

## NDFA Social Housing Lot 3 Coolaghknock Glebe – Factual Report



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## **Document Control Sheet**

Report No.:		23-0881F							
Project Title:		NDFA Social Housing Lot 3 – Coolaghknock Glebe Factual Report							
Client:		NDFA							
Client's Repres	entative:	Malone O'Regan Consulting Engineers							
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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).
Р	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 strengthVR: 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.
$\bigtriangledown$	Water strike: initial depth of strike.
▼	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 17<sup>th</sup> October and 14<sup>th</sup> 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<sub>(s)</sub>) or solid cone attachment (SPT<sub>(c)</sub>). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections. The SPT hammer energy measurement report is provided in Appendix K.

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

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

#### 4.3 Standpipe installations

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





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

#### 4.4 Trial Pits

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

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

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

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

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

#### 4.5 Slit trenches

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

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

#### 4.6 Infiltration tests

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

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

#### 4.7 Surveying

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

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





#### 4.8 Groundwater monitoring

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

The monitoring records are presented in Section 6.3.

#### 5 LABORATORY WORK

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

#### 5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils comprised:

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

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

The test results are presented in Appendix I.

#### 5.2 Environmental laboratory testing of soils

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

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

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





- Asbestos screen
- Sulphate and sulphide
- pH

Results of environmental laboratory testing are presented in Appendix J.

#### **6 GROUND CONDITIONS**

#### 6.1 General geology of the area

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

#### 6.2 Ground types encountered during investigation of the site

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

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

#### 6.3 Groundwater

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

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

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





#### **Table 1 Groundwater monitoring**

Data	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









## APPENDIX B BOREHOLE LOGS

	C	GEOT	ECH	Pro 23	oject No. -0881F	Project Client: Client's	Name: No No Rep: M	DFA So DFA alone (	cial Housing Lot 3 - C O'Regan Consulting E	oolaghknock ( ngineers	Glebe	Borehole ID BH01
Met Cable Pe	hod rcussion	Plant Used Dando 2000	Top (m) Base (r	n) Coc	ordinates	Final De	epth: 0	).90 m	Start Date: 10/11/202	23 Driller: K	(F	Sheet 1 of 1
				674 712	026.50 E 995.55 N	Elevatio	<b>n:</b> 99.70	) mOD	End Date: 10/11/202	23 Logger: S	iR	FINAL
Depth (m)	Sample / Tests	Field Record	S Casing Wa Depth Dep (m) (n	er th ) mOD	Depth (m)	Legend			Description			Backfill
0.50	ES1			99.60	0 - 0.10		TOPSOIL MADE GROU coarse GRAU Cobbles are	UND: Gr VEL with subang	eyish brown sandy clayey I ow cobble content. Sanc ular. End of Borehole at 0.90	subangular fine t I is fine to coarse.	to .	0.5
												1.5 — - 1.5 — -
					- - - -							2.0
					- - - -							2.5
												- - 3.5 — -
					- - - - - -							4.0
					- - - -							4.5
					- - - - -							5.0 — - 5.5 —
					- - - - -							6.0
					-							6.5 — - - - -
					-							7.0
Struck at (m) Casing To (m)	Water Casing to (m) Details Diameter	Strikes Time (min) Rose to Water Added From (m) To (m	Chisell           (m)         From (m)         1	p (m)	Time (hh:mm)	Remarks Inspection No ground	in pit hand dug dwater encou	g to 1.20 ntered.	m.	1	act linds	ted 1
						Terminate	d on refusal.				22/01/20	<sup>24</sup> AGS

				۸v			Proje	ct No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe	Borehole ID
		G	GEOTE	СН			23-0	1188 1	Client: NDFA	BHUIA
Meth	nod	Plant U	Jsed	Top (m)	Base	(m)	Coord	linates		Sheet 1 of 2
Sonic D	rilling	Fraste CRS	-XL Duo	0.00	10.	20	67402	7 05 F	Final Depth: 10.20 m Start Date: 13/12/2023 Driller: RC	Scale: 1:50
							71299	97.27 N	Elevation: 99.87 mOD End Date: 13/12/2023 Logger: AM	FINAL
Depth (m)	Sample / Tests	Fie	eld Records		Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend Description	Backfill
0.00		13-12-2023			0.00	Dry	99.67	0.20	TOPSOIL	>
									with low cobble content. Sand is fine to coarse. Cobbles are rounded.	0.5 —
1.20 - 1.65	D1						98.67	1.20	Medium dense grevish brown sandy subangular fine to coarse	1.0
1.20 - 2.00 1.20 - 2.70	B13 SB2								GRAVEL of various lithologies. Sand is fine to coarse.	1.5 —
1.20 - 1.65	SPT (S)	N=16 (8,8/5,4	4,4,3)		1.20	0.50				-
2.00 - 2.70	B14						97.87	2.00	Medium dense greyish brown gravelly slightly clayey fine to coarse	2.0
										2.5
2.70 - 3.15 2.70 - 4.20	D3 SB4									
2.70 - 3.15 2.90 - 3.50	SPT (S) B15	N=11 (4,4/3,3	3,2,3)		2.70	0.50				3.0
3.50 - 4.20	B16						96.37	3.50		
									Medium dense greyish brown fine to coarse SAND and subangular fine to coarse GRAVEL of various lithologies with low cobble content.	-
									Cobbles are of limestone.	4.0
4.20 - 4.50 4.20 - 4.65	B17 D5						05.27	4 50		
4.20 - 3.70	SPT (S) B18	N=16 (3,3/4,5	5,4,3)		4.20	0.50	33.37	4.50	Medium dense becoming dense greyish brown sandy slightly clayey subangular fine to coarse GRAVEL of various lithologies with low	+.3
5.00 - 5.65	B19								cobble content. Sand is fine to coarse. Cobbles are of limestone.	5.0
										-
5.65 - 5.70	B20								المعنية المعني معنية المعنية ال	5.5 —
5.70 - 6.15 5.70 - 7.20 5.70 - 6.15	SB8 SPT (S)	N-36 (5 5/8 <sup>-</sup>	10 9 9)		5 70	0 50	93 77	E E 6 10		6.0
6.10 - 6.70	B21	11-30 (3,3/0,	10,5,57		5.70	0.50	55.77	0.10	Very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various	-
6.70 - 7.20	B22								الله المركب ا المركب المركب المركب المركب المركب	6.5 —
										7.0
7.20 - 7.58 7.20 - 8.70	D9 SB10						92.67	7.20	Low recovery: Dense grey subangular fine to coarse GRAVEL of	-
7.20 - 7.58	SPT (S)	50 (8,12/50 f	for 225mm)		7.20	0.50				7.5 —
										8.0
8.20 - 8.40	B23						01.47			
8.40 - 8.70	624 SR12						91.4/	8.40	Stiff greyish brown sandy very gravelly CLAY with low cobble content.	8.5 —
8.70 - 8.93 8.70 - 8 93	D11 SPT (S)	50 (12.13/50	for 75mm		8.70	0.50	51.17	. 0.70	Ithologies. Cobbles are of limestone.           Dense greyish brown sandy subangular fine to coarse GRAVEL of	9.0
9.20 - 9.40	.70 - 8.93 SPT (S) 50 (12,13/50 for 75mm) 8.70 0. .20 - 9.40 B25								Image: Interpretent of the second	
	Wate	r Strikes		Rema	arks					
Struck at (m) (	ruck at (m) Casing to (m) Time (min) Rose to (m) Inspection pi No groundwa							1.20m. red.		
	Det-1	147.0	0 al c <sup>1</sup> <sup>1</sup>	-						
To (m)	Casing Details         Water Added           To (m)         Diam (mm)         From (m)         To (m)           10.00         17.7         0.00         10.00			_						
10.20	10.20 177 0.00 10.20			Core	e Barr	el	Flush	Туре	Termination Reason Last Upda	ated
							Wa	ter	Terminated at scheduled depth. 22/01/20	AGS

