel is rounded fine to coarse. C			-	
				-	× × ×	rounded.			_	
				-	××××				1.0 —	
				-	××××				_	
				Ė	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				=	
				-	×××××				-	
				<u> </u>	× × × ×				1.5	
					× × × ×					
				-	× × × ×				_	
				Ē	* * * * * * * * * *				-	
				-	* * * * * * * * * *				2.0 —	
				E	× × × × ×					
				-	× × × × ×				_	
				-	× × × × ×				_	
			96.80	2.50	× × ×	End of trial pit at 2.50m			2.5 —	
				-					_	
				[
				-					_	
				_					3.0	
				-					_	
				[
				-					_	
				Ē					3.5 —	
				-					-	
				-					_	
				_					4.0	
				-					-	
				<u> </u>					_	
				-						
				<u> </u>					4.5 —	
									-	
				-					-	
				<u> </u>						
				-				\perp		
Water	Strikes		Ren	narks:		<u>I</u>				
Struck at (m)	Remarks	Depth: 2.50	No §	groundwat	er encou	ntered.				
		Width: 0.50								
		Length: 6.50							1	
		Stability:		nination R			Last Upda		AGS	
		Stable	Term	Terminated at scheduled depth. 20/12/2						



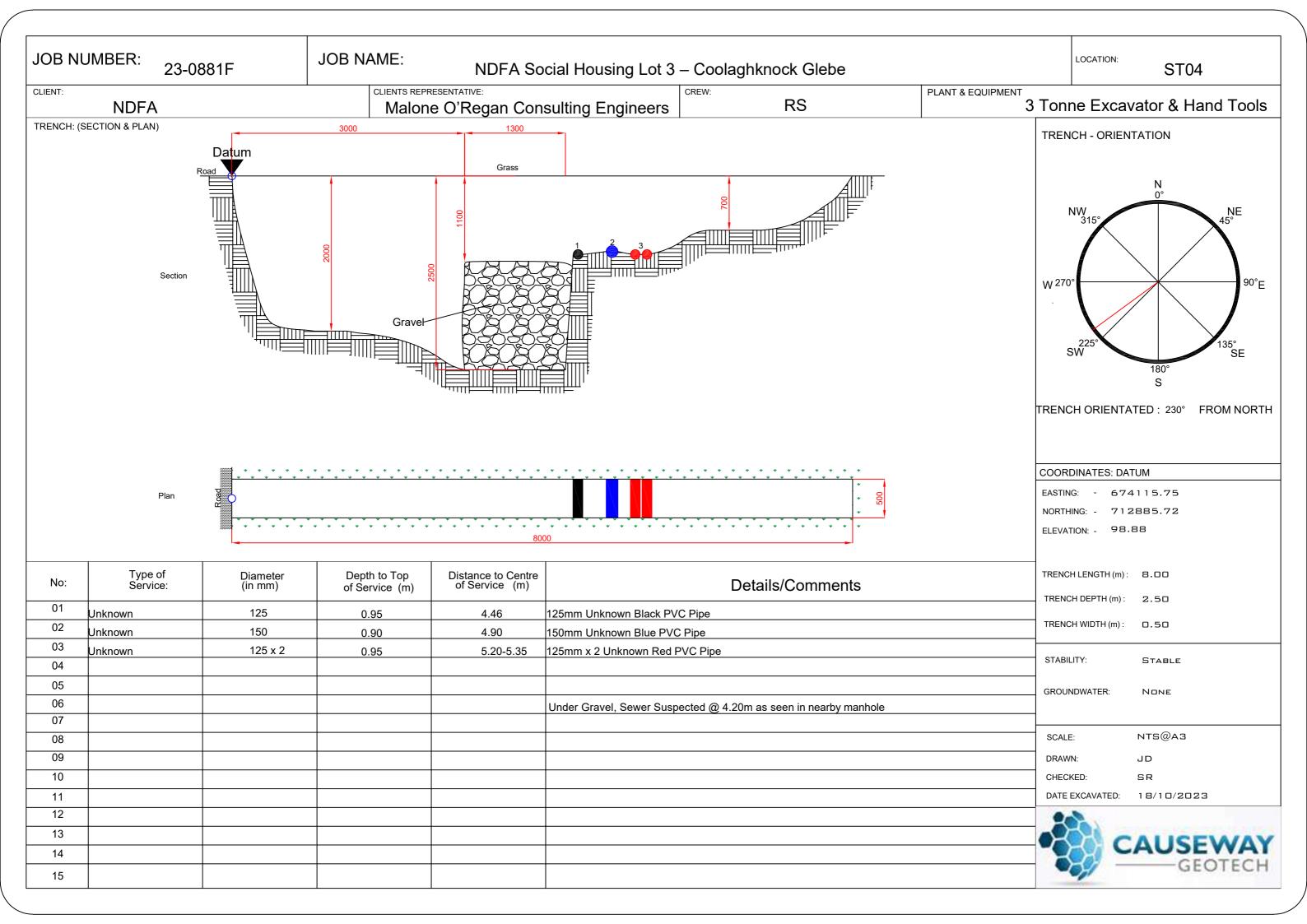
			Proj	ect No.	Project	: Name:		Tr	ial Pit ID
	CALIC	EVAVAV		0881F	1	ocial Housing Lot 3 - Coolaghknock Glebe			
CAUSEWAY GEOTECH			674076 70 5		Client:				ST02
					NDFA				
Method:				22.28 N		s Representative:			eet 1 of 1
Slit Trenching						e O'Regan Consulting Engineers		Sc	ale: 1:25
Plant:			Elevation 99.41 mOD		Date:		ogger:		FINAL
8t Tracked Exca Depth			99.4		18/10/	2023	RS		
(m)	Sample / Tests	Field Records	(mOD)	Depth (m)	Legend	Description		Water	
				-		MADE GROUND: Light brown slightly sandy very silty ro coarse GRAVEL. Sand is fine to coarse	unded fine to		_
				[-
				<u> </u>					-
			99.01	0.40	××××	Stiff brown slightly sandy slightly gravelly SILT with low Sand is fine to coarse. Gravel is rounded fine to coarse.			0.5
				<u> </u>	×.×.×.	rounded.	Copples are		_
				[××.×.				-
				-	× × × ×				-
				[_	× ·× .× . × × × ×				1.0 -
				-	× × × ×				-
				ļ.	(× × × × × × × × × × × × × × × × × × ×				-
				<u> </u>	X X X X				-
				-	X X X X				1.5
				Ė	× × × ×				-
				-	× × × ×				=
				[× × × ×				
			97.41	2.00	X X X X	End of trial pit at 2.00m			2.0
				[-
				-					
				-					_
				-					2.5 —
				-					
				-					_
				[=
				E					3.0
				-					_
				-					-
				Ė					3.5 —
				}					3.3 —
				-					4
				<u> </u>					-
				-					4.0
				Ė					4
				}					-
				-					
				<u>-</u>					4.5
				-					4
				Ė					-
				-					
				-					
Water		Depth: 2.00	- 1	narks:	o	ntanad		, ,	
Struck at (m)	Remarks	Width: 0.50	NO!	groundwat	er encou	merea.			
		Length: 10.00							
		Stability:	Teri	mination R	eason		Last U	Jpdated	
		Terminated at scheduled depth. 20/12						AGS	



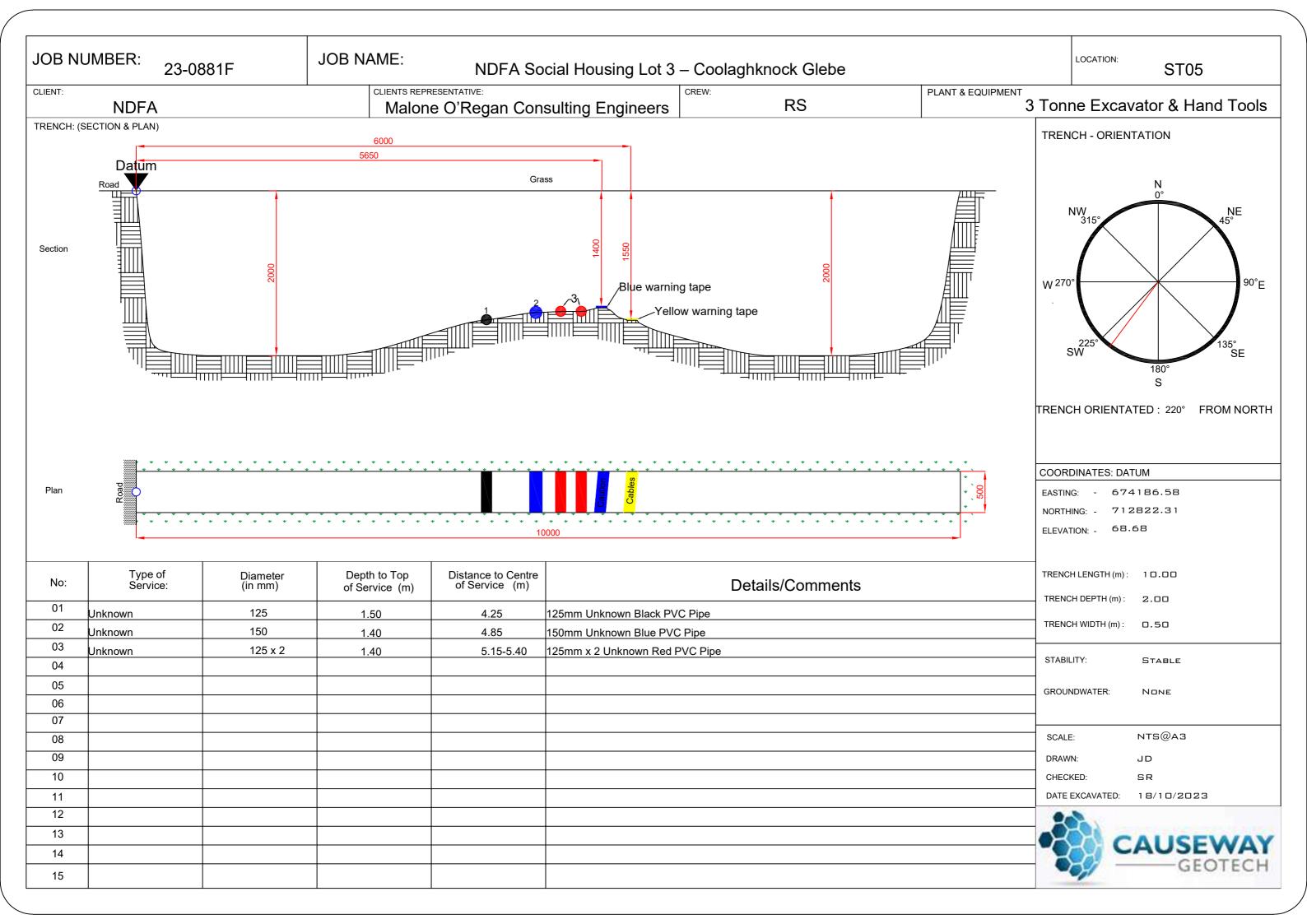
A-N			Proi	ect No.	Project	: Name:		Т	ial Pit ID	
				0881F	1	ocial Housing Lot 3 - Coolaghknock Glebe				
CAUSEWAY ——GEOTECH					Client:		ST03			
	GEOTECH			674116 21 5		NDFA				
Method:			674116.21 E		Client's	Sheet 1 of 1				
Slit Trenching					Malone	e O'Regan Consulting Engineers		Scale: 1:25		
Plant:					Date:				FINAL	
8t Tracked Exca					18/10/	2023 RS			1111/12	
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water		
				- -		MADE GROUND: Firm brown slightly sandy slightly gravell fine to coarse. Gravel is rounded fine to coarse.	y CLAY. Sand is		=	
				[-	
			00.50						_	
			98.50	0.40		MADE GROUND: Grey sandy silty angular fine to coarse GI high cobble content. Sand is fine to coarse. Cobbles are ar			0.5	
				-		ringir cobbic content. Sand is time to coarse. Cobbics are ar	iguiai.		-	
			98.20	0.70	× × × ×	Stiff brown slightly sandy gravelly SILT with low cobble cor	ntent. Sand is		-	
					× × × ×	fine to coarse. Gravel is rounded fine to coarse. Cobbles a	re subrounded.			
				-	X X X X				1.0	
				-	XXXX				-	
				<u> </u>	× × × ×					
				 	× × × ×				_	
					× × × ×				1.5 —	
				Ė	× × ×					
				-	\(\times \tim				4	
					× × × ×				-	
				_	* * * * * * * * *				2.0	
			96.70	2.20	* * * * * *	End of trial pit at 2.20m				
						End of that pit at 2.2011			-	
				-					2.5	
				-					-	
									-	
				-					3.0	
									-	
				-						
				-					-	
				-					3.5 —	
				<u> </u>						
				<u> </u>					_	
				-					-	
				 -					4.0	
				<u> </u>					-	
				-					-	
				<u> </u>					4.5	
				<u> </u>						
				-					-	
				<u> </u>						
				-						
	Strikes	Depth: 2.20	- 1	narks:	1					
Struck at (m)	Remarks	Width: 0.50	No §	groundwat	er encou	ntered.				
		Length: 4.00								
		Stability:	Terr	nination R	eason		Last Up	date		
		Unstable	Terminated at scheduled depth. 20/12/						AGS	