	CAUSEV	<b>NAY</b> TECH		Proje 23-C	ct No. )881F	roject Name: NDFA Social Hor lient: NDFA	Ising Lot 3 - Coola	aghknock Glebe	Boreh BH	iole ID 01A
Method	Plant Used	Top (m)	Base (m)	) Coorr	dinates	ient's Rep: Malone O'Rega	Consulting Engi	neers	Sheet	: 2 of 2
Sonic Drilling	Fraste CRS-XL Du	0.00	10.20	67402	27.05 E	nal Depth: 10.20 m  Start D	ate: 13/12/2023	Driller: RC	Scale	e: 1:50
				71299	)7.27 N	evation: 99.87 mOD End Da	te: 13/12/2023	Logger: AM	FIN	<b>J</b> AL
Depth Sample (m) Tests	Field Recor	rds	Casing Depth Depth (m)	Level mOD	Depth (m)	egend	Description		Mater Nater	kfill
9.40 - 10.20 B26				90.47	9.40	Very stiff brown sandy very g	ravelly CLAY with low is subangular fine to	cobble content. coarse of various		9.5
						lithologies. Cobbles are of lir	iestone.			10.0
				89.67	10.20	End of	Borehole at 10.20m		-	
										10.5
										11.0
										11.5
										12.0
										12.5 -
										13.0
										-
										13.5 -
										14.0
										-
										14.5 -
										15.0
										- - 15.5 —
										16.0
										16.5 — -
										-
										17.5
										18.0
	tor Chrikes	Dami			-				-	-
Casing Details To (m) Diam (m 10.20 177	Water Addec           Im)         From (m)         To (i           0.00         10.7	2 (m) Inspec No gro 1 m) 20	ition pit hai	nd dug to encounter	1.20m. red.					
		Core	Barrel	Flush Type Water		mination Reason minated at scheduled depth.		22/01	/2024	AGS

	¢					Proje 23-0	ect No. )881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe         Client:       NDFA	Borehole ID BH02
Met Cable Pe	hod rcussion	Plant Used Dando 2000	<b>Top (m)</b> 0.00	Base	<b>e (m)</b> 65	<b>Coord</b>	<b>dinates</b>	Client's Rep:       Malone O'Regan Consulting Engineers         Final Depth:       1.60 m       Start Date:       11/11/2023       Driller:       BE	Sheet 1 of 1 Scale: 1:40
						71302	13.44 N	Elevation:         106.90 mOD         End Date:         11/11/2023         Logger:         SR	FINAL
Depth (m)	Sample / Tests	Field Rec	ords	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend Description	b Hackfill > Backfill
0.40 0.50	B4 ES1					106.50	- - - 0.40 - -	Greyish brown sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.	- - - 0.5 - - -
1.00 1.00 1.20 - 1.60 1.20 - 1.65	D3 ES2 B5 SPT (C)	N=38 (8,8/9,8,7,14 = 0895	) Hammer SN	1.20	0.00	105.70	- 1.20	Dense greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse.	1.0
						105.25	_ 1:85 _ _ _	Grey BOULDER. Recovered through percussive drilling as angular	2.0
							-		2.5 -
							-		3.0
							-		3.5
									4.0 — - - 4.5 —
							- - - -		
							-		  5.5
							-		
							-		6.5 — — — —
							- - - -		7.0
Struck at (m) Casing To (m) 1.20	Water Casing to (m Details Diameter 200	T Strikes	to (m) From 1.6 d (m) 50	Chis (m) 0	ellin <u></u> To ( 1.6	g Details m) Tim 55	s ie (hh:mm) 00:45	Remarks Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.	
	1.20 200 0.40 1.60							Termination Reason     Last Upd       Terminated on refusal.     22/01/2	lated LI 1024 AGS

		CAUSEW	/AY		Proje 23-0	ect No. )881F	Project Client:	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Gleb Client: NDFA				
	9 -	GEOT	ECH				Client's	<b>Rep:</b> Malone	O'Regan Consultin	g Engineers		
Metho Sonic Dr	od illing	Plant Used Fraste CRS-XL Duo	<b>Top (m)</b> 0.00	Base (m 10.20	) Coord	<b>dinates</b> 02.79 E	Final De	<b></b>	Start Date: 14/12/	2023 Driller:	RC	Sheet 1 of 2 Scale: 1:50
					71299	95.35 N	Elevatio	Elevation: 105.58 mOD End Date: 14/12/2023 Logger: AI				FINAL
Depth (m)	Sample / Tests	Field Record	s	Casing Water Depth Depth (m) (m)	Level mOD	Depth (m)	Legend		Description			backfill
0.00		14-12-2023		0.00 Dry	105.29	0.20		TOPSOIL				-
					105.28	. 0.30	0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	Greyish brown very low cobble content.	sandy subrounded fine Sand is fine to coarse.	e to coarse GRAVE Cobbles are subr	EL with ounded.	0.5 — — — —
1 20 1 65	D1				104.38	1 20	0 0 0 0 0 0					1.0
1.20 - 1.65 1.20 - 1.70 1.20 - 2.70 1.20 - 1.65	B13 SB2 SPT (S)	N=13 (5.5/4.4.3.2)		1.20 0.6	104.38	1.20		Medium dense grey fine to coarse GRAV 1.40m to 1.50m: Very clay	rish brown slightly sand EL of various lithologie rey: borderline CLAY	dy very clayey sub s. Sand is fine to o	angular coarse.	
1.70 - 2.30	B14				103.88	1.70		Medium dense grey fine to coarse GRAV 1.80m to 2.00m: Very clay	ish brown fine to coars EL of various lithologie rey: borderline CLAY	se SAND and suba s.	angular	2.0
2.30 - 2.70	B15				103.28	2.30		Loose brown slightly subangular fine to c	y gravelly fine to coarse oarse of various litholo	e SAND. Gravel is ogies.		
2.70 - 3.15 2.70 - 4.20 2.70 - 3.15	D3 SB4 SPT (S)	N=6 (1 1/2 2 1 1)		2 70 0 6								
3.20 - 3.70	B16				102.38	3.20	0.0	Loose greyish brown	n sandy subangular fin	e to coarse GRAVE	EL of	-
3.70 - 4.20	B17						4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	various lithologies v Cobbles are subrou	vith low cobble conten nded of limestone and	t. Sand is fine to c siltstone.	coarse.	3.5 — - -
4.20 - 4.65	D5				101.38	4.20						4.0
4.20 - 4.70 4.20 - 5.70 4.20 - 4.65 4 70 - 5 10	B18 SB6 SPT (S) B19	N=10 (2,2/3,3,2,2)		4.20 0.6	D			Medium dense grey GRAVEL of various li coarse. Cobbles are	rish brown sandy subar ithologies with low cob subrounded of limesto	ngular fine to coar oble content. Sanc one and siltstone.	rse d is fine to	4.5
5.10 - 5.70	B20				100.48	5.10					SAND	
								Gravel is subangular lithologies.	s			
5.70 - 6.15 5.70 - 7.20	D7 SB8											-
5.70 - 6.15	SPT (S)	N=16 (3,3/5,5,3,3)		5.70 0.6	D							6.0
6.40 - 7.20	B21				99.18	6.40	0 0 0 0	Medium dense grey GRAVEL of various li	rish brown sandy subar ithologies with low cob	ngular fine to coar oble content. Sanc	rse d is fine to	6.5 —
							6 0 0 6 0 0	coarse. Cobbles are	subrounded of limesto	one and siltstone.		7.0
7.20 - 7.65 7.20 - 8.70	D9 SB10						0, 0 0, 0 0, 0 0, 0					-
7.20 - 7.65 7.60 - 8.10	SPT (S) B22	N=22 (2,6/6,7,5,4)		7.20 0.6	ס		6 6 6 6 6 6 6 6					7.5
8.10 - 8 70	B23						2000 2000 2000 2000 2000					8.0
8.70 - 10.20 8.70 - 9.15 8.70 - 9.20 8.70 - 9.15	SB12 D11 B24 SPT (S)	N=37 (8,8/10,11,8,8)		8.70 0.6	96.88	8.70		Dense greyish brow of various lithologie Cobbles are subrou	sandy clayey subangu s with low cobble cont nded of various litholo	lar fine to coarse ( ent. Sand is fine t gies.	GRAVEL to coarse.	9.0
9.20 - 9.70	B25 Wate	r Strikes	Rem	arks								
Struck at (m) C	asing to (m	) Time (min) Rose to (	(m) Insper No gr	ction pit h oundwate	and dug to 1.20m. er encountered.							
Casing D To (m) D	Casing Details         Water Added           To (m)         Diam (mm)         From (m)         To (m)											
10.20	10.20         177         0.00         10.20			Core Barrel Flu			2 Termination Reason Last U				Last Upda	ated
					Wa	ter	Terminated at scheduled depth. 22/01					AGS