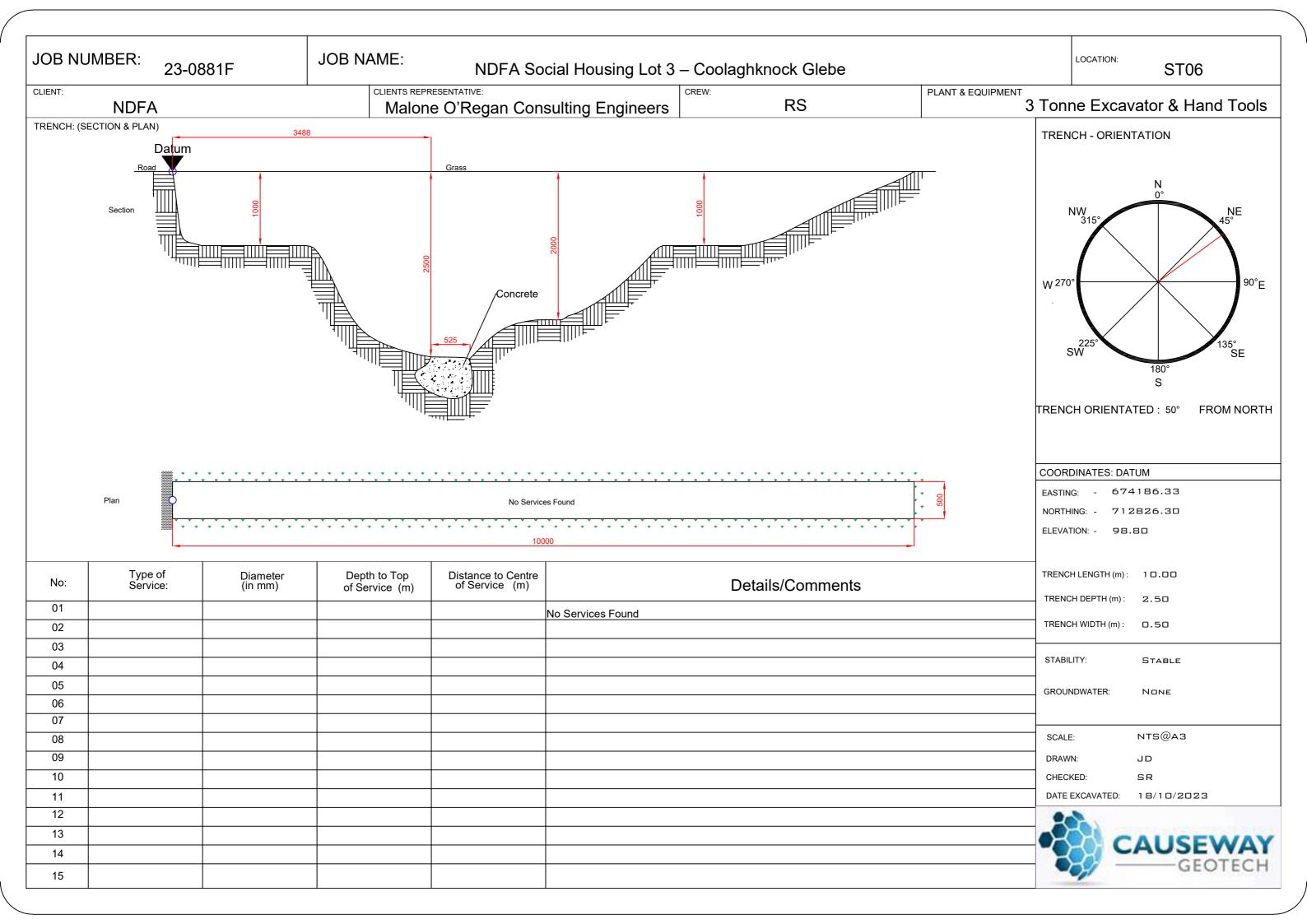
A-N			Proi	ect No.	Project	: Name:		Tri	al Pit ID	
				0881F	1	ocial Housing Lot 3 - Coolaghknock Glebe				
CAUSEWAY GEOTECH Method:					Client:		Sheet 1 of 1			
			Coordinates		NDFA					
			674115.75 E		Client's					
Slit Trenching			7128	85.72 N	1	Malone O'Regan Consulting Engineers				
Plant:					Date:		Scale: 1:25			
8t Tracked Exca	avator		98.88 mOD		18/10/	Date: Logger: 18/10/2023 RS			INAL	
Depth	Sample /	Field Records	Level	Depth	Legend	Description		Ē		
		Field Records			Legend A A A A A A A A A A A A A A A A A A A	Description MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY cobble content and rare sheets of plastic. Sand is fine to coarse. rounded fine to coarse. Cobbles are rounded. Stiff brown slightly sandy slightly gravelly SILT with low cobble co Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles a rounded.	with low Gravel is	Mater	1.5 — 1.5 —	
				E						
				-				\perp		
Mata	Strikes	<u> </u>	Ren	narks:						
Struck at (m)	Remarks	Depth: 2.50	- 1	groundwat	er encou	ntered.				
Struck at (III)	Remarks	Width: 0.50	''		554					
		Length: 8.00								
		Stability:	Terr	mination R	eason	Т	Last Upda	ted		
						lonth			ACC	
		Stable	Terminated at scheduled depth. 20/12/2						AGS	



			Pro	ect No.	Project	t Name:		Tris	al Pit ID	
- 201				-0881F		Social Housing Lot 3 - Coolaghknock Glebe		1116	מודונוט	
CAUSEWAY GEOTECH			_			Client:				
		SEOTECH		- 674186.58 E 712822.31 N Elevation 98.68 mOD		NDFA Client's Representative:				
Method:										
Slit Trenching			7128			e O'Regan Consulting Engineers		Sheet 1 of Scale: 1:25		
Plant:			Ele			Logger:		FINAL		
8t Tracked Exca	ivator		98.6			2023 RS				
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water		
(m)	Tests	Field Records	98.28 96.68	(m) - 0.40	Legend	MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY cobble content. Sand is fine to coarse. Gravel is subrounded fine coarse. Cobbles are subrounded. MADE GROUND: Stiff brown slightly sandy gravelly CLAY with loc content. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is angular fine to coarse. Care angular.	with low to	May May May May May May May May May May	1.5 — 1.5 — 2.0 — 3.5 — 4.0 — 4.5 —	
	Strikes	Depth: 2.00		narks:						
Struck at (m)	Remarks	Width: 0.50	No	groundwat	er encou	nterea.				
		Length: 10.00								
		Stability:		mination R	assor	Т	Last Upda	tod.		
İ		Stable	Terr	Terminated at scheduled depth. 20/12/2						



A-N			Proi	ect No.	Project	: Name:		Т	rial Pit ID	
			l	-0881F	1	ocial Housing Lot 3 - Coolaghknock Glebe		-		
CAUSEWAY			Coordinates		Client:				ST06	
	——— G E	EOTECH	Coordinates		NDFA					
Method:	Method:			.86.33 E	Client's	Sheet 1 of 1				
Slit Trenching			712826.30 N		1	e O'Regan Consulting Engineers		Scale: 1:2		
Plant:			Elevation		Date:					
8t Tracked Exca	vator		98.80 mOD		18/10/	18/10/2023 RS		FINAL		
Depth (m)	Sample /	Field Records	Level (mOD)	Depth	Legend	Description		Water		
(m)	Tests		(עטאו)	(m)		MADE GROUND: Firm brown slightly sandy slightly grave	elly CLAY. Sand is	>		
						fine to coarse. Gravel is rounded fine to coarse.				
				-					_	
				-					-	
				-					0.5 —	
			98.20	0.60		MADE GROUND: Grey slightly sandy slightly silty angula				
				-		GRAVEL with low cobble content. Sand is fine to coarse. angular.	CONNIGS 916		_	
			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 subrounded.	se. Cobbles are		1.0	
				-	× × ×	Subrounded.				
				<u>-</u>	× × × ×				_	
				-	××××				-	
				-	× × ×				1.5 —	
				-	××××					
				-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				_	
					××××				_	
				-	× × × ×				2.0	
				-	× × × ×				=	
				-	× × × × ×					
				-	× × × ×				-	
			96.30	2.50	** × × ×	End of trial pit at 2.50m			2.5 —	
				-						
				-					=	
				-					3.0	
				-						
				-					_	
				-					-	
				-					3.5 —	
				-						
				<u> </u>					_	
									-	
				-					4.0	
				-						
				-						
				-					-	
				-					4.5 —	
				-						
				-						
				-					-	
	Strikes	Depth: 2.50		narks: groundwat	or enco	ntered				
Struck at (m)	Remarks	Width: 0.50	INO	BroundWdt	er encou	merea.				
		Length: 10.00								
		Stability:	Teri	mination R	eason		Last U _l	odate	d T	
		Unstable	Terminated at scheduled depth. 20/12/						AGS	





APPENDIX G SLIT TRENCH PHOTOGRAPHS





ST01





ST01





ST01



ST01





ST02





ST02





ST02



ST02





ST03





ST03





ST03





ST03





ST04





ST04





ST04





ST04





ST04



ST04





ST05





ST05





ST05





ST05





ST05





ST05





ST06





ST06





ST06



ST06





ST06





APPENDIX H SOAKAWAY PIT LOGS AND TEST RESULTS



202				ect No.		Name:		Trial Pit ID
	CAUS	EWAY EOTECH		0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe		IT01
		SEOTECH		dinates	NDFA			1101
1ethod:				15.39 E		Representative:		Sheet 1 of 1
oakaway Pit				05.52 N		e O'Regan Consulting Engineers		Scale: 1:25
lant:	a ata r			wation 5 mOD	Date:	Logger 2023 RS	:	FINAL
t Tracked Exc		etalal passanda	Level	Depth Depth	17/10/			
Depth (m)	Sample / Tests	Field Records	99.25 98.95	Depth (m) - 0.30 - 1.50	Legend The state of the state	Description Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to a Gravel is rounded fine to coarse. Firm light brown slightly sandy slightly gravelly CLAY. Sand is fine coarse. Gravel is rounded fine to coarse. Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to a Gravel is rounded fine to coarse. End of trial pit at 1.50m	e to	2.0 — 3.5 — 4.0 —
				-				
Wate	r Strikes	Depth: 1.50		narks:	1			
Struck at (m)	Remarks	Width: 0.45	No §	groundwat	er encou	ntered.		
		Length: 1.30						
		Stability:	T	nination R	leases		Last Upda	ated -
		Stable	Term	ninated at so	cheduled o	lepth.	20/12/20)23 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

Soakaway Infiltration Test

Project No.: 23-0881F

Site: NDFA Social Housing Lot 3 - Coolaghknock Glebe

1.50

Test Location: IT01

Test Date: 17 October 2023

test pit depth (m)



and CIRIA Report C697-The SUDS Manual

	wiath (m)	iength (m
test pit top dimensions	0.45	1.30
test pit base dimensions	0.30	0.60

depth to groundwater before adding water (m) = Dry

test pit depth (iii)					
	Depth to	Head of water			
Time	water surface	in pit			
(mins)	(m)	(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

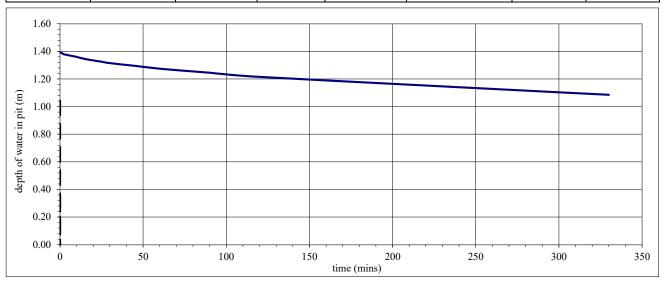
Test end

\$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

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



A-N			Proi	ect No.	Project	Name:		Т	rial Pit ID
				0881F	1	ocial Housing Lot 3 - Coolaghknock Glebe			
	CAUS	EWAY SEOTECH		dinates	Client:			$\overline{}$	IT02
		BEOTECH			NDFA				
Method:				27.20 E	1	Representative:		Sh	eet 1 of 1
Soakaway Pit				42.87 N		e O'Regan Consulting Engineers		S	cale: 1:25
Plant:				vation	Date:		Logger:		FINAL
8t Tracked Exca				3 mOD	17/10/	2023	RS		1111/7/2
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water	
(m)		Field Records	99.98 99.53	(m)	Legend	Firm brown slightly sandy slightly gravelly CLAY. Sand Gravel is rounded fine to coarse. Grey gravelly silty fine to coarse SAND with low cobble rounded fine to coarse. Cobbles are rounded. End of trial pit at 1.50m			1.5 — 2.0 — 3.0 — 4.0 — 4.5 —
				-					4
								+	
	Strikes	Depth: 1.50		narks:				,	
Struck at (m)	Remarks	Width: 0.40	No §	groundwat	er encou	ntered.			
		Length: 1.40							
			Torr	nination R	03505		1.55	t Update	,
		Stability:							
		Stable	Term	ninated at so	cheduled o	lepth.	20	0/12/2023	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) Analysis using method as described in BRE Digest 365
test pit top dimensions 0.30 1.50 and CIRIA Report C697-The SUDS Manual
test pit base dimensions 0.30 1.00

test pit depth (m) 1.50 depth to groundwater before adding water (m) = Dry

Depth to	Head of water
water surface	in pit
(m)	(m)
0.56	0.94
0.56	0.94
0.56	0.94
0.58	0.92
0.61	0.89
0.64	0.86
0.66	0.85
0.67	0.83
0.71	0.80
0.72	0.78
0.75	0.75
0.77	0.73
0.83	0.68
0.89	0.62
1.10	0.40
1.23	0.27
1.29	0.21
1.31	0.19
	water surface (m) 0.56 0.56 0.56 0.58 0.61 0.64 0.66 0.71 0.72 0.75 0.77 0.83 0.89 1.10 1.23 1.29

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

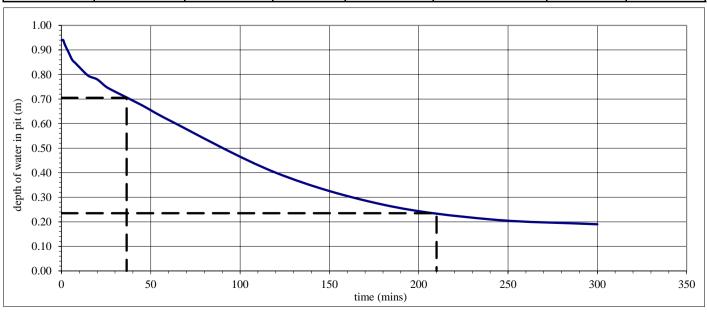
Test end

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

	depth to water	head of water	time	volume of	Area of walls and			
time	surface	in pit	elapsed	water lost	base at 50% drop	q	q	
(mins)	(m)	(m)	(mins)	(m^3)	(m^2)	(m/min)	(m/h)	
36.5	0.80	0.71	173.5	0.16	1.61	5.8E-04	0.035	
210	1.27	0.24	1/3.3	0.16	1.01	3.0E-U4	0.055	



CAUSEWAY Procedure Continue				Proj	ect No.	Project	Name:		Tr	ial Pit ID
Coordinates Coordinates		CALIC	EVA/AV			1				
Method:		CAUS	EVVAI			1			1	IT03
Transfer Transfer		G	EOTECH			NDFA				
Moder Strikes Depth: 1.50 Struke Strikes Depth: 1.50	Method:					Client's	s Representative:		Sh	eet 1 of 1
Strucked Stratuce Strucked Stratuce Strucked Stratuce Strucked Stratuce Strucked Stratuce Strucked Stratuce Strucked Strucke	Soakaway Pit			/127 	5/.77 N	Malone	e O'Regan Consulting Engineers			
Depth Dept	Plant:			Ele	vation	Date:		Logger:		
Month Strikes Page Pag	8t Tracked Exca	vator		99.61	l mOD	17/10/	2023	RS		FINAL
Water Strikes Water Strikes Struck at [mi] Remarks			Field Records		Depth (m)	Legend	Description		Vater	
Woter Strikes March Struck at		.5565		,	,			is fine to coarse.	1	
Weier Strikes Struck at (m) Remarks: Struck at (m) Remarks: With: 0.40 Stability: Termination Reason Last Updated						:	Gravel is rounded fine to coarse.			
Water Strikes Struck at (m) Remarks: No groundwater encountered. Struck at (m) Remarks: No groundwater encountered. No groundwater encountered.				99.31	0.30	× ×	Crow slightly grouply slightly sitty fine to see so CAND	Crouplis rounded		_
Water Strikes Struck at (m) Remarks Struck at (m) Remarks Width: 140 Stability: Termination Reason Last Updated I						×××		. Graver is rounded		-
Water Strikes Struck at (m) Remarks: No groundwater encountered. Width: 0.40 Last Updated Stability: Termination Reason Last Updated					-	X X				0.5
Water Strikes Struck at (m) Remarks: No groundwater encountered. Width: 0.40 Last Updated Stability: Termination Reason Last Updated						×××				
Water Strikes Struck at (m) Remarks: No groundwater encountered. Width: 0.40 Last Updated Stability: Termination Reason Last Updated					-	×××				_
Water Strikes Struck at (m) Remarks: No groundwater encountered. Width: 0.40 Last Updated Stability: Termination Reason Last Updated					-	×××				_
Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Stability Termination Reason Last Updated I					-	×××				1.0
Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Stability Termination Reason Last Updated I					-	××××				-
Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Stability Termination Reason Last Updated I					-	××××				
Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Struck at (m) Remarks Stability Termination Reason Last Updated I					- -	×××				_
Water Strikes Struck at (m) Remarks Struck at (m) Remarks Width: 0.40 Length: 1.50 Width: 0.40 Length: 1.60 Stability: Termination Reason Last Updated				98.11	1.50	××××	End of trial pit at 1.50m		+	1.5 —
Water Strikes Depth: 1.50 Struck at (m) Remarks: No groundwater encountered. Midth: 0.40 Length: 1.40 Stability: Termination Reason					-					-
Water Strikes Depth: 1.50 Struck at (m) Remarks: No groundwater encountered. Midth: 0.40 Length: 1.40 Stability: Termination Reason					-					-
Water Strikes Depth: 1.50 Struck at (m) Remarks: No groundwater encountered. Midth: 0.40 Length: 1.40 Stability: Termination Reason										
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					- -					2.0
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated										_
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					- -					-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					-					
Mater Strikes					[2.5
Mater Strikes					- -					_
Mater Strikes										-
Mater Strikes					-					_
Mater Strikes										3.0
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					- -					
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated										_
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					- -					-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					-					25 —
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					[3.5
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					<u> </u>					4
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated										-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					-					-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					-					4.0 —
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					-					-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated										-
Water Strikes Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated					<u> </u> -					_
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Depth: 1.50 No groundwater encountered. No groundwater encountered. Last Updated					<u> </u>					4.5 —
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Depth: 1.50 No groundwater encountered. No groundwater encountered. Last Updated					[
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Depth: 1.50 No groundwater encountered. No groundwater encountered. Last Updated					-					_
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Depth: 1.50 No groundwater encountered. No groundwater encountered. Last Updated										=
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Depth: 1.50 No groundwater encountered. No groundwater encountered. Last Updated										
Struck at (m) Remarks Width: 0.40 Length: 1.40 Stability: Termination Reason Last Updated		1	Depth: 1.50	- 1						
Length: 1.40 Stability: Termination Reason Last Updated	Struck at (m)	Remarks		NO §	groundwat	er encou	mered.			
Stability: Termination Reason Last Updated										
				Terr	nination R	eason		Last U	pdated	
			Moderately stable				lepth.			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)	Analysis using method as described in BRE Digest 365
test pit top dimensions	0.40	1.40	and CIRIA Report C697-The SUDS Manual
test pit base dimensions	0.30	1.06	

test pit depth (m) 1.50 depth to groundwater before adding water (m) = Dry

	Depth to	Head of water
Time	water surface	in pit
(mins)	(m)	(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

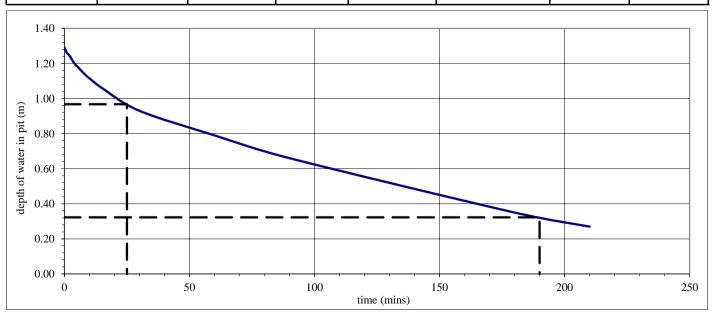
Test end

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

	depth to water	head of water	time	volume of	Area of walls and		
time	surface	in pit	elapsed	water lost	base at 50% drop	q	q
(mins)	(m)	(m)	(mins)	(m^3)	(m^2)	(m/min)	(m/h)
25	0.53	0.97	165	0.27	2.22	7.3E-04	0.044
190	1.18	0.32	103	0.27	2.22	7.3E-04	0.044





APPENDIX I GEOTECHNICAL LABORATORY TEST RESULTS





HEAD OFFICE Causeway Geotech Ltd

NI: +44 (0)28 276 66640

Registered in Northern Ireland. Company Number: NI610766

REGIONAL OFFICE Causeway Geotech (IRL) Ltd

Unit 1 Fingal House Stephenstown Industrial Estate Balbriggan, Co Dublin, Ireland, K32 VR66 ROI: +353 (0)1 526 7465

Company Number: 633786

www.causewaygeotech.com

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



Summary of Classification Test Results

Project No.

Project Name

23-0881F

NDFA Social Housing Lot 3 - Coolaghknock Glebe

		San	nple			Dama	:4		I		ы	ы	Dantiala	
Hole No.	Ref	Top	Base	Туре	Specimen Description	Dens bulk	dry	W	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
				. 7 -		Mg/m	13	%	%	%	%	%	Mg/m3	
TP01	3	1.00		В	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			3.9						
TP02	5	1.00		В	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			4.2						
TP03	4	1.00		В	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			5.7						
TP04	4	1.00		В	Brown sandy slightly gravelly silty CLAY.			18	74	31 -1pt	17	14		CL
TP04	5	2.00		В	Brown sandy slightly gravelly silty CLAY.			12	62	25 -1pt	14	11		CL
TP05	5	2.00		В	Brown gravelly clayey fine to coarse SAND.			4.5						
TP06	4	1.00		В	Brown sandy slightly gravelly silty CLAY.			14	60	33 -1pt	16	17		CL
TP06	5	2.00		В	Brown sandy slightly gravelly silty CLAY.			13	73	26 -1pt	15	11		CL
TP07	4	1.00		В	Grey subangular fine to coarse GRAVEL.			4.9						
TP07	5	2.00		В	Grey slightly sandy subangular fine to coarse GRAVEL.			5.7						

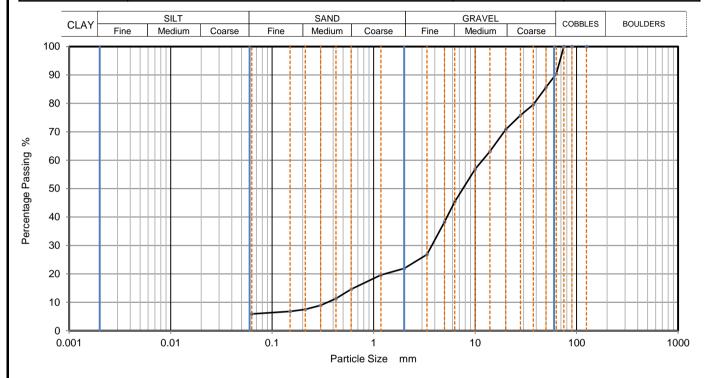
All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key Date Printed Approved By Density test Liquid Limit Particle density Linear measurement unless : 4pt cone unless : sp - small pyknometer 20/11/2023 wd - water displacement cas - Casagrande method gj - gas jar wi - immersion in water 1pt - single point test Stephen Watson



CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F	
——GEOTECH					Borehole/Pit No.		TP01
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		3
Specimen Description	Prown clightly candy cligh	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			Sample	Тор	1.00
Specimen bescription	Brown slightly sandy sligh				Depth (m)	Base	
Specimen Reference	7 Specimen 1 m			m	Sample Type		В
Test Method	S1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus2023102499



Siev	/ing	Sedime	ntation
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

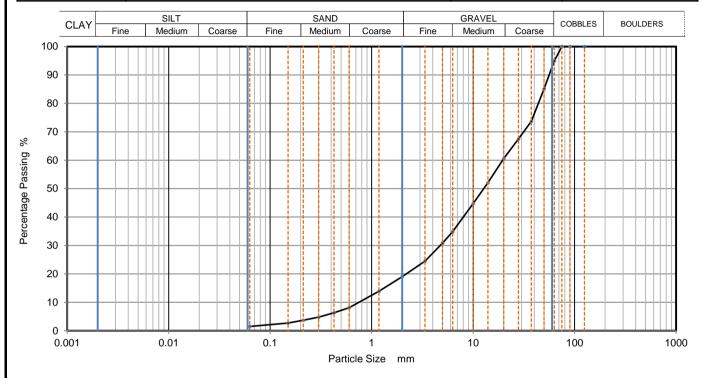
Grading Analysis		
D100	mm	
D60	mm	11.8
D30	mm	3.74
D10	mm	0.352
Uniformity Coefficient		34
Curvature Coefficient		3.4

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





CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F	
——GEOTECH					Borehole/Pit No.		TP02
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe				Sample No.		5
Specimen Description	Prown clightly candy cligh	Brown slightly sandy slightly silty subangular fine to coarse GRAVEL.			Sample	Тор	1.00
Specimen Description	Brown slightly sandy sligh				Depth (m)	Base	
Specimen Reference	7 Specimen 1 m			m	Sample Type		В
Test Method	IS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024100



Siev	/ing	Sedime	entation
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				

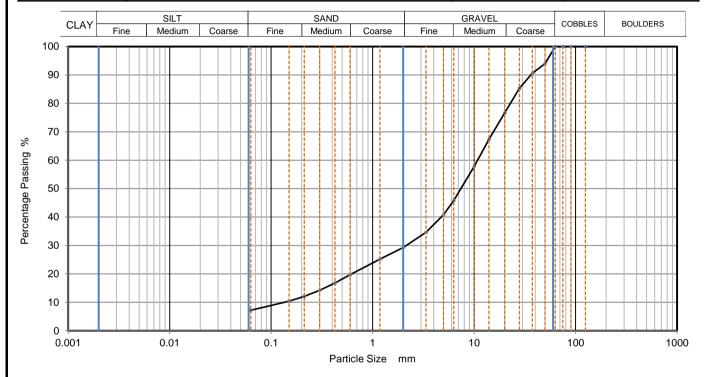
Grading Analysis		
D100	mm	
D60	mm	19.5
D30	mm	4.75
D10	mm	0.75
Uniformity Coefficient		26
Curvature Coefficient		1.5