2							ct No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock					Bore	ehole ID
	-{}} C		EW	AY		23-0	881F	Client:	NDFA				BI	H02A
	8-	G	OIE	СН				Client's	Rep: Malone	O'Regan Co	nsulting Engir	neers		
Met Sonic D	hod Drilling	Plant Us Fraste CRS-X	ed ·	Top (m) 0.00	Base (m 10.20	) Coord	dinates	Final Dep	<b>oth:</b> 10.20 m	Start Date:	14/12/2023	Driller: RC	She	et 2 of 2
						67410	)2.79 E						502	ne: 1:50
						/1299	95.35 N	Elevatior	105.58 mOD	End Date:	14/12/2023	Logger: AM	F	INAL
Depth (m)	Sample / Tests	Field	Records		Casing Water Depth Depth (m) (m)	Level mOD	Depth (m)	Legend		Desc	ription		Wate	ackfill
0.70 40.00	Dac.													9.5 — -
9.70 - 10.20	J 826													-
						95.38	10.20			End of Borel	hole at 10.20m		_	
														10.5 —
														-
														11.0 -
														11.5 —
														-
														12.0
														12.5 —
														-
														13.0
														13.5 —
														-
														14.0
														- 14.5
														-
														15.0
														-
														-
														16.0
														-
														16.5
														17.0
														17.5 —
														18.0
							-						_	18.5 -
Struck at (~)	Water Strikes Remarks						1.20							
Struck at (m)	casing to (m	in nine (min) R	บระ เบ (ท	Inspec No gro	tion pit ha undwate	and dug to encounte	1.20m. red.							
Casing	Details	Water A	dded											
To (m) 10.20	Diam (mm 177	) From (m) 0.00	To (m) 10.20	-										
-	Core Barrel				l Flush Type Te		e Termination Reason Last I				Updated			
					Wa	ter	Terminated	l at scheduled depth	l.		22/0	01/2024	AGS	

2						Proje	ect No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Gleb					orehol	e ID
	$\mathcal{X}$	CAUSE	WAY			23-0	)881F	Client:	NDFA				BH03	3
	8/ -	GEC	TECH					Client'	s Rep: Malone	O'Regan Consulting Eng	ineers			
Met	hod	Plant Used	Top (m	) Base	e (m)	Coord	dinates					SI	heet 1 d	of 1
Cable Per	rcussion	Dando 2000	0.00	3.	50	67408	35.00 E	Final De	epth: 3.50 m	Start Date: 09/11/2023	Driller: BE	5	Scale: 1	:40
						71297	75.10 N	Elevatio	on: 102.68 mOD	End Date: 10/11/2023	Logger: SR		FINA	L
Depth	Sample /	Field Dec	anda	Casing	Water	Level	Depth	Lagand		Description		ter	Realifill	
(m)	Tests		orus	(m)	(m)	mOD	(m)	Legend	TOPSOIL	Description		Ňa	Dackill	
							-							-
0.50	ES1					102.18	- - 0.50		Growish brown con	hy clayov subangular find to s		_		0.5 —
0.50 - 1.20	B4						-		low cobble content	. Sand is fine to coarse.	Jaise GRAVEL WILLI			_
1.00	50						_							-
1.00	ES2					101.48	- 1.20					_		-
1.20 - 1.65 1.20 - 2.00	В7 В5						-		Dense greyish brow coarse GRAVEL with	n very sandy slightly clayey s Now cobble content. Sand is	ubangular fine to fine to coarse.			-
1.20 - 1.65	SPT (C)	N=31 (6,7/7,8,7,9) 0895	Hammer SN	= 1.20	Dry		-		Cobbles are subrou	nded.				1.5 -
							-							
2.00	B6						_							2.0
2.00 2.00 - 2.45	B8						-							
2.00 - 2.45	SPT (C)	N=34 (8,8/9,8,8,9) 0895	Hammer SN	= 2.00	Dry		-							2.5
							-							
							-							
3.00 3.00 - 3.45	D11 B9						-							3.0
3.00 - 3.45	SPT (C)	N=31 (6,8/7,9,8,7) 0895	Hammer SN	= 3.00	0.00									
3.50 - 3.55	SPT (C)	50 (25 for 30mm/	50 for 20mm)	3.00	0.00	99.18	- 3.50	<u></u>		End of Borehole at 3.50m			<u>. Н</u> .	° 3.5 —
							-							-
							-							4.0
														-
														45
							-							-
							-							-
							-							5.0 -
							-							-
							Ē							5.5 -
							-							-
							-							6.0
							-							-
							-							-
														6.5
							-							-
							-							7.0
							-							-
	Wate	r Strikes	1	Chie	ollin	o Detaile		Remarks						
Struck at (m)	Casing to (m	) Time (min) Rose	to (m) From	(m)	To	m) Tim	ie (hh:mm)	Inspection	n pit hand dug to 1.20	)m.				
			0.5	50	3.	50	04:00	No obviou	us groundwater strike	s - water added during drillin				
Casing	Details	Water Add	ed											
To (m)	Diameter	From (m) To	(m)											
3.50	200	0.50 3	.50				-	Termina	tion Reason		Last l	Jpdate	d 📕	
								Terminate	ed on refusal.		22/0	1/2024	Δ	GS

					Pro	ject No.	Project	t Name: NDFA So	cial Housing	g Lot 3 - Cool	aghknock Glebe	Bor	ehole ID
		AUSEW	/AY		23.	-0881F	Client:	NDFA				B	3H04
	- 12	GEOT	ECH				Client'	s Rep: Malone	O'Regan Cor	nsulting Engi	neers		
Meth	nod	Plant Used	Top (m) [	Base (m	ı) Coo	ordinates	- Final De		Stort Date:	<u></u>	Drillor: BE	She	et 1 of 2
Cable Per	rcussion	Dando 2000	0.00	7.50	674	096.98 E		3ptn: 7.50 m	Start Date.	23/10/2025	Driller: DE	Sca	ale: 1:40
					712	954.60 N	Elevatio	<b>on:</b> 101.31 mOD	End Date:	24/10/2023	Logger: SR	F	INAL
Depth	Sample /	Field Records	· · · · ·	Casing Wate Depth Dept	tr Level	Depth (m)	Legend		 Desc <sup>,</sup>	ription		ater B	ackfill
0.00 - 1.20	B4			(m) (m)	101.2	.1 - 0.10		TOPSOIL			· · · ·	3	
						-		Soft brown slightly s Gravel is subrounde	sandy slightly g ed fine to medi	gravelly CLAY. Sa um.	nd is fine to coarse.		
0.50	ES1							4 					0.5
						-		4 					
1.00	D3					-							- 1.0
1.00 1.20 - 1.50	ES2 B5				100.1	.1 - 1.20		Medium dense loca	ally loose grevis	sh brown gravel	ly very silty fine to	-	
1.20 - 1.65	B7 SPT (C)	N=11 (2 3/3 3.3.2)		1 20 Dr		+	× × × × ×	coarse SAND. Grave	el is subangular	fine to medium	i,		-
1.50 - 1.70	B6	(L)0,0,0,-,-,					×××						-
						-	××××	- -					
2.00 2.00 - 2.45	D9 B8					-	×××××						2.0 -
2.00 - 2.45	SPT (C)	N=8 (2,2/2,2,2,2)	1	2.00 Dr	¥	-	××××	•					-
					98.91	- 2.40	× × ×	Loose light grey gra	velly slightly sil	Ity fine to coars	e SAND. Gravel is		2.5 —
2.70	B10					-	$\times \times \times$	Subrounded fine to	medium.				
3 00	13				98.3	1 3.00	×. × × ×						3.0
3.00 - 3.45	D11				50.01	-	$\mathbf{x} \mathbf{x}$	Medium dense light Gravel is subrounde	t grey gravelly s ed fine to medi	slightly silty fine um.	e to coarse SAND.		
3.00 - 4.00 3.00 - 3.45	SPT (S)	N=18 (2,3/4,4,5,5)	:	3.00 Dr	¥	-	× × × × ×						-
						-	××××						3.5 —
						-	× × × ×	- - -					-
4.00	D14				97.31	1 4.00	× × ×	Stiff light brown slig	ohtly sandy slig	htly gravelly CL/	AY Sand is fine to	-	4.0
4.00 - 4.45 4.00 - 5.00	D16 B15					Ē		coarse. Gravel is sub	brounded fine.				
4.00 - 4.45	SPT (S)	N=19 (1,3/4,5,5,5)	4	4.00 Dry	1								4.5 —
						-							-
						-  -							-
5.00 5.00 - 5.45	D19 D17					-		-					5.0
5.00 - 6.50 5.00 - 5.45	B18 SPT (S)	N=18 (2,4/4,5,5,4)	,	5.00 Dr	v	+		4 					
								- - -					5.5 —
						-							_
6.00	D21					-							6.0
6.20	B20					-  -		Donco grov candy si		to subrounded	fac to coarse		
7.50							× × ×	GRAVEL. Sand is find	e to coarse.	lo subroundea	The to coarse		-
6.50 - 7.50 6.50 - 6.67	B22 SPT (C)	50 (25 for 125mm/50 f	for 45mm)	6.50 0.0	0 94.81	- 0.50	× × ×						6.5
							××××						-
7.00	D23					-	×××××	- 9 5					7.0
						-	× × ×	- 				_  ┣	
	Wate	r Strikos	<del></del>	Chiselli	ng Deta	ile	Remarks						
Struck at (m)	Casing to (m	n) Time (min) Rose to (r	m) From (r	n) To		rime (hh:mm)	Inspection	<b>,</b> n pit hand dug to 1.20	)m.				
			6.20		.50	02:00	No obviou	us groundwater strikes	s - water addec	during drilling.			
						ļ							
Casing	Dotails	Water Added	_			ļ	l						
To (m)	Diameter	From (m) To (m)				ļ	l						
7.50	200	6.20 7.50				ļ	Termina	tion Reason			Last U	Indated	
						ļ	Terminate	ed on refusal.			22/0	1/2024	ACS
						ļ					,		AUD

			FW	ΔΥ		Pr	oject	t No.	Project	Name	e: NDFA So	cial Housin	g Lot 3 - Cool	aghknock	Glebe	Boreh	ole ID
		G	EOTE	СН		2	-00	OTL	Client's	Ren	Malone	O'Regan Co	nsulting Engi	neers		ЪП	
Meth	nod	Plant U	sed 1	ſop (m) I	Base (	m) Co	ordir	nates			7.50					Sheet	2 of 2
Cable Per	cussion	Dando 2	2000	0.00	7.50	67	4096.	.98 E	Final De	pth:	7.50 m	Start Date:	23/10/2023	Driller: E	3E	Scale	: 1:40
						71	2954.	.60 N	Elevatio	<b>n:</b> 1	01.31 mOD	End Date:	24/10/2023	Logger: S	SR	FIN	IAL
Depth (m)	Sample / Tests	Fiel	ld Records		Casing W Depth De (m) (	ater Lev epth m) mC	el D	Depth (m)	Legend			Desc	cription			Mater Bac	kfill
						93.	81 -	7.50	× × ×			End of Bore	abole at 7.50m				7.5 —
							-					End of Bore	enole at 1.50m				-
							Ē										8.0
							-										-
							ŀ										-
							F										-
							-										-
							-										9.0
							-										-
							-										9.5 —
							-										-
							-										10.0
							-										-
							-										10.5 —
							-										-
							-										-
							-										-
							-										-
							-										11.5 —
							-										-
							-										12.0
							-										-
							-										12.5 —
							-										-
							-										
							ŀ										-
							ŀ										-
							-										13.5
							-										-
							-										14.0
							-										-
							-										14.5 —
		Chuil			<u></u>				Perro 1								
Struck at (m)	Water Casing to (m)	STRIKES	Rose to (m)	From (r	n)	To (m)	Time (	hh:mm)	<b>kemarks</b> Inspection	pit har	nd dug to 1.20	)m.					
				6.20		7.50	02	:00	No obviou:	s groun	dwater strike	s - water adde	d during drilling.				
Casing	Details	Water	Added	-													
To (m)	Diameter	From (m)	To (m)	1													
	200	5.20							Terminat	ion Re	ason				Last Upd	lated	
									Terminated	d on ref	<sup>f</sup> usal.				22/01/2	024	AGS

		CAUSEW	/AY		F	Proje 23-0	ct No. 881F	Project Client:	: Name: N	NDFA Sc NDFA	ocial Housin	g Lot 3 - Cool	aghknock Gleb	e B	orehole ID BH05
	8 -	GEOT	ECH					Client'	s Rep: 1	Malone	O'Regan Co	onsulting Engi	neers		
Met Cable Pe	hod rcussion	Plant Used Dando 2000	<b>Top (m)</b> 0.00	<b>Base</b> 5.80	<b>m) (</b>	Coord	linates	Final De	epth:	5.80 m	Start Date:	24/10/2023	Driller: BE	9	Sheet 1 of 1 Scale: 1:40
					7	7405 1290	54.07 E 07.56 N	Elevatio	o <b>n:</b> 98.	61 mOD	End Date:	25/10/2023	Logger: SR		FINAL
Depth (m)	Sample , Tests	/ Field Record	5	Casing V Depth D (m)	ater L epth m) N	evel 10D	Depth (m)	Legend			Des	cription		Water	Backfill
0.00 - 1.00	B4				98	3.41	- 0.20		TOPSOIL						
0.50	564						-		Soft brow subangula	n sandy g ar fine to i	ravelly CLAY. S medium.	and is fine to coa	arse. Gravel is		
0.50	EST						-								0.5 -
1.00						7.64	-								
1.00	B5 D3				9.	/.61	- 1.00		Firm brow coarse. Gr	n slightly vavel is su	sandy slightly brounded fine	gravelly CLAY. Sa to medium.	and is fine to		1.0
1.20 - 1.65	E32 D6 B7						-								
1.20 - 2.00	SPT (S)	N=12 (3,3/3,3,3,3) Ha	mmer SN =	1.20 C	ory		-								1.5 -
		0000					-								
2.00 2.00 - 2.45	D10 D8						-								2.0
2.00 - 3.00 2.00 - 2.45	B12 SPT (S)	N=12 (2,2/3,3,3,3) Ha	mmer SN =	2.00 C	ory		-								
		0895					-								2.5 -
							-								
3.00 3.00 - 3.45	B11 D9						-								3.0 —
3.00 - 4.00 3.00 - 3.45	B13 SPT (S)	N=13 (3,3/3,4,3,3) Ha	mmer SN =	3.00 C	ory		-								
		0895					-								3.5 -
							-								
4.00 4.00 - 5.00	D14 B15						-								4.0
4.00 - 4.45	SPT (S)	N=12 (3,3/3,3,3,3) Ha 0895	mmer SN =	4.00 [	ory		-								
							-								4.5 -
							-								
5.00 5.00 - 5.45	D16 D17						-								5.0 —
5.00 - 5.80 5.00 - 5.45	B18 SPT (S)	N=10 (2,3/3,2,2,3) Ha	mmer SN =	5.00 C	ory		-								
		0895					-								5.5 -
5.80 - 5.82	SPT (C)	50 (25 for 5mm/50 fo	r 15mm)	5.80 [	ory 92	2.81	5.80		Grey BOU	LDER of li	imestone. Rec	overed through c	hiselling as angula	ur /	
		nammer SN = 0895			9.	2.01	-		gravel.		End of Bore	ehole at 5.80m	-	_/	6.0 -
							-								
							-								6.5 -
							-								
							-								7.0 -
							-								
	Wate	er Strikes		Chise	ling D	etails	 ;	Remarks	;						
Struck at (m)	Casing to (r	m) Time (min) Rose to (	m) From ( 5.80	m) )	To (m) 5.80	Tim	e (hh:mm) 01:00	Inspection No obviou	n pit hand d Is groundwa	ug to 1.20 ater strike	0m. s - water adde	d during drilling.			
Casing To (m)	Details Diamete	Water Added           r         From (m)         To (m)	)												
5.80	200							Termina	tion Reaso	on			last	Update	ed 🗖 = =
								Terminate	d on refusa	l.			22/0	)1/2024	