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





CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F	
——GEOTECH	PARII	CLE SIZE DISTRIBUTION			Borehole/Pit No.		TP03
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		4	
Specimen Description	Prown clightly candy cligh				Sample	Тор	1.00
Specimen Description	brown slightly sandy sligh	itiy siity subaligulai	tly silty subangular fine to coarse GRAVEL.			Base	
Specimen Reference	7 Specimen 1 m				Sample Typ	e	В
Test Method	3S1377:Part 2:1990, clause 9.2			KeyLAB ID		Caus20231024101	



Siev	Sieving		entation
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			

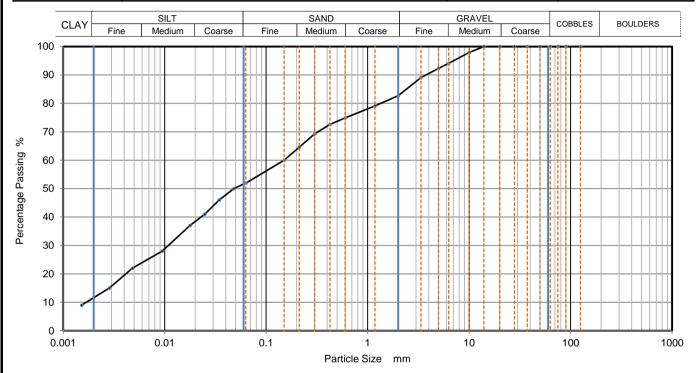
Grading Analysis		
D100	mm	
D60	mm	10.8
D30	mm	2.14
D10	mm	0.133
Uniformity Coefficient		81
Curvature Coefficient		3.2

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





CAUSEWAY	DARTICLE CIZE DISTRIBUTION			Job Ref		23-0881F	
——GEOTECH	PARII	PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.		TP04
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		4	
Specimen Description	Prown sandy slightly gray	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Тор	1.00
Specimen Description	Brown sandy slightly grav					Base	
Specimen Reference	7 Specimen 1 m				Sample Type		В
Test Method	3S1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus20231024102	



Siev	/ing	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	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

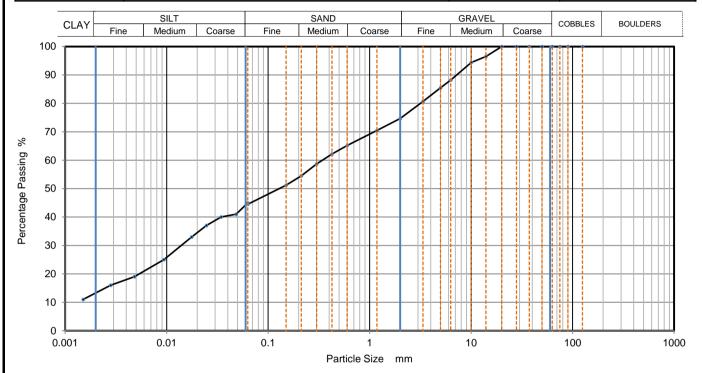
Grading Analysis		
D100	mm	
D60	mm	0.15
D30	mm	0.011
D10	mm	0.00165
Uniformity Coefficient		91
Curvature Coefficient		0.49

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





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



Siev	/ing	Sedime	entation
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

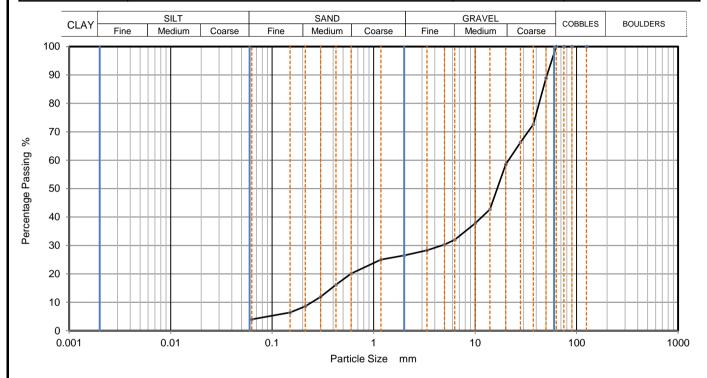
Grading Analysis		
D100	mm	
D60	mm	0.341
D30	mm	0.0135
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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





CAUSEWAY	DARTI	CLE SIZE DIST	FRIENTION		Job Ref		23-0881F
——GEOTECH	PARII	CLE SIZE DIST	RIBUTION		Borehole/P	it No.	TP05
Site Name	NDFA Social Housing L	ot 3 - Coolaghkno	ck Glebe		Sample No		5
Specimen Description	Brown gravelly clayey fine	to coarce CAND			Sample	Тор	2.00
specimen bescription	Brown graveny clayey inte	e to coarse sand.			Depth (m)	Base	
Specimen Reference	6	Specimen Depth	2	m	Sample Typ	е	В
Test Method	BS1377:Part 2:1990, clau	se 9.2			KeyLAB ID		Caus20231024105



Siev	/ing	Sedime	entation
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

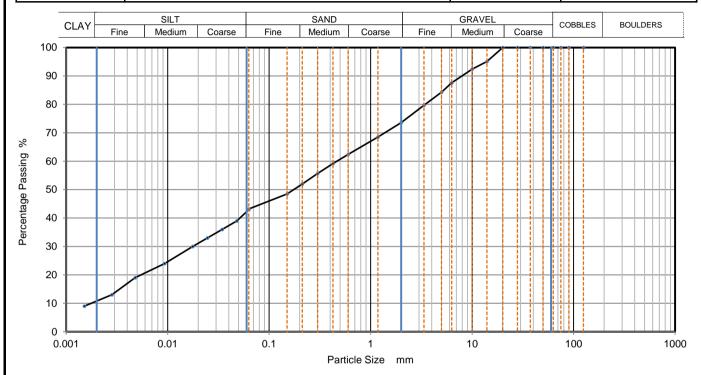
Grading Analysis		
D100	mm	
D60	mm	21.3
D30	mm	4.66
D10	mm	0.246
Uniformity Coefficient		87
Curvature Coefficient		4.2

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





CAUSEWAY	DARTI	CLE SIZE DIST	FDIDLITION		Job Ref		23-0881F
———GEOTECH	PANII	CLE SIZE DIST	INIBOTION		Borehole/F	it No.	TP06
Site Name	NDFA Social Housing L	ot 3 - Coolaghkno	ock Glebe		Sample No		4
Specimen Description	Brown sandy slightly grav	rolly cilty CLAV			Sample	Тор	1.00
Specimen bescription	Brown Sandy Slightly grav	elly silty CLAT.			Depth (m)	Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Typ	oe	В
Test Method	BS1377:Part 2:1990, clau	ses 9.2 and 9.5			KeyLAB ID		Caus20231024106



Siev	ving	Sedime	entation
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

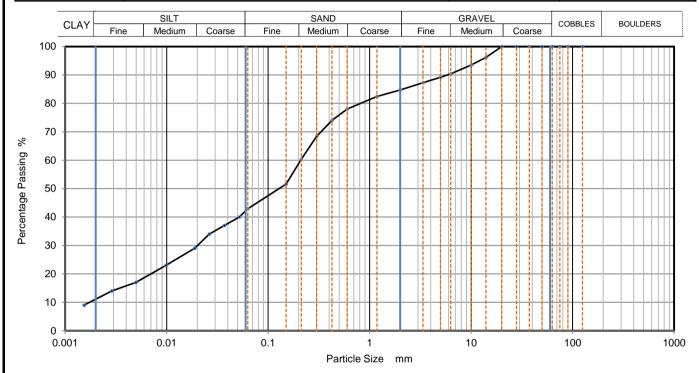
Grading Analysis		
D100	mm	
D60	mm	0.463
D30	mm	0.0172
D10	mm	0.00184
Uniformity Coefficient		250
Curvature Coefficient		0.35

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





CAUSEWAY	DARTICI E CIZE DICTRIBUTIONI		Job Ref		23-0881F		
——— GEOTECH	PARII	PARTICLE SIZE DISTRIBUTION -			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	Тор	2.00	
specimen bescription				Depth (m)	Base		
Specimen Reference	6 Specimen 2 m			Sample Typ	e	В	
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			

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

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

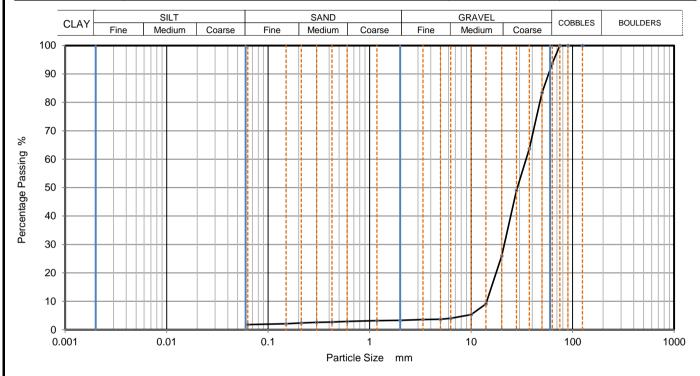




LAB 05R - Version 6

10122

CAUSEWAY	DARTICLE SIZE DISTRIBUTION		Job Ref		23-0881F		
——— GEOTECH	PANII	PARTICLE SIZE DISTRIBUTION -		Borehole/Pit No.		TP07	
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		4	
Specimen Description	Constant of the Assessed CRAVE			Sample	Тор	1.00	
Specimen Description	Grey subangular fine to coarse GRAVEL.		Depth (m)	Base			
Specimen Reference	7 Specimen 1 m			m	Sample Typ	e	В
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID		Caus20231024108



Siev	/ing	Sedime	entation
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

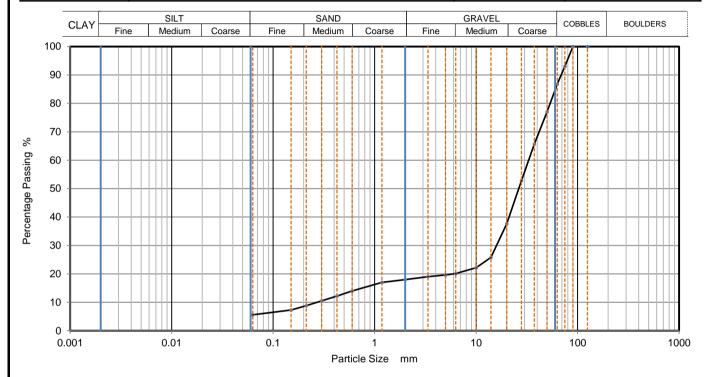
Grading Analysis		
D100	mm	
D60	mm	34.8
D30	mm	21.2
D10	mm	14.3
Uniformity Coefficient		2.4
Curvature Coefficient		0.9

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





CAUSEWAY	DARTICI E CIZE DISTRIBILITIONI			Job Ref		23-0881F	
——GEOTECH	PARII	PARTICLE SIZE DISTRIBUTION -			Borehole/Pit No.		TP07
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		5	
Specimen Description	Crow clightly candy cuban	Grey slightly sandy subangular fine to coarse GRAVEL.			Sample	Тор	2.00
specimen bescription	Grey Siightiy Sahuy Subah	guiar fille to coarse	GRAVEL.		Depth (m)	Base	
Specimen Reference	6 Specimen 2 m			Sample Typ	e	В	
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID		Caus20231024109	



Siev	ving	Sedime	ntation
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	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

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

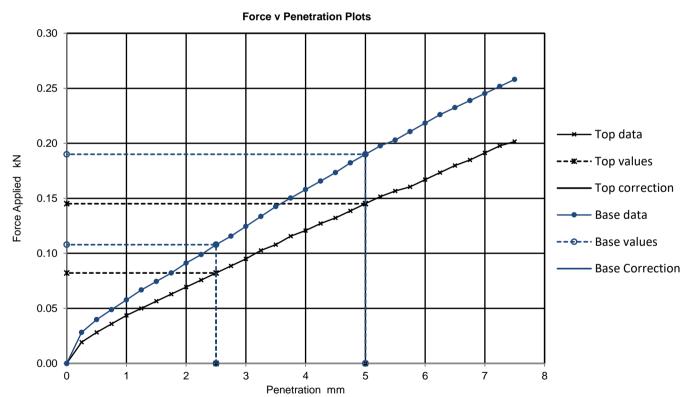




CALISEWAY	California Bearing Ratio (CBR)		Job Ref	23-0881F
GEOTECH	Camornia Bearing R	Borehole/Pit No.	TP04	
Site Name	NDFA Social Housing Lot 3 - Coolaghkn	ock Glebe	Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.		Depth m	1.00
Specimen Reference	Specimen m Depth		Sample Type	В
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	REMOUL	.DED			Soaking details	Not soake	d
Details	Recompa	acted with specified standard e	ffort using 2	2.5kg	Period of soaking		days
	rammer				Time to surface		days
					Amount of swell recorded		mm
Material retained	d 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	%			



Results CBR Values, % Moisture Curve Content correction 2.5mm 5mm Highest Average applied % TOP No 0.6 0.7 0.7 19 BASE No 8.0 1.0 1.0 18

General remarks	Test specific remarks	Approved
	Average result may be reported if within 10% of the mean CBR value of top and base.	