					Proj	ect No.	Projec	t Name: NDFA So	cial Housing Lot 3 - Coo	laghknock Glebe	Bor	ehole ID
		GEOT	ECH		23-	0881F	Client:	NDFA			B	6H06
Met	hod	Plant Lised	Top (m) B	ase (m)	Coor	dinates	Client	s Rep: Malone	O'Regan Consulting Eng 	ineers	She	et 1 of 1
Cable Pe	rcussion	Dando 2000	0.00	5.00	6742	11 26 5	Final De	epth: 5.00 m	Start Date: 07/11/2023	Driller: BE	Sca	ale: 1:40
					7129	09.53 N	Elevatio	<b>n:</b> 101.26 mOD	End Date: 08/11/2023	Logger: SR	F	INAL
Depth (m)	Sample / Tests	Field Record	S Ca	epth Depth (m) (m)	Level mOD	Depth (m)	Legend		Description		Mater B	ackfill
0.00 - 1.00	B3					-		TOPSOIL				-
0.50	ES1				100.96	- 0.30 - - -		Soft brown slightly Gravel is subrounde	sandy slightly gravelly CLAY. Si d fine to coarse.	and is fine to coarse		0.5
1.00 1.00 1.20 - 1.20 1.20 - 1.65 1.20 - 2.00 1.20 - 1.65	D6 ES2 B4 D5 B8 SPT (S)	N=6 (1,0/1,2,2,1)	1.	.20 Dry	100.26			Soft becoming firm is fine to coarse. Gr	orangish brown slightly grave avel is subrounded fine to me	lly sandy CLAY. Sand dium.		1.0 — — — 1.5 — —
2.00 2.00 2.00 - 2.65 2.00 - 2.80 2.00 - 2.45	B11 D12 D7 B9 SPT (S)	N=8 (1,1/2,2,2,2) Han 0895	nmer SN = 2	.00 Dry		- - - - - -						2.0   2.5   
2.80 3.00 - 3.45 3.00 - 4.00 3.00 - 3.45	B10 D13 B17 SPT (S)	N=21 (3,5/5,6,5,5) Ha 0895	mmer SN = 3.	.00 Dry	98.46	- 2.80 		Stiff brown slightly Gravel is subangula	sandy slightly gravelly CLAY. Si r fine to medium.	and is fine to coarse		3.0 — 3.0 — 3.5 —
4.00 4.00 - 4.45 4.00 - 5.00 4.00 - 4.45	D15 D14 B18 SPT (S)	N=28 (6,8/8,6,7,7) Ha 0895	mmer SN = 4.	.00 Dry								4.0   4.5 
5.00 5.00 - 5.04	D16 SPT (S)	50 (25 for 10mm/50 f Hammer SN = 0895	or 25mm) 5.	.00 Dry	96.26	- - - 5.00 -			End of Borehole at 5.00m			5.0
						- - - - -						5.5 — - - 6.0 —
						-						6.5 -
						-						7.0
Struck at (m) Casing To (m) 5.00	Wate Casing to (m Details Diameter 200	r Strikes	(m) From (m 5.00	hisellin ) To 5.	g Detail (m) The 00	ls me (hh:mm) 01:00	Remarks Inspection No obviou	n pit hand dug to 1.20 is groundwater strike	Im. s - water added during drilling	Last U	Jpdated	
							Terminate	d on refusal.		22/0	1/2024	AGS

		GEOT	<b>YAY</b> ECH		Proje 23-(	ect No. 0881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe Client: NDFA	Borehole ID BH07
Met Cable Pe	hod rcussion	Plant Used Dando 2000	Top (m)         Base           0.00         1	<b>se (m)</b> 1.20	<b>Coor</b> 6741	<b>dinates</b> 75.41 E	Final Depth: 1.20 m Start Date: 07/11/2023 Driller: KF	Sheet 1 of 1 Scale: 1:40
					7128	58.13 N	Elevation:         99.88 mOD         End Date:         07/11/2023         Logger:         SR	FINAL
Depth (m)	Sample / Tests	Field Record	S Casir (m)	ng Water th Depth ) (m)	Level mOD	Depth (m)	Legend Description	Backfill
0.50	ES1				99.78	0.10	TOPSOIL Greyish brown sandy silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.	
1.00 1.00 1.20 - 1.65	B3 ES2 SPT (S)	N=60 (5,7/10,13,15,2	2) 1.0	0 0.00	98.88 98.68	- 1.00 - 1.20	Image: State of the state	1.0 — — — — — — — — — — — — — — — — — — —
						- - - - - -		2.0
						-		2.5
						-		3.5 -
						-		4.0
						-		4.5 — - - -
						-		5.0 — - - 5.5 —
						-		6.0
						- - - -		6.5 — - -
						- - - - -		7.0
	Wate	r Strikes	Ch	isellin	g Detail	s	Remarks	
Struck at (m) Casing To (m) 1.00	Casing to (m Details Diameter 200	Water         Added           From (m)         To (m)           0.00         1.20	(m) From (m)	То (	<u>m) Tir</u>	ne (hh:mm)	Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.	dated 🗐 💶
							Terminated on refusal and move to position BH07A. 22/01/	2024 AGS

		CAUS	EW	AY			Proje 23-0	ect No. )881F	Project Client:	Name: NDFA So	cial Housing Lot 3	3 - Coolaghkno	ck Glebe	Bore BH	hole ID 107A
	Ð –	G	EOTE	СН					Client's	Rep: Malone	O'Regan Consultir	ng Engineers			
Met Cable Per	hod rcussion	Plant Us Dando 2	sed 1 000	<b>fop (m)</b> 0.00	Base	<b>(m)</b> 50	Coor	dinates	Final De	epth: 1.50 m	Start Date: 07/11	L/2023 Driller	: KF	Shee Scal	et 1 of 1 e: 1:40
							6741. 71286	76.88 E 64.60 N	Elevatio	<b>n:</b> 100.53 mOD	End Date: 08/11	L/2023 Logger	: SR	FI	NAL
Depth	Sample /	Field	d Records		Casing Depth	Water Depth	Level	Depth	Legend		Description		_	ater Ba	ckfill
(m)	lests				(m)	(m)	100.43	- 0.10		TOPSOIL				3	-
							99.53	- - - - - - - - - - - - - - - - - - -		Dense greyish brown with low cobble content.	n sandy silty subrounded in , Sand is fine to coarse n sandy silty subroun itent. Sand is fine to c	e. Cobbles are sub ided fine to coarse coarse. Cobbles ar	e GRAVEL e		
								-	a ×	subrounded.					-
1.50 - 1.54	SPT (C)	50 (25 for 15m	חm/50 for ∶	20mm)	1.50	Dry	99.03	- 1.50 - - - - - - -	<u> </u>		End of Borehole at	1.50m			1.5 — - - 2.0 — - -
								- - - -							2.5 — - 3.0 —
								-							-
								-							
								-							4.0
								-							4.5 — - -
								-							5.0
								-							5.5 —
								-							
								-							-
								- - -							- 6.5 — -
								-							7.0
								-							-
		Chuilt			<u></u>	- <sup>11</sup>	- D-+ "		Derry 1						
Struck at (m) Casing To (m) 1.50	Casing to (m Details Diameter 200	Jimes           Jime (min)           Water A           From (m)           0.10	Rose to (m) Added To (m) 1.50	From (I 1.50	m)	To (	5 Details m) Tim 50	<u>אפ (hh:mm)</u> 00:30	Inspection No obviou	n pit hand dug to 1.20 Is groundwater strike: <b>tion Reason</b>	)m. s - water added during	g drilling.	Last Upo	lated	
									Terminate	d on refusal.			22/01/2	:024	AGS

			EV	AY		Proj <b>23</b> -	ect No. 0881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe         Client:       NDFA	Borehole ID BH07B
Met	hod	Plant I	Ised 1	[on (m)	Base (r	) Coo	rdinates	Client's Rep: Malone O'Regan Consulting Engineers	Sheet 1 of 2
Sonic D	rilling	Fraste CRS	-XL Duo	0.00	10.20	674	76 69 F	Final Depth: 10.20 m Start Date: 12/12/2023 Driller: RC	Scale: 1:50
						7128	358.66 N	Elevation: 99.97 mOD End Date: 13/12/2023 Logger: AM	FINAL
Depth (m)	Sample / Tests	Fie	eld Records		Casing Wat Depth Dep (m) (m	r Level mOD	Depth (m)	Legend Description	Backfill
						99.67	0.30	TOPSOIL Dark greyish brown very sandy subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
1.20 - 1.65 1.20 - 1.70 1.20 - 2.70 1.20 - 1.65 1.70 - 2.20	D1 B13 SB2 SPT (S) B14	N=23 (4,4/6,	8,4,5)		1.20 0.4	98.77	1.20	Medium dense greyish brown sandy slightly clayey subrounded fine to coarse GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are rounded.	
2.20 - 2.78 2.70 - 3.15	B15 D3		(8,14/12,15,15,6) 2.70 0.40			97.77	2.20	Dense dark greyish brown very sandy silty subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse. Cobbles are subrounded.	2.5
2.70 - 3.20 2.70 - 4.20 2.70 - 3.15 3.20 3.20 - 3.70 3.70 - 4.20	SB4 SPT (S) B17 B18 B19	N=48 (8,14/1	(8,14/12,15,15,6) 2.70 0.40				3.20	Dense greyish brown very sandy subangular to subrounded fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of limestone, siltstone and sandstone.	3.0 — — 3.5 — 3.5 —
4.20 - 4.65 4.20 - 4.70 4.20 - 5.70 4.20 - 4.65 4.70 - 5.20	D5 B20 SB6 SPT (S) B21	N=50 (10,14/	2.70 0.40 .0,14/12,12,13,13) 4.20 0.40						4.0 — 4.0 — 4.5 — 5.0 —
5.20 - 5.70	B22 B23		10,14/12,12,13,13) 4.20 0.40				5.20	Medium dense greyish brown sandy slightly clayey subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.	
5.70 - 6.15 5.70 - 7.20 5.70 - 6.15 6.10 - 6.65	D7 SB8 SPT (S) B24	N=23 (4,4/6,	6,5,6)		5.70 0.4	0 93.87	6.10	Stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone, siltstone and	
6.65 - 7.20	B25					93.32	6.65	Dense greyish brown sandy clayey angular to subrounded fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse. Cobbles are subangular to	6.5 — - - 7.0 —
7.20 - 7.35 7.20 - 7.70 7.20 - 8.70 7.20 - 7.35 7.70 - 8.20	D9 B26 SB11 SPT (S) B27	50 (25 for 10	0mm/50 for	50mm)	7.20 0.4	0		Image: Subrounded of limestone and siltstone.       Image: Subrounded of limestone and siltstone.	
8.20 - 8.70	B28								
8.70 - 10.20 8.70 - 9.00 8.70 - 9.60 8.70 - 9.00	) SB12 D10 B29 SPT (S)	B12 10 29 PT (S) 50 (11,13/50 for 150mm) 8.70 C				0			9.0
	Wate	r Strikes	I	Rema	irks	1	1		
Struck at (m)	Casing Details         Water Added         No ground           0 (m)         Diam (mm)         From (m)         To (m)						o 1.20m. ered.		
To (m) 10.20	Diam (mm 177	) From (m) 0.00	To (m) 10.20						
				Core	Barrel	Flus	h Type	Termination Reason Last Upda	ated
						W	ater	ierminated at scheduled depth. 22/01/20	AGS

		CAUSE	<b>VAY</b> TECH			Proje 23-0	ct No. 881F	Project Client:	Name: NDFA So NDFA	cial Housing	g Lot 3 - Cool	aghknock Gl	lebe <b>Bc</b>	orehole ID BH07B
Meth	od	Plant Used	Top (n	n) Base	: (m)	Coord	linates	Einal Do	nth: 10.20 m	Start Date:	12/12/2022		SI	neet 2 of 2
Sonic Dr	rilling	Fraste CRS-XL Du	io 0.00	10.	.20	67417	'6.69 E		<b>ptn.</b> 10.20 m	Start Date.	12/12/2023		<u></u>	cale: 1:50
						71285	8.66 N	Elevatio	n: 99.97 mOD	End Date:	13/12/2023	Logger: AN	м	FINAL
Depth (m)	Sample / Tests	Field Reco	rds	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Des	cription		Water	Backfill
9.60 - 10.20	B30					90.37	9.60		Stiff brown slightly s is angular to subrou	sandy gravelly inded fine to c	CLAY. Sand is fin oarse of limesto	e to coarse. Gr ne and sandsto	ravel one.	9.5         
10.20 10.20		12-12-2023 13-12-2023		10.2 10.2	0.40 0.40	89.77	10.20			End of Bore	hole at 10.20m			10.0
														10.5 - - 11.0 -
														- - - 11.5 —
														- - 12.0
														- - 12.5
														13.5 — —
														14.5
														15.0
														15.5 - - - 16.0 -
														17.0
														18.0
														- - 18.5 — -
Struck at (m) C	Water Casing to (m Details Diam (mm	r Strikes ) Time (min) Rose t Water Adder ) From (m) To (	Rer o(m) Insp Nog n)	narks ection p groundw	it har ater (	nd dug to encounter	1.20m. red.							
10.20	177	0.00 10.	20 Co	re Barr	el	Flush	Туре	Terminat	tion Reason			Li	ast Update	
						Wa	ter	Terminate	d at scheduled depth				22/01/2024	AGS