UKAS TESTING

LAB 11R - Version 6

CALISEWAY	California Bearing Ratio (CBR)		Job Ref	23-0881F
CAUSEWAY	Camornia Bearing i	Jilila Bealing Ratio (CBR)		TP05
Site Name	NDFA Social Housing Lot 3 - Coolaghkr	nock Glebe	Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.		Depth m	1.00
Specimen Reference	Specimen m Depth		Sample Type	В
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

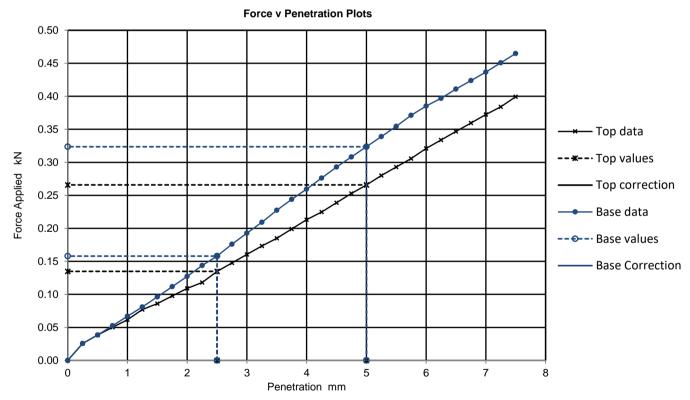
Condition REMOULDED Soaking details Not soaked Details Period of soaking days Recompacted with specified standard effort using 2.5kg rammer Time to surface days Amount of swell recorded mm 2 Material retained on 20mm sieve removed % Dry density after soaking Mg/m3 Initial Specimen details 2.06 Mg/m3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

Dry density

1.76 Mg/m3

Moisture content

17 %



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

General remarks	Test specific remarks	Approved
	Average result may be reported if within 10% of the mean CBR value of top and base.	

UKAS
TESTING
10122

LAB 11R - Version 6

CAUSEWAY	California Bearing Ratio (CBR)		Job Ref	23-0881F
GEOTECH	Camornia Bearing R	Borehole/Pit No.	TP06	
Site Name	NDFA Social Housing Lot 3 - Coolaghkn	ock Glebe	Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.		Depth m	1.00
Specimen Reference	Specimen m Depth		Sample Type	В
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 Period of soaking days Recompacted with specified standard effort using 2.5kg rammer 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 2.15 4.5 Bulk density Mg/m3 Surcharge applied kg

Dry density

1.90 Mg/m3

Moisture content

13 %

Force v Penetration Plots 0.70 0.60 0.50 Top data Force Applied kN -· Top values 0.40 - Top correction Base data 0.30 - •-- Base values Base Correction 0.20 0.10 0.00 3 6 Penetration mm

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

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

UKAS TESTING

LAB 11R - Version 6



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).

Genord

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







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	В	В	В	В	В	В	В	В
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

rest	ivietnoa	LOD	Units								
Inorganics											
рН	DETSC 2008#		рН	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



Information in Support of the Analytical Results

Our Ref 23-26103 Client Ref 23-0881F

Contract COOLAGHKNOCK GLEBE

Containers Received & Deviating Samples

		Date	•	Holding time exceeded for	Inappropriate container for
Lab No	Sample ID	Sampled	Containers Received	tests	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 Causeway Geotech Ltd

NI: +44 (0)28 276 66640

Registered in Northern Ireland. Company Number: NI610766

REGIONAL OFFICE Causeway Geotech (IRL) Ltd

Unit 1 Fingal House Stephenstown Industrial Estate Balbriggan, Co Dublin, Ireland, K32 VR66 ROI: +353 (0)1 526 7465

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

		San	nple			Dens	ity	W	Passing	LL	PL	ΡI	Particle	Casagrande
Hole No.	Ref	Тор	Base	Туре	Specimen Description	bulk Mg/m	dry 3	%	425μm %	%	%	%	density Mg/m3	Classification
BH04	4	0.00	1.20	В	Brown sandy slightly gravelly silty CLAY.			26	82	33 -1pt	21	12		CL
BH04	18	5.00	6.50	В	Brown sandy slightly gravelly silty CLAY.			17	93	25 -1pt	15	10		CL
BH05	12	2.00	3.00	В	Brown sandy slightly gravelly silty CLAY.			10	66	23 -1pt	15	8		CL
BH05	13	3.00	4.00	В	Brown sandy slightly gravelly silty CLAY.			11	61	22 -1pt	15	7		CL
A.II. 4	LAB 01R Version 6													

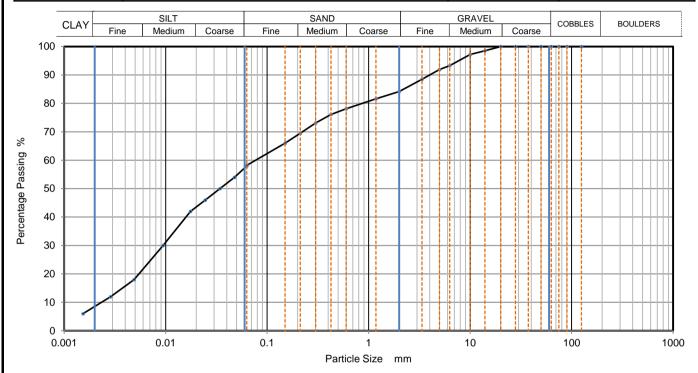
All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key Date Printed Approved By Density test Liquid Limit Particle density Linear measurement unless : 4pt cone unless : sp - small pyknometer 21/11/2023 wd - water displacement cas - Casagrande method gj - gas jar wi - immersion in water 1pt - single point test Stephen Watson



CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F	
———GEOTECH	PARII	CLE SIZE DIST	IKIBUTION		Borehole/P	it No.	BH04
Site Name	NDFA Social Housing L	ock Glebe	Sample No.		4		
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample	Тор	0.00	
specimen bescription	Brown Sandy Siightly grav	relly silty CLAT.			Depth (m)	Base	1.20
Specimen Reference	en Reference 7 Specimen 0 m			m	Sample Type		В
Test Method	Test Method BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023110228



Siev	/ing	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			

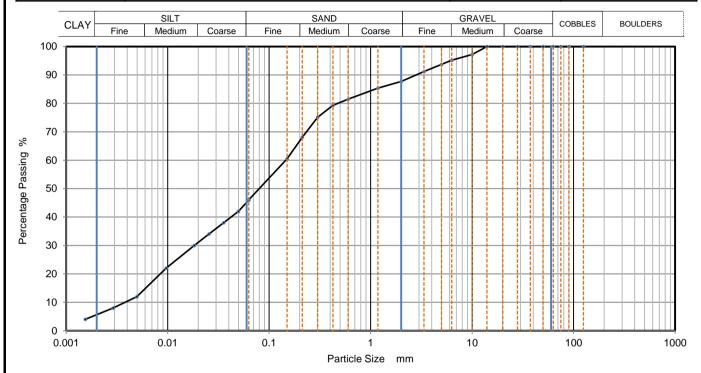
Grading Analysis		
D100	mm	
D60	mm	0.0772
D30	mm	0.00938
D10	mm	0.00232
Uniformity Coefficient		33
Curvature Coefficient		0.49

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





CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881F	
——— GEOTECH	PARII	CLE SIZE DIST	IKIBUTIUN		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	Тор	2.00	
specimen bescription	brown sandy slightly grav	elly silty CLAT.		Depth (m)	Base	2.45	
Specimen Reference	nce 2 Specimen 2 m			Sample Type		В	
Test Method	Test Method BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023110229



Sievi	ng	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	<u> </u>	T			
2	88					
1.18	85	1	<u> </u>			
0.6	82	Particle density	(assumed)			
0.425	79	2.65	Mg/m3			
0.3	75					
0.212	68	1				
0.15	61	1				
0.063	46	1				

Sample Proportions	% dry mass
Cobbles	0.0

323

Dry Mass of sample, g

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

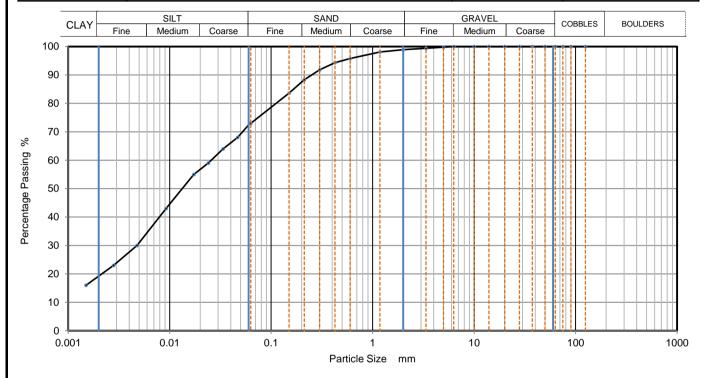
Remarks

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





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



Siev	ving	Sedime	entation
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	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

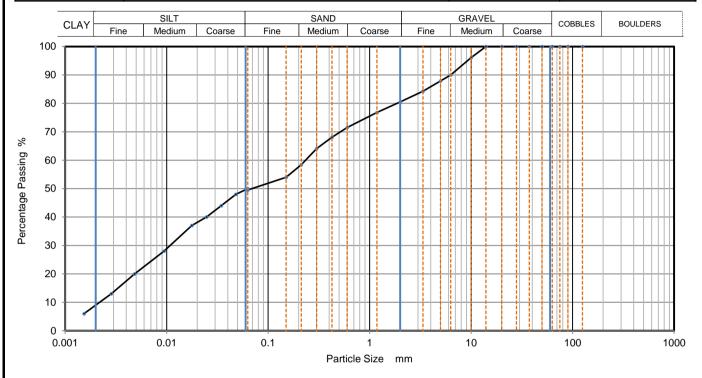
Grading Analysis		
D100	mm	
D60	mm	0.0253
D30	mm	0.00485
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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





CAUSEWAY	PARTICLE SIZE DISTRIBUTION -		Job Ref Borehole/Pit No.		23-0881F		
———GEOTECH					вн05		
Site Name	NDFA Social Housing Lot 3 - Coolaghknock Glebe			Sample No.		12	
Specimen Description	Danish and a distable surveille of the CLAV			Sample Depth (m)	Тор	2.00	
specimen bescription	Brown sandy slightly gravelly silty CLAY.		Base		3.00		
Specimen Reference	6 Specimen 2 m			Sample Typ	e	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023110232



Sieving		Sedime	entation
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	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

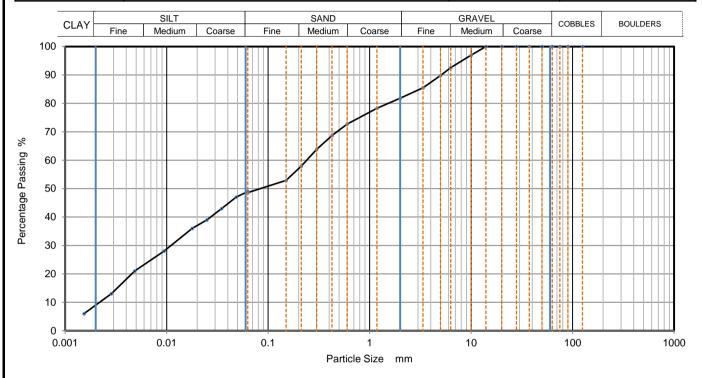
Grading Analysis		
D100	mm	
D60	mm	0.233
D30	mm	0.0112
D10	mm	0.00224
Uniformity Coefficient		100
Curvature Coefficient		0.24

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





CAUSEWAY	DARTI	PARTICLE SIZE DISTRIBUTION -		Job Ref		23-0881F	
———GEOTECH	PARII	CLE SIZE DIST	IKIBUTIUN		Borehole/Pit No.		BH05
Site Name	NDFA Social Housing L	ot 3 - Coolaghkno	ock Glebe		Sample No.		13
Specimen Description	Brown sandy slightly grav	L CAN CAN		Sample	Тор	3.00	
specimen bescription	brown sandy slightly grav	relly silty CLAT.			<u> </u>	Base	4.00
Specimen Reference	6	Specimen Depth	3	m	Sample Type		В
Test Method	BS1377:Part 2:1990, clau	ses 9.2 and 9.5			KeyLAB ID		Caus2023110233



		1	
Sievi	ing	Sedime	entation
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	1	
6.3	93		
5	90	<u> </u>	
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	1	
0.15	53	1	
0.063	49	1	

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

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





CAUSEWAY	Californ	California Bearing Ratio (CBR)		Job Ref	23-0881F
GEOTECH	Californ	ia bearing r	Rallo (CBR)	Borehole/Pit No.	BH04
Site Name	NDFA Social Housing I	Lot 3 - Coolaghkn	ock Glebe	Sample No.	4
Soil Description	Brown sandy slightly gr	ravelly silty CLAY	velly silty CLAY.		0.00
Specimen Reference		Specimen Depth	m	Sample Type	В
Specimen Description	Brown sandy slightly gr	'		KeyLAB ID	Caus2023110228
Test Method	BS1377 : Part 4 : 1990	, clause 7		CBR Test Number	1

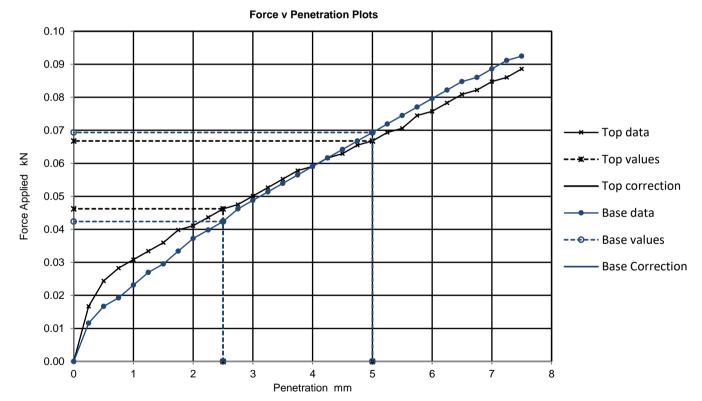
Specimen Preparation

Condition REMOULDED Soaking details Not soaked Details Period of soaking days Recompacted with specified standard effort using 2.5kg rammer Time to surface days Amount of swell recorded mm Material retained on 20mm sieve removed 12 % Dry density after soaking Mg/m3 1.95 4.5

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 %



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

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

UKAS
TESTING
10122

LAB 11R - Version 6

CAUSEWAY	California Bearing Ratio (CBR)	Job Ref	23-0881F
GEOTECH	Camornia Bearing Ratio (CBR)	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 m Depth	Sample Type	В
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 Period of soaking days Recompacted with specified standard effort using 2.5kg rammer Time to surface days Amount of swell recorded mm 3 Material retained on 20mm sieve removed % Dry density after soaking Mg/m3 Initial Specimen details 1.99 4.5 Bulk density Mg/m3 Surcharge applied kg Dry density 1.67 Mg/m3 kPa

19

%

Force v Penetration Plots 0.40 0.35 0.30 Top data 0.25 Force Applied kN -· Top values - Top correction 0.20 Base data 0.15 - •-- Base values Base Correction 0.10 0.05 0.00 6 Penetration mm

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

Moisture content

General remarks	Test specific remarks	Approved
	Average result may be reported if within 10% of the mean CBR value of top and base.	

UKAS TESTING

LAB 11R - Version 6

Moisture

Content

%

19

20



Certificate of Analysis

Issued:

16-Nov-23

Certificate Number 23-26601

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







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	В	В
Sampling Date	09/11/2023	09/11/2023
Sampling Time	n/s	n/s

Test Method LOD Units

Inorganics					
рН	DETSC 2008#		рН	8.0	7.8
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	13	19



Holding time inappropriate

Information in Support of the Analytical Results

Our Ref 23-26601 Client Ref 23-0881F

Contract COSLAGHKNOCK GLEBE

Containers Received & Deviating Samples

		Date		exceeded for	container for
Lab No	Sample ID	Sampled	Containers Received	tests	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



APPENDIX J ENVIRONMENTAL LABORATORY TEST RESULTS





Certificate of Analysis

Issued:

06-Nov-23

Certificate Number 23-25555

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







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									
рН	DETSC 2008#		рН	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



Our Ref 23-25555 Client Ref 23-0881F

Contract Title COOLNAGHKNOCK (GLEBE								
			Lab No	2254876	2254877	2254878	2254879	2254880	2254881
		.Sa	imple ID	TP01	TP02	TP02	TP02	TP04	TP05
			Depth	0.50	0.50	1.00	3.00	0.50	1.00
		(Other ID						
		Samı	ple Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampl	ing Date	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
		Sampli	ing 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
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
		4.0	41	4.0	4.0	4.0	4.0	4.0	10
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
Acenaphthene	DETSC 3301	0.1	mg/kg		< 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
Phenanthrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	0.7	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	0.7	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	1.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg		< 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	0.5	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg		< 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	0.2	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg		< 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	0.5	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg		< 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
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		
PAH 16 Total	DETSC 3301	1.6	mg/kg		< 1.6	< 1.6	< 1.6	5.6	
PCBs		<u> </u>							
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
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



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					
рН	DETSC 2008#		рН	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



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



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*			Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
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.



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

Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	1.4
DETSC 2003# Loss On Ignition	%	0.75
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	8.5
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	4.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

W	WAC Limit Values								
Inert	SNRHW	Hazardous							
Waste	SINULIAN	Waste							
3	5	6							
n/a	n/a	10							
6	n/a	n/a							
1	n/a	n/a							
500	n/a	n/a							
100	n/a	n/a							
n/a	>6	n/a							
n/a	TBE	TBE							
n/a	TBE	TBE							

WAC Limit Values

Test	Resu	ltς	On	Leac	hate
1636	11C3U	11.3	OII	LCal	IIalc

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.49	< 0.01
DETSC 2306 Barium as Ba	1.8	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.1
DETSC 2306 Copper as Cu	0.97	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.23	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	0.29	< 0.03
DETSC 2306 Zinc as Zn	< 1.3	< 0.01
DETSC 2055 Chloride as Cl	780	< 100
DETSC 2055* Fluoride as F	110	1.1
DETSC 2055 Sulphate as SO4	2000	< 100
DETSC 2009* Total Dissolved Solids	33000	330
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	2500	< 50

Limit values for LS10 Leachate				
Inert	SNRHW	Hazardous		
Waste	SINULIAN	Waste		
0.5	2	25		
20	100	300		
0.04	1	5		
0.5	10	70		
2	50	100		
0.01	0.2	2		
0.5	10	30		
0.4	10	40		
0.5	10	50		
0.06	0.7	5		
0.1	0.5	7		
4	50	200		
800	15,000	25,000		
10	150	500		
1000	20,000	50,000		
4000	60,000	100,000		
1	n/a	n/a		

800

TBE - To Be Evaluated

SNRHW - Stable Non-Reactive

Hazardous Waste

1000

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

V.2.06

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



Our Ref 23-25555 Client Ref 23-0881F

Contract Title COOLNAGHKNOCK GLEBE

Sample Id TP02 0.50

Mass of Sample Kg*

Stage 1

V.2.06

Mass of dry Sample Kg*

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2254877 2254885 Date Analysed 06/11/2023

Test Results On Waste			H	WAC Limit Values		
				Inert	CNIDLIM	Hazardous
	Units	Result]	Waste	SINULIAN	Waste
	%	1.0]	3	5	6
	%	0.96	H	n/a	n/a	10
	mg/kg	< 0.04	H	6	n/a	n/a
	mg/kg	< 0.01	H	1	n/a	n/a
I	mg/kg	< 10	Н	500	n/a	n/a
	mg/kg	< 1.6	H	100	n/a	n/a
	pH Units	8.6	H	n/a	>6	n/a
(pH4)	mol/kg	< 1.0	Н	n/a	TBE	TBE
(pH7)	mol/kg	< 1.0	╛	n/a	TBE	TBE
		•	ĺ	W	AC Limit Va	lues
				Limit val	ues for LS10) Leachate
Conc in E	luate ug/l	Amount Leached* mg/kg		Inert	CNIDLINA	Hazardous
10	0:1	LS10	1	Waste	SNKHW	Waste
0.	.39	< 0.01	1	0.5	2	25
]	2	< 0.1		20	100	300
< 0.	.030	< 0.02	H	0.04	1	5
< 0).25	< 0.1	H	0.5	10	70
0.	.88	< 0.02	H	2	50	100
< 0.	.010	< 0.002	H	0.01	0.2	2
< :	1.1	< 0.1	Н	0.5	10	30
< 0).50	< 0.1	H	0.4	10	40
0	.3	< 0.05	H	0.5	10	50
< 0).17	< 0.05	H	0.06	0.7	5
< 0).25	< 0.03	H	0.1	0.5	7
< :	1.3	< 0.01	H	4	50	200
6	60	< 100	H	800	15,000	25,000
< 1	100	< 0.1	H	10	150	500
16	500	< 100	H	1000	20,000	50,000
290	000	290		4000	60,000	100,000
< 1	100	< 1		1	n/a	n/a
29	900	< 50]	500	800	1000
			-	TBE -	To Be Evalua	ated
9	.1			SNRHW -	Stable Non-l	Reactive
40	0.7				Hazardous V	Vaste
(10 0. <0 <0 <0 <0 <0 <0 <0 <1 6 29 <1	% % mg/kg mg/kg mg/kg mg/kg pH Units (pH4) %	% 0.96 mg/kg < 0.04 mg/kg < 0.01 mg/kg < 1.6 pH Units 8.6 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 < 0.1 < 0.1 < 0.1 < 0.1 < 0.002 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.05 < 0.17 < 0.05 < 0.17 < 0.05 < 0.25 < 0.03 < 1.3 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.00 < 1.00 < 0.1 < 0.00 < 0.1 < 0.00 < 1.00 < 0.1 < 0.00 < 0.1 < 0.00 < 0.1 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.00 < 0.	% 1.0 % 0.96 mg/kg < 0.04 mg/kg < 0.01 mg/kg < 1.6 pH Units 8.6 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0 mol/kg < 1.0	Note Note	Note

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

0.100

0.095

0.942

0.89



Our Ref 23-25555 Client Ref 23-0881F

Contract Title COOLNAGHKNOCK GLEBE

Sample Id TP02 1.00

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2254878 2254886 Date Analysed 06/11/2023

Test Results On Waste				ΙE	W	AC Limit Va	lues
rest results on waste					Inert	SNRHW	Hazardous
Determinand and Method Reference		Units	Result	J L	Waste		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 (p	H4)	mol/kg	4.8		n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	H7)	mol/kg	< 1.0	J L	n/a	TBE	TBE
Test Results On Leachate			•	ÌГ	W	AC Limit Va	lues
rest results on Leachate					Limit val	ues for LS10) Leachate
Determinand and Method Reference	Conc in E	luate ug/l	Amount Leached* mg/kg	$] \ \lceil$	Inert	SNRHW	Hazardous
Determinant and Method Reference	10	0:1	LS10] [Waste	SINULIAN	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	8.	50	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 1	100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	17	700	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	180	000	180		4000	60,000	100,000
DETSC 2130 Phenol Index	< 1	100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	28	300	< 50		500	800	1000
Additional Information			_		TBE -	To Be Evalua	ated
DETSC 2008 pH	8	.7			SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	25	5.3		L		Hazardous V	Vaste
* Temperature*	18	3.0					
Mass of Sample Kg*	0.1	100					
Mass of dry Sample Kg*	0.0	094					
Stage 1	•						
	3						

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

0.939

0.88



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
DETSC 2084# Total Organic Carbon	%	1.2
DETSC 2003# Loss On Ignition	%	0.85
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	8.8
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

WAC Limit Values					
Inert	SNRHW	Hazardous			
Waste	SINULIAN	Waste			
3	5	6			
n/a	n/a	10			
6	n/a	n/a			
1	n/a	n/a			
500	n/a	n/a			
100	n/a	n/a			
n/a	>6	n/a			
n/a	TBE	TBE			
n/a	TBE	TBE			
W	WAC Limit Values				

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.28	< 0.01
DETSC 2306 Barium as Ba	3.2	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.1
DETSC 2306 Copper as Cu	0.66	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.13	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.03
DETSC 2306 Zinc as Zn	8.5	0.085
DETSC 2055 Chloride as Cl	650	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	1300	< 100
DETSC 2009* Total Dissolved Solids	33000	330
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	2600	< 50

Limit values for LS10 Leachate				
Inert	SNRHW	Hazardous		
Waste	SINULIAN	Waste		
0.5	2	25		
20	100	300		
0.04	1	5		
0.5	10	70		
2	50	100		
0.01	0.2	2		
0.5	10	30		
0.4	10	40		
0.5	10	50		
0.06	0.7	5		
0.1	0.5	7		
4	50	200		
800	15,000	25,000		
10	150	500		
1000	20,000	50,000		
4000	60,000	100,000		
1	n/a	n/a		

800

TBE - To Be Evaluated

SNRHW - Stable Non-Reactive

Hazardous Waste

1000

Additional Information

DETSC 2008 pH

DETSC 2009 Conductivity uS/cm

Mass of Sample Kg*

Mass of dry Sample Kg*

0.100

0.096

Stage 1

* Temperature*

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.

9.0

46.6

18.0



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

Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	1.4
DETSC 2003# Loss On Ignition	%	4.6
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	10.0
DETSC 3301 PAHs	mg/kg	5.6
DETSC 2008# pH	pH Units	7.6
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

WAC Limit Values				
Inert	SNRHW	Hazardous		
Waste	SINULIAN	Waste		
3	5	6		
n/a	n/a	10		
6	n/a	n/a		
1	n/a	n/a		
500	n/a	n/a		
100	n/a	n/a		
n/a	>6	n/a		
n/a	TBE	TBE		
n/a	TBE	TBE		
W	AC Limit Va	lues		

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.26	< 0.01
DETSC 2306 Barium as Ba	2.2	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.1
DETSC 2306 Copper as Cu	0.81	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.4	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.03
DETSC 2306 Zinc as Zn	< 1.3	< 0.01
DETSC 2055 Chloride as Cl	700	< 100
DETSC 2055* Fluoride as F	210	2.1
DETSC 2055 Sulphate as SO4	1900	< 100
DETSC 2009* Total Dissolved Solids	19000	190
DETSC 2130 Phenol Index	< 100	<1
DETSC 2085 Dissolved Organic Carbon	2400	< 50

WAC LIMIT Values						
Limit val	Limit values for LS10 Leachate					
Inert	SNRHW	Hazardous				
Waste	SINULIAN	Waste				
0.5	2	25				
20	100	300				
0.04	1	5				
0.5	10	70				
2	50	100				
0.01	0.2	2				
0.5	10	30				
0.4	10	40				
0.5	10	50				
0.06	0.7	5				
0.1	0.5	7				
4	50	200				
800	15,000	25,000				
10	150	500				
1000	20,000	50,000				
4000	60,000	100,000				
1	n/a	n/a				
500	800	1000				

TBE - To Be Evaluated

SNRHW - Stable Non-Reactive

Hazardous Waste

Additional Information

Mass of dry Sample Kg*

 DETSC 2008 pH
 8.2

 DETSC 2009 Conductivity uS/cm
 27.2

 * Temperature*
 18.0

 Mass of Sample Kg*
 0.120

Stage 1

Volume of Leachant L2* 0.994
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.