							Proje	ect No.	Project	Name: NDFA S	ocial Housin	g Lot 3 - Cool	aghknock Gleb	e Bo	rehole ID
				AY			23-0	)881F	Client:	NDFA					BH08
		GE		СП	_				Client's	s Rep: Malone	O'Regan Co	onsulting Engi	neers	_	
Meth Cable Pero	od cussion	Plant Use Dando 200	e <b>d</b> () 200	Top (m) 0.00	Base 8.0	e <b>(m)</b> 00	Coord	dinates	Final De	epth: 8.00 m	Start Date:	26/10/2023	Driller: BE	Sh	eet 1 of 2 cale: 1:40
							67413 7128/	30.90 E	Flovatio	00 1E mOE	End Data	07/11/2022	Logger, SD		
					Casing	Water	/1204	+0.94 N	Elevatio	99.15 MOL	End Date:	07/11/2023	Logger: SR		FINAL
Depth (m)	Sample / Tests	Field R	Records		Depth (m)	Depth (m)	Level mOD	Depth (m)	Legend	TORSON	Des	cription		Wate	Backfill
0.00 - 0.80	65						98.95	- 0.20		MADE GROUND: B	rown sandy ve	ry clayey subang	ular fine to coarse		-
0.50	ES1							_		GRAVEL. Saliu IS III	le to coarse.				0.5 —
0.00							00.05								-
1.00	D3						98.35	- 0.80		MADE GROUND: F Sand is fine to coa	irm brown slig rse. Gravel is su	htly sandy slightl ubangular fine to	y gravelly CLAY. medium.		
1.00	ES2 B4							-				-			-
1.20 - 1.65	SPT (C)	N=11 (2,3/3,2,3,	,3) Ham	mer SN =	1.20	Dry		-							-
		0893													1.5 -
								-							-
2.00 2.00 - 2.45	D9 B7							-							2.0
2.00 - 2.45	SPT (C)	N=10 (2,3/3,2,2, 0895	,3) Ham	mer SN =	2.00	Dry		-							-
															2.5 —
								-							-
3.00	D10							-							3.0
3.00 - 3.45 3.00 - 3.45	B8 SPT (C)	N=10 (3,3/3,3,2,	,2) Ham	mer SN =	3.00	Dry		-							-
		0895													
								-							-
3.80 - 4.60	B11						95.35	- 3.80		MADE GROUND: L	arge fragments	s of WOOD and w	vire.		-
4.00 4.00 - 4.45	D12 B13							-							4.0
4.00 - 4.60 4.00 - 4.45	B14 SPT (C)	N=15 (2,2/4,6,3,	,2) Ham	mer SN =	4.00	Dry		_							-
		0895					94.55	- 4.60		<b>F</b>	P. 1.4			_	4.5 —
								-		coarse. Gravel is su	ubrounded fine	to medium.	and is the to		-
5.00 - 5.45	B15	N 0 /2 2 /2 4 2 2		CN	5 00	0.00		_							5.0
5.00 - 5.45	SPT (C)	0895	) namn	ier siv =	5.00	0.00		-							-
								-							- 5.5 —
							93.45	5.70		Dense gravelly clay	/ey fine to coar	se SAND. Gravel	is subrounded fine		-
6.00	D17							Ĺ		to coarse.	,				6.0
0.00	51/							Ļ							-
6.50							00.5-	-							-
6.50 6.50 - 8.00	B16 B18						92.65	- 6.50	×. × 、×	Dense greyish brow	wn sandy slight	tly silty fine to co	arse GRAVEL. Sand	i	6.5 —
6.50 - 6.82	SPT (C)	50 (3,10/50 for 3 Hammer SN = 08	175mm) 895		6.50	0.00		-	××××						-
7.00	D19							-	××××						7.0
								-	××××					-	
	Wate	r Strikes			Chis	elling	g Details	5	Remarks	:					
Struck at (m) C	Casing to (m	n) Time (min) Ros	se to (m	) From ( 6.50	m) )	To ( 8.0	m) Tim 00	ne (hh:mm) 02:00	Inspection	n pit hand dug to 1.2 Is groundwater strike	0m. es - water adde	d during drilling			
												ib «i iiiiiBi			
Casing D	Details	Water Ad	lded												
lo (m) 8.00	Diameter 200	From (m) 5.80	10 (m) 8.00	-											
									Termina	tion Reason			Last	Updated	
									Terminate	ed on refusal.			22/0	01/2024	AGS

					Proje	ect No.	Project	: Name: NDFA So	cial Housing Lot 3 - Coo	aghknock Glebe	BC	orehole	ID
	{}} <b>C</b>		AY		23-0	)881F	Client:	NDFA				BH08	
		GEOT	ECH				Client's	Rep: Malone	O'Regan Consulting Eng	neers			
Meth	nod rcussion	Plant Used	Top (m) Bas	e (m)	Coord	dinates	Final De	e <b>pth:</b> 8.00 m	Start Date: 26/10/2023	Driller: BE	Sł	neet 2 o	f 2
cubic r ci	cussion	2000	0.00		67413	30.90 E						cale: 1:	40
					71284	18.94 N	Elevatio	99.15 mOD	End Date: 07/11/2023	Logger: SR		FINAL	-
Depth (m)	Sample / Tests	Field Records	Casin Dept (m)	g Water h Depth (m)	Level mOD	Depth (m)	Legend		Description		Water	Backfill	
						-	× × ×						- 7.5 —
						-	×. × ×						-
8.00	B21				91.15	- 8.00	××××				_		- 8.0
8.00 8.00 - 8.26	D20 SPT (C)	50 (8.15/50 for 115mm	) 8.0	00.00		-			End of Borehole at 8.00m				-
		Hammer SN = 0895	,			-							85
						-							-
						-							-
													9.0
						-							-
						-							9.5 —
						-							10.0
						-							-
													10.5 -
						-							-
						-							
													-
						-							- 11.5 —
						-							-
						_							12.0
						-							-
													-
													12.5
						-							-
						_							13.0
						-							
						-							13.5 —
						-							14.0
						-							-
													14.5 —
		or 11			<u> </u>								
Struck at (m)	Wate Casing to (m	) Time (min) Rose to (n	Chi n) From (m)	sellin To	g Details (m) Tim	ie (hh:mm)	Remarks Inspectior	n pit hand dug to 1.20	)m.				
			6.50	8.	00	02:00	No obviou	is groundwater strike:	s - water added during drilling				
Casing	Details	Water Added	-										
To (m) 8.00	Diameter 200	From (m) To (m) 5.80 8.00	-										
							Terminat	tion Reason		Last U	Jpdate	d	T
							Terminate	d on refusal.		22/0	1/2024	A	GS

						Proje	ect No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe	Borehole ID
		G	OTE	СН		23-0	JOOTL	Client: NDFA	впоэ
Meth Cable Per	nod rcussion	Plant Us Dando 20	<b>ed T</b>	op (m) B 0.00	<b>ase (m)</b> 8.00	<b>Coor</b> 6742 7128	dinates 81.70 E 34.44 N	Final Depth:       8.00 m       Start Date:       08/11/2023       Driller:       BE         Elevation:       101.10 mOD       End Date:       09/11/2023       Logger:       SR	Sheet 1 of 2 Scale: 1:40
Depth	Sample /	Field	Pecords	Ci	ising Water	Level	Depth	Levend Description	
(m) 0.50 0.50	B4 ES1		Records		m) (m)	mOD 100.60	(m) - - - - 0.50	TOPSOIL Soft light brown slightly sandy slightly gravely CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	• • • • • • • • • • • • • • • • • • •
1.00 1.00 1.20 - 1.65 1.20 - 2.00 1.20 - 1.65	D3 ES2 D5 B6 SPT (S)	N=12 (1,2/3,3,: 0895	3,3) Hamn	ner SN = 1	.20 Dry	99.90	- 1.20	Medium dense greyish brown slightly gravelly silty fine to coarse SAND. Gravel is subrounded fine to coarse.	
2.00 2.00 - 2.45 2.00 - 3.00 2.00 - 2.45	D8 B7 B10 SPT (C)	N=21 (6,5/6,5,5 0895	5,5) Hamn	ner SN = 2	.00 Dry	99.10	- - 2.00 - - - -	Medium dense greyish brown very sandy slightly silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.	
3.00 3.00 - 3.45 3.00 - 4.00 3.00 - 3.45	D9 B11 B12 SPT (C)	N=21 (4,4/4,6, 0895	5,6) Hamn	ner SN = 3	.00 Dry				
4.00 4.00 4.00 - 4.45 4.00 - 4.45 4.45 - 4.65	B13 D15 U16 SPT (C) D14	Ublow=100 50' N=22 (4,6/5,5,1 0895	% Recover 6,6) Hamn	y 4 her SN = 3	.00 0.00 .00 0.00	97.10	- - 4.00 - - - -	Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	4.5
5.00 5.00 - 5.45 5.00 - 6.50 5.00 - 5.45	D19 B23 B17 SPT (C)	N=27 (4,5/6,6,1 0895	8,7) Hamn	ner SN = 5	.00 0.00				5.0 — - - 5.5 — - - - - - -
6.00	D20						-		
6.50 - 6.95 6.50 - 8.00 6.50 - 6.95 7 00	B24 B18 SPT (C) D21	N=39 (5,8/8,11 SN = 0895	.,11,9) Har	nmer 6	.50 0.00	94.60 94.15	- 6.50 - - - 6.95	Dense brown sandy slightly silty subrounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.	6.5 — - - - - - - - - - - - - - - - - - - -
							- - -	to coarse. Gravel is subrounded fine to medium.	
Struck at (m)	Wate Casing to (m Details	r Strikes	ose to (m)	From (m 8.00	hisellin ) To 8.1	g Detail (m) Tin 00	s ne (hh:mm) 01:00	Remarks Inspection pit hand dug to 1.20m. No obvious groundwater strikes - water added during drilling.	
10 (m) 8.00	Diameter 200	4.00	10 (m) 8.00					Termination Reason     Last Up       Terminated on refusal.     22/01	vdated 1 /2024 AGS