0.101



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		
DETSC 2084# Total Organic Carbon	%	0.5		
DETSC 2003# Loss On Ignition	%	2.5		
DETSC 3321# BTEX	mg/kg	< 0.04		
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01		
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10		
DETSC 3301 PAHs	mg/kg	< 1.6		
DETSC 2008# pH	pH Units	7.8		
DETSC 2073* Acid Neutralisation Capacity (pH	4) mol/kg	< 1.0		
DETSC 2073* Acid Neutralisation Capacity (pH	7) mol/kg	< 1.0		
Test Results On Leachate				
Conc in Eluate ug/l Amount Leached* mg/l				

W	WAC Limit Values				
Inert	SNRHW	Hazardous			
Waste	SINULIAN	Waste			
3	5	6			
n/a	n/a	10			
6	n/a	n/a			
1	n/a	n/a			
500	n/a	n/a			
100	n/a	n/a			
n/a	>6	n/a			
n/a	TBE	TBE			
n/a	TBE	TBE			

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinant and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.16	< 0.01
DETSC 2306 Barium as Ba	3.2	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	0.61	< 0.1
DETSC 2306 Copper as Cu	0.46	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.15	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.03
DETSC 2306 Zinc as Zn	32	0.32
DETSC 2055 Chloride as Cl	840	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	6800	< 100
DETSC 2009* Total Dissolved Solids	37000	370
DETSC 2130 Phenol Index	< 100	<1
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50

WAC Limit Values						
Limit val	Limit values for LS10 Leachate					
Inert	SNRHW	Hazardous				
Waste	SINULIAN	Waste				
0.5	2	25				
20	100	300				
0.04	1	5				
0.5	10	70				
2	50	100				
0.01	0.2	2				
0.5	10	30				
0.4	10	40				
0.5	10	50				
0.06	0.7	5				
0.1	0.5	7				
4	50	200				
800	15,000	25,000				
10	150	500				
1000	20,000	50,000				
4000	60,000	100,000				
1	n/a	n/a				
500	800	1000				

TBE - To Be Evaluated

SNRHW - Stable Non-Reactive

Hazardous Waste

Additional Information
DETSC 2008 pH

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* 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.

0.096



Our Ref 23-25555 Client Ref 23-0881F

Contract Title COOLNAGHKNOCK GLEBE

Sample Id TP06 0.50

Test Results On Waste

Sample Numbers 2254882 2254890 Date Analysed 06/11/2023

WAC Limit Values

lest Results On Waste		1		41	Inert	I SNRHW I	
Determinand and Method Reference		Units	Result	41	Waste		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 (p	oH4)	mol/kg	< 1.0		n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	oH7)	mol/kg	< 1.0	ا ل	n/a	TBE	TBE
Test Results On Leachate					WAC Limit Values		lues
rest Results Off Leachate				╝	Limit val	ues for LS10	
Determinand and Method Reference	Conc in E	luate ug/l	Amount Leached* mg/kg	3	Inert SNRHW		Hazardous
Determinant and Wicthou Reference	10):1	LS10	╝	Waste	SIGNITOR	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	8.	70	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	2	40	2.4		10	150	500
DETSC 2055 Sulphate as SO4	19	000	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	44	000	440		4000	60,000	100,000

Additional Information

DETSC 2130 Phenol Index

DETSC 2085 Dissolved Organic Carbon

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* 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.

< 100

2400

0.102

< 1

< 50

1

500

n/a

800

TBE - To Be Evaluated

SNRHW - Stable Non-Reactive

Hazardous Waste

n/a

1000



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

Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	0.5
DETSC 2003# Loss On Ignition	%	3.2
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	7.7
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

W	WAC Limit Values					
Inert	SNRHW	Hazardous				
Waste	SINULIAN	Waste				
3	5	6				
n/a	n/a	10				
6	n/a	n/a				
1	n/a	n/a				
500	n/a	n/a				
100	n/a	n/a				
n/a	>6	n/a				
n/a	TBE	TBE				
n/a	TBE	TBE				

WAC Limit Values Limit values for LS10 Leachate

Test	Resu	ltς	On	Leac	hate
1636	11C3U	11.3	OII	LCal	IIalc

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.41	< 0.01
DETSC 2306 Barium as Ba	1.3	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	0.55	< 0.1
DETSC 2306 Copper as Cu	0.74	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	1.1	< 0.1
DETSC 2306 Lead as Pb	0.48	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.03
DETSC 2306 Zinc as Zn	3	0.03
DETSC 2055 Chloride as Cl	2000	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	3300	< 100
DETSC 2009* Total Dissolved Solids	37000	370
DETSC 2130 Phenol Index	< 100	<1
DETSC 2085 Dissolved Organic Carbon	2200	< 50

Inert	SNRHW	Hazardous
Waste	SINKHW	Waste
0.5	2	25
20	100	300
0.04	1	5
0.5	10	70
2	50	100
0.01	0.2	2
0.5	10	30
0.4	10	40
0.5	10	50
0.06	0.7	5
0.1	0.5	7
4	50	200
800	15,000	25,000
10	150	500
1000	20.000	50.000

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

60,000

n/a

800

100,000 n/a

1000

4000

1

500

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

V.2.06

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.



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

LUDITO	Junipic ID	Jampica	Containers received	riolanig time exceeded for tests	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 (L0	D 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







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						
рН	DETSC 2008#		рН	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



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

		Samnli	ing Time	n/s	n/s	n/s
Test	Method	LOD	Units	11/3	11/3	11/3
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
Ali/Aro C10-C44: EH CU 1D Total	DETSC 3072*	10	mg/kg			< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg			< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01		< 0.01
Xylene	DETSC 3321#	0.01	mg/kg			< 0.01
MTBE	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
INTIBL	DL13C 3321	0.01	IIIg/ Ng	₹ 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	22.000022		6/6		0	
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg			< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.1
Fluorene	DETSC 3301	0.1	mg/kg			< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg			< 0.1
Anthracene	DETSC 3301	0.1	mg/kg			< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1
Pyrene	DETSC 3301	0.1	mg/kg			< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			< 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	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			< 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	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg			< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6
PCBs			<u> </u>			
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
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
PCB 180	DETSC 3401#	0.01	mg/kg		< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg			< 0.01
Phenols			<u> </u>			
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	< 0.3	< 0.3



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*			Υ	Υ	Υ
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



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
DETSC 2084# Total Organic Carbon	%	1.7
DETSC 2003# Loss On Ignition	%	4.5
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	7.8
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

W	AC Limit Va	lues
Inert	SNRHW	Hazardous
Waste	SINULIAN	Waste
3	5	6
n/a	n/a	10
6	n/a	n/a
1	n/a	n/a
500	n/a	n/a
100	n/a	n/a
n/a	>6	n/a
n/a	TBE	TBE
n/a	TBE	TBE

Test	Resu	ltς	On	Leac	hate
1636	11C3U	11.3	OII	LCal	IIalc

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.29	< 0.01
DETSC 2306 Barium as Ba	4.6	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.1
DETSC 2306 Copper as Cu	0.9	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.21	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	0.28	< 0.03
DETSC 2306 Zinc as Zn	< 1.3	< 0.01
DETSC 2055 Chloride as Cl	740	< 100
DETSC 2055* Fluoride as F	130	1.3
DETSC 2055 Sulphate as SO4	2300	< 100
DETSC 2009* Total Dissolved Solids	35000	350
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	2100	< 50

W	AC Limit Va	lues
Limit val	ues for LS10) Leachate
Inert	SNRHW	Hazardous
Waste	SINULIAN	Waste
0.5	2	25
20	100	300
0.04	1	5
0.5	10	70
2	50	100
0.01	0.2	2
0.5	10	30
0.4	10	40
0.5	10	50
0.06	0.7	5
0.1	0.5	7
4	50	200
800	15,000	25,000
10	150	500
1000	20,000	50,000
4000	60,000	100,000
1	n/a	n/a
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

V.2.06

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.



Our Ref 23-25930 Client Ref 23-0881F

Contract Title COOLNAGHKOCK GLEBE

Sample Id BH08 1 0.50

Stage 1

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2257359 2257362 *Date Analysed* 13/11/2023

Test Results On Waste					W	AC Limit Va	lues
rest Results On Waste					Inert	SNRHW	Hazardous
Determinand and Method Reference		Units	Result		Waste	SINKHW	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 ()H4)	mol/kg	< 1.0		n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	-	mol/kg	< 1.0		n/a	TBE	TBE
				i	W	AC Limit Va	lues
Test Results On Leachate						ues for LS1	
Determinend and Mathed Defended	Conc in E	luate ug/l	Amount Leached	* mg/kg	Inert	SNRHW	Hazardous
Determinand and Method Reference	10):1	LS10		Waste	SINKHW	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	1.1	< 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	< 2	1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	9!	50	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 1	100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	20	000	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	290	000	290		4000	60,000	100,000
DETSC 2130 Phenol Index		L00	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	21	.00	< 50		500	800	1000
Additional Information	•				TBE -	To Be Evalua	ated
DETSC 2008 pH	6	.7			SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	41	L.3				Hazardous \	Waste
* Temperature*	18	3.0					
Mass of Sample Kg*	0.1	120	-				
Mass of dry Sample Kg*		95					

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

0.927

0.87



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

Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	0.9
DETSC 2003# Loss On Ignition	%	1.5
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	8.2
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

W	AC Limit Va	lues
Inert	SNRHW	Hazardous
Waste	SINULIAN	Waste
3	5	6
n/a	n/a	10
6	n/a	n/a
1	n/a	n/a
500	n/a	n/a
100	n/a	n/a
n/a	>6	n/a
n/a	TBE	TBE
n/a	TBE	TBE

WAC Limit Values

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	0.32	< 0.01
DETSC 2306 Barium as Ba	6	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	< 0.25	< 0.1
DETSC 2306 Copper as Cu	0.84	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.092	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	< 0.25	< 0.03
DETSC 2306 Zinc as Zn	< 1.3	< 0.01
DETSC 2055 Chloride as Cl	770	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	2300	< 100
DETSC 2009* Total Dissolved Solids	42000	420
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50

Limit val	ues for LS10) Leachate
Inert	SNRHW	Hazardous
Waste	SINIVION	Waste
0.5	2	25
20	100	300
0.04	1	5
0.5	10	70
2	50	100
0.01	0.2	2
0.5	10	30
0.4	10	40
0.5	10	50
0.06	0.7	5
0.1	0.5	7
4	50	200
800	15,000	25,000
10	150	500
1000	20,000	50,000
4000	60,000	100,000

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

n/a

800

1 500 n/a

1000

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

V.2.06

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.



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.



Our Ref 23-25930 Client Ref 23-0881F

Contract COOLNAGHKOCK GLEBE

Containers Received & Deviating Samples

Inappropriate Date container for Lab No Sample ID Sampled Containers Received Holding time exceeded for tests 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

Kev: 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 425 μm 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



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 (LC	D 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







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										
рН	DETSC 2008#		рН	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		1.2	mg/kg	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL		1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL		3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL		3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL		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		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



Summary of Chemical Analysis Soil Samples

Our Ref 23-28026 Client Ref 23-0881F

Contract Title Coolnaghknoo	ck Glebe		_							
			Lab No	2269028	2269029	2269030	2269031	2269032	2269033	2269034
		.Sa	mple ID	BH06	BH02	BH07	BH03	BH10	BH11	BH09
			Depth	0.50	0.50	0.50	1.00	1.00	0.50	0.50
		C	Other ID	1	1	1	2	2	1	1
		Samp	ole Type	ES	ES	ES	ES	ES	ES	ES
		Sampli	ng Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
		Sampli	ng 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			1					Ţ.		
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
								·		



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						
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s						

Test	Method	LOD	Units							
Preparation										
BS EN 12457 10:1	DETSC 1009*			Υ	Υ	Υ	Υ	Υ	Υ	Υ
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



Our Ref 23-28026 *Client Ref* 23-0881F

Contract Title Coolnaghknock Glebe

Sample Id BH06 1 0.50

Test Results On Waste

Mass of Sample Kg*

Stage 1

V.2.06

Mass of dry Sample Kg*

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2269028 2269035 Date Analysed 18/12/2023

WAC Limit Values

Test Results On Waste						10 2	Hazardous
Determinand and Method Reference		Units	Result		Inert Waste	SNRHW	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 (p	H4)	mol/kg	< 1.0		n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	H7)	mol/kg	< 1.0	╛	n/a	TBE	TBE
Test Results On Leachate						AC Limit Va	
	Consin F	luate ug/l	Amount Leached* mg/k	_	Inert	ues for LS1	Hazardous
Determinand and Method Reference):1	LS10	g	Waste	SNRHW	Waste
DETSC 2306 Arsenic as As		.1	0.011	\dashv	0.5	2	25
DETSC 2306 Barium as Ba		.9	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd		.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr		.7	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	1		< 0.02		2	50	100
DETSC 2306 Mercury as Hg		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		93	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb		.5	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb		.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se		.8	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn		.4	0.24		4	50	200
DETSC 2055 Chloride as Cl		20	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 1	100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	17	00	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	21000		210		4000	60,000	100,000
DETSC 2130 Phenol Index	< 1	100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	26	000	< 50		500	800	1000
Additional Information	•		•	_	TBE -	To Be Evalua	ated
DETSC 2008 pH	6	.4]		SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	30).1				Hazardous \	Vaste
* Temperature*	17	7.0					
			-				

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.

0.100

0.100

0.995

0.945



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

Determinand and Method Reference	Units	Result
DETSC 2084# Total Organic Carbon	%	5.3
DETSC 2003# Loss On Ignition	%	0.41
DETSC 3321# BTEX	mg/kg	< 0.04
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10
DETSC 3301 PAHs	mg/kg	< 1.6
DETSC 2008# pH	pH Units	9.1
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0

W	WAC Limit Values										
Inert	SNRHW	Hazardous									
Waste	SINIVITON	Waste									
3	5	6									
n/a	n/a	10									
6	n/a	n/a									
1	n/a	n/a									
500	n/a	n/a									
100	n/a	n/a									
n/a	>6	n/a									
n/a	TBE	TBE									
n/a	TBE	TBE									

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinand and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	1	0.01
DETSC 2306 Barium as Ba	1.9	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	0.29	< 0.1
DETSC 2306 Copper as Cu	0.43	< 0.02
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.23	< 0.05
DETSC 2306 Antimony as Sb	< 0.17	< 0.05
DETSC 2306 Selenium as Se	1.9	< 0.03
DETSC 2306 Zinc as Zn	3	0.03
DETSC 2055 Chloride as Cl	220	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	890	< 100
DETSC 2009* Total Dissolved Solids	15000	150
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50

WAC Limit Values				
Limit val	ues for LS10) Leachate		
Inert	SNRHW	Hazardous		
Waste	SINITION	Waste		
0.5	2	25		
20	100	300		
0.04	1	5		
0.5	10	70		
2	50	100		
0.01	0.2	2		
0.5	10	30		
0.4	10	40		
0.5	10	50		
0.06	0.7	5		
0.1	0.5	7		
4	50	200		
800	15,000	25,000		
10	150	500		
1000	20,000	50,000		
4000	60,000	100,000		
1	n/a	n/a		
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

V.2.06

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.



Our Ref 23-28026 Client Ref 23-0881F

Contract Title Coolnaghknock Glebe

Sample Id BH07 1 0.50

Stage 1

V.2.06

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2269030 2269037 *Date Analysed* 15/12/2023

est Results On Waste			WAC Limit Values				
rest results on waste				Ine	rt	SNRHW	Hazardous
Determinand and Method Reference		Units	Result	Was	te		Waste
DETSC 2084# Total Organic Carbon		%	2.2	3		5	6
DETSC 2003# Loss On Ignition		%	3.5	n/:	a	n/a	10
ETSC 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	50	0	n/a	n/a
DETSC 3301 PAHs		mg/kg	< 1.6	10	0	n/a	n/a
DETSC 2008# pH		pH Units	8.1	n/a	a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (oH4)	mol/kg	< 1.0	n/a	a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (oH7)	mol/kg	< 1.0	n/a	a	TBE	TBE
Test Results On Leachate				l		AC Limit Va	
	1 a · -	//	la 1 14 /1			ues for LS10	
Determinand and Method Reference		luate ug/l	Amount Leached* mg/kg	4 1		SNRHW	Hazardous
DETCO 2005 A):1	LS10	Was			Waste
DETSC 2306 Arsenic as As		.3	0.013	0.5		2	25
DETSC 2306 Barium as Ba		.8	< 0.1	20		100	300
DETSC 2306 Cadmium as Cd		.030	< 0.02	0.0		1	5
DETSC 2306 Chromium as Cr		88	< 0.1	0.5		10	70
DETSC 2306 Copper as Cu		.9	< 0.02	2		50	100
DETSC 2306 Mercury as Hg		010	< 0.002	0.0		0.2	2
DETSC 2306 Molybdenum as Mo		1.1	< 0.1	0.5		10	30
DETSC 2306 Nickel as Ni		.50	< 0.1	0.4		10	40
DETSC 2306 Lead as Pb		18	< 0.05	0.5	5	10	50
DETSC 2306 Antimony as Sb	< 0	.17	< 0.05	0.0	6	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	63	30	< 100	80	0	15,000	25,000
DETSC 2055* Fluoride as F	< 1	100	< 0.1	10)	150	500
DETSC 2055 Sulphate as SO4	12	.00	< 100	100	00	20,000	50,000
DETSC 2009* Total Dissolved Solids	350	000	350	400	00	60,000	100,000
DETSC 2130 Phenol Index	< 1	L00	< 1	1		n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2	000	< 50	50	0	800	1000
Additional Information			_	•	TBE -	To Be Evalua	ated
DETSC 2008 pH	6	.5		SNR	HW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	50).4		L		Hazardous V	Vaste
* Temperature*	17	7.0					
Mass of Sample Kg*	0.1	110					
Mass of dry Sample Kg*	0.0)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.

0.923

0.87



Our Ref 23-28026 Client Ref 23-0881F

Contract Title Coolnaghknock Glebe

Sample Id BH03 2 1.00

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2269031 2269038 *Date Analysed* 15/12/2023

Test Results On Waste				'	NAC Limit Va	alues
rest results on waste				Inert	SNRHW	Hazardous
Determinand and Method Reference		Units	Result	Waste		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 (p	oH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	oH7)	mol/kg	< 1.0	n/a	TBE	TBE
Test Results On Leachate			•	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	NAC Limit Va	alues
rest results on Leachate				Limit v	alues for LS1	0 Leachate
Determinand and Method Reference	Conc in E	luate ug/l	Amount Leached* mg/kg	Inert	SNRHW	Hazardous
Determinant and Method Reference		0:1	LS10	Waste	SIVINITA	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	1.1	< 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	30	60	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 1	100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	13	300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	260	000	260	4000	60,000	100,000
DETSC 2130 Phenol Index	< 1	100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000		< 50	500	800	1000
Additional Information			_	TBE	- To Be Evalu	ated
DETSC 2008 pH	pH 6.6			SNRHW	- Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	36.6				Hazardous '	Waste
* Temperature*	17	7.0]			
Mass of Sample Kg*	0.1	100				
Mass of dry Sample Kg*	0.0	093				
Stage 1	-					
	٠					

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

0.922

0.87



Our Ref 23-28026 Client Ref 23-0881F

Contract Title Coolnaghknock Glebe

Sample Id BH10 2 1.00

Stage 1

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2269032 2269039 Date Analysed 15/12/2023

est Results On Waste			1	WAC Limit Values			
					Inert	SNRHW	Hazardous
Determinand and Method Reference		Units	Result		Waste	SIVINITV	Waste
DETSC 2084# Total Organic Carbon		%	1.1		3	5	6
ETSC 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 (p	H4)	mol/kg	< 1.0		n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (p	H7)	mol/kg	< 1.0		n/a	TBE	TBE
Test Results On Leachate			•	1	W	AC Limit Va	lues
lest Results On Leachate					Limit val	ues for LS10) Leachate
Determinand and Method Reference	Conc in E	luate ug/l	Amount Leached* mg/kg	3	Inert	SNRHW	Hazardous
	10	0:1	LS10		Waste	SIVINITVV	Waste
DETSC 2306 Arsenic as As		.3	0.013		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	_	45	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu		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		.2	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb		092	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb).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		80	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F		100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	84	40	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids		000	350		4000	60,000	100,000
DETSC 2130 Phenol Index		100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2	000	< 50		500	800	1000
Additional Information					TBE -	To Be Evalua	ated
DETSC 2008 pH		.5			SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm		9.7				Hazardous V	Vaste
* Temperature*	17	7.0					
Mass of Sample Kg*	0.1	110					
Mass of dry Sample Kg*	0.0	096					
Mass of dry Sample Kg*	0.0	096					

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

0.949

0.9



Our Ref 23-28026 Client Ref 23-0881F

Contract Title Coolnaghknock Glebe

Sample Id BH11 1 0.50

* Temperature*

Stage 1

V.2.06

Mass of Sample Kg*

Mass of dry Sample Kg*

Volume of Leachant L2*

Volume of Eluate VE1*

Sample Numbers 2269033 2269040 Date Analysed 15/12/2023

Test Results On Waste Determinand and Method Reference DETSC 2084# Total Organic Carbon DETSC 2003# Loss On Ignition DETSC 3321# BTEX		Units	Result		Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon DETSC 2003# Loss On Ignition					Waste	SIVINITA	Waste
DETSC 2003# Loss On Ignition		0.1					waste
_		%	0.8		3	5	6
DFTSC 3321# BTFX		%	2.6		n/a	n/a	10
22.0000222.2.1		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
Took Booulto On Lookata				Ī	W	AC Limit Va	lues
Test Results On Leachate					Limit val	ues for LS10) Leachate
Determinand and Method Reference	Conc in E	luate ug/l	Amount Leached* mg/	ιg	Inert	CNIDLINA	Hazardous
Determinand and Method Reference	10):1	LS10		Waste	SNRHW	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	0.0)99	< 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	4	70	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 1	L00	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	54	40	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	370	000	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
DETSC 2085 Dissolved Organic Carbon	Additional Information						
			_		TBE -	To Be Evalua	ited
		.6 2.9]			To Be Evalua Stable Non-l	

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

17.0

0.110 0.095

0.933

0.885



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			
DETSC 2084# Total Organic Carbon	%	< 0.5			
DETSC 2003# Loss On Ignition	%	1.8			
DETSC 3321# BTEX	mg/kg	< 0.04			
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01			
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10			
DETSC 3301 PAHs	mg/kg	< 1.6			
DETSC 2008# pH	pH Units	7.9			
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0			
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0			

W	WAC Limit Values							
Inert	SNRHW	Hazardous						
Waste	SINULIAN	Waste						
3	5	6						
n/a	n/a	10						
6	n/a	n/a						
1	n/a	n/a						
500	n/a	n/a						
100	n/a	n/a						
n/a	>6	n/a						
n/a	TBE	TBE						
n/a	TBE	TBE						

WAC Limit Values

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg
Determinant and Method Reference	10:1	LS10
DETSC 2306 Arsenic as As	5.3	0.053
DETSC 2306 Barium as Ba	8.5	< 0.1
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02
DETSC 2306 Chromium as Cr	2.3	< 0.1
DETSC 2306 Copper as Cu	4	0.04
DETSC 2306 Mercury as Hg	< 0.010	< 0.002
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1
DETSC 2306 Nickel as Ni	< 0.50	< 0.1
DETSC 2306 Lead as Pb	0.85	< 0.05
DETSC 2306 Antimony as Sb	3	< 0.05
DETSC 2306 Selenium as Se	2	< 0.03
DETSC 2306 Zinc as Zn	< 1.3	< 0.01
DETSC 2055 Chloride as Cl	480	< 100
DETSC 2055* Fluoride as F	< 100	< 0.1
DETSC 2055 Sulphate as SO4	1900	< 100
DETSC 2009* Total Dissolved Solids	41000	410
DETSC 2130 Phenol Index	< 100	< 1
DETSC 2085 Dissolved Organic Carbon	2700	< 50

WAC LIMIT Values						
Limit val	ues for LS10) Leachate				
Inert	SNRHW	Hazardous				
Waste	SINULIAN	Waste				
0.5	2	25				
20	100	300				
0.04	1	5				
0.5	10	70				
2	50	100				
0.01	0.2	2				
0.5	10	30				
0.4	10	40				
0.5	10	50				
0.06	0.7	5				
0.1	0.5	7				
4	50	200				
800	15,000	25,000				
10	150	500				
1000	20,000	50,000				
4000	60,000	100,000				
1	n/a	n/a				
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* Stage 1

V.2.06

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.

0.100



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.



Our Ref 23-28026 *Client Ref* 23-0881F

Contract Coolnaghknock Glebe

Containers Received & Deviating Samples

Coman	iers neceiveu & i	Date	p.es		Inappropriate container for
Lab No	Sample ID	Sampled	Containers Received	Holding time exceeded for tests	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)	



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	Jampieu	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)	



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



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	O EH_1D_Total

End of Report



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 Ea (GPa): 208

Accelerometer No.1:

64786

Accelerometer No.2:

64789

SPT Hammer Information

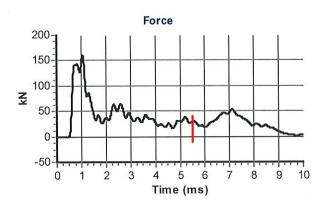
Hammer Mass m (kg): 63.5

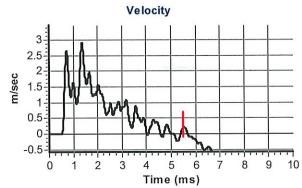
Falling Height h (mm): 760

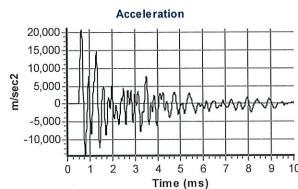
SPT String Length L (m): 10.0

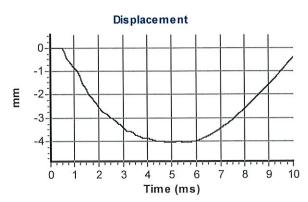
Comments / Location

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

Technician

Title:

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 Ea (GPa): 208

Accelerometer No.1:

64786

Accelerometer No.2:

64789

SPT Hammer Information

Hammer Mass m (kg):

Falling Height h (mm):

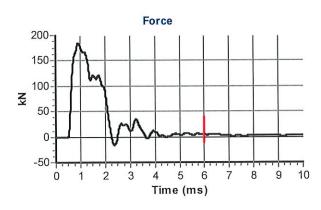
760

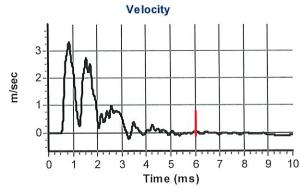
SPT String Length L (m):

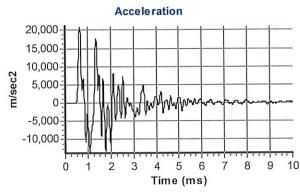
29.7

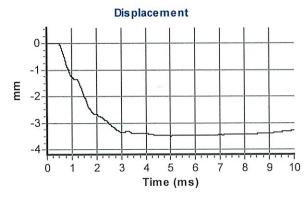
Comments / Location

Midleton









Calculations

Area of Rod A (mm2):

983

Theoretical Energy E_{theor} (J):

473

393

Measured Energy E_{meas}

Energy Ratio E_r (%):

83

Signed:

Title:

Technician

The recommended calibration interval is 12 months