R					Proj	ect No.	Project Na	ame: NDFA So	cial Housing Lot 3 - Coc	laghknock	Glebe	Borehole ID
		AUSEV	VAY		23-0	0881F	Client:	NDFA				BH09
		GEOT	FECH				Client's R	ep: Malone	O'Regan Consulting Eng	gineers		
Metl Cable Per	n <b>od</b> rcussion	Plant Used Dando 2000	<b>Top (m) E</b> 0.00	Base (m) 8.00	<b>Coor</b>	dinates	Final Dept	<b>h:</b> 8.00 m	Start Date: 08/11/2023	Driller:	BE	Sheet 2 of 2 Scale: 1:40
					7128	34.44 N	Elevation:	101.10 mOD	End Date: 09/11/2023	Logger:	SR	FINAL
Depth (m)	Sample / Tests	Field Recor	ds	Casing Water Depth Depth (m) (m)	Level mOD	Depth (m)	Legend		Description			Backfill
Depth (m) 8.00 8.00 8.00 - 8.32	B25 D22 SPT (C)	Field Record	) for 1 1 = 0895	Casing Water Depth Depth (m) (m) 8.00 0.00 8.00 0.00 Chisellin n) To 8.	93.10 93.10	Depth (m) 	Remarks Inspection pit No obvious gr	t hand dug to 1.20 roundwater strike	Description  End of Borehole at 8.00m  The second s	<u>-</u>		No.         No.           1         7.5           1         7.5           1         1
	l											
	L											
Casing	Details	Water Added	2)									
10 (m) 8.00	Diameter 200	From (m)         To (n           4.00         8.00	<u>1)</u> )									
	I						Termination	n Reason			Last Upd	ated
	I						Terminated o	on refusal.			22/01/2	O24 AGS

CAUSEWAY						Proje 23-(	ect No. 0881F	Project Client:	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe Client: NDFA					Borehole ID BH10	
GEOTECH								Client'	Client's Rep: Malone O'Regan Consulting Engineers						
Method		Plant Used Top (r		o (m) Base (m)		Coordinates		Final De	epth: 1.50 m	Start Date:	08/11/2023	Driller: KF	Sł	neet 1 o	of 1
Cable Percussion		Dando 2000	0.00	0.00 1.50		674259.46 E							S	Scale: 1:40	
						7128	04.73 N	Elevatio	<b>on:</b> 101.33 mOD	End Date: 08/11/2023		Logger: SR		FINAL	
Depth (m)	Sample / Tests	Field Record	5	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend		Descri	iption		Water	Backfill	
						101.23	0.10		TOPSOIL Dark brown sandy o	clavev subangula	ar fine to coars	GRAVEL. Sand is	-		-
							-		fine to coarse.						-
0.50	ES1					100.83	- 0.50	• × • • • × •	Dense brown sandy	y silty subround	ed fine to coars	e GRAVEL with low	-		0.5 —
							-	° × ° °× (	cobble content. Col	bble are subrou	nded.				-
1.00	В3						-	• × • • × (							1.0
1.00 1.00 - 1.05	ES2 SPT (C)	50 (25 for 20mm/50 f	or 30mm)	1.00	Dry		-	• × • • × •							-
						99.83	- - 1.50	• ×: • • × 0			1 1 50				- 1.5
							-			End of Boreh	ole at 1.50m				-
							-								-
							-								2.0 -
							-								-
															2.5
															-
							-								3.0
							-								-
							-								-
															3.5 -
							-								_
							-								4.0
							-								-
							-								4.5 —
							-								_
							_								-
							-								-
							-								
							-								5.5 —
							-								-
							_								6.0
							-								
							-								6.5 —
							-								-
							-								-
							-								/.0
							-								-
Water Strikes		r Strikes	Chisellin		g Details		Remarks								
Struck at (m)         Casing to (m)         Time (min)         Rose to (m)         From (m)         To (           0.50         1.0			(m) Tin 00	ne (hh:mm) 02:00	Inspection No obviou	n pit hand dug to 1.20 Is groundwater strike	0m. es - water added	during drilling.							
Casing	Details	Water Added													
10 (m)	Diameter	From (m)         To (m)           0.50         1.50													
						Termina	ermination Reason Last U				pdate	d L			
						Terminate	rminated on refusal. 22/0				1/2024	A	GS		
							Proje	ct No.	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe	Borehole ID					
---	---	------------------------	--------------------------	-----------------------------	-----------------------------	-----------------------	--------------	----------------	---	--					
	{}} <b>⊂</b>	CAUS	EW	AY			23-0	881F	Client: NDFA	BH10A					
		G	EOT	CH					Client's Rep: Malone O'Regan Consulting Engineers						
Meth Sonic D	nod rilling	Plant U Fraste CRS-	<b>Ised</b> -XL Duo	Top (m) 0.00	Base (	<b>m)</b> 0	Coord	linates	Final Depth: 10.20 m Start Date: 12/12/2023 Driller: RC	Sheet 1 of 2					
	0						67425	7.09 E							
							/1280	17.79 N	Elevation: 101.20 mOD End Date: 12/12/2023 Logger: AM	FINAL					
Depth (m)	Sample / Tests	Fiel	ld Records		Casing V Depth (m)	Vater lepth (m)	Level mOD	Depth (m)	Legend Description	Backfill					
0.00		12-12-2023				лү	100.90	0.30	Dark greyish brown very sandy subrounded fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are rounded.	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 B15	N=31 (8,8/8,9	9,9,5)		1.20 0	.50	100.00	1.20	Dense greyish brown very sandy slightly clayey subangular fine to coarse GRAVEL of limestone, siltstone and sandstone. Sand is fine to coarse.						
2.70 - 3.15 2.70 - 3.20 2.70 - 4.20 2.70 - 3.15 3.20 - 3.70 3.70 - 4.20	D3 B16 SB4 SPT (S) B17 B18	N=43 (5,5/9,1	(5,5/9,14,11,9) 2.70 0.9					3.20	Dense brownish grey very gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse of limestone, siltstone and sandstone.	2.5 - - - 3.0 - - - - - - - - - - - - - - - - - - -					
4.20 - 4.65 4.20 - 4.80 4.20 - 5.70 4.20 - 4.65 4.80 - 5.05 5.05 - 5.70	D5 B19 SB6 SPT (S) B20 B21	N=45 (5,8/8,1	12,12,13)		4.20 0	.50	97.00	4.20	Dense greyish brown very sandy slightly silty subangular fine to coarse GRAVEL of limestone, siltstone and sandstone with low cobble content. Sand is fine to coarse.     4.80m to 5.05m: Cobble recovered as light grey very sandy angular gravel.	4.0					
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 (5,16/1	5,15,10,9)		5.70 0	.50		-		5.5 — 6.0 — 6.5 —					
6.70 - 7.20 7.20 - 7.45 7.20 - 7.70 7.20 - 8.70 7.20 - 7.45 7.70 - 8.20 8.20 - 8.70	B24 D9 B25 SB10 SPT (S) B26 B27	50 (9,13/50 fc	or 100mm	)	7.20 0	.50	94.00	7.20	Very stiff brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of limestone, siltstone and sandstone. Cobbles are subangular to subrounded of limestone and siltstone.	7.0					
8.70 - 10.20 8.70 - 8.94 8.70 - 9.20 8.70 - 9.07 9.20 - 9.70	SB12 D11 B28 SPT (S) B29	50 (9,15/50 fc	or 225mm	)	8.70 0	.50		-		8.5  9.0     					
Struck at (m)	Water Casing to (m	r Strikes	Rose to (n	Rema n) Inspec No gro	arks ction pit bundwa	han ter e	id dug to a	1.20m. red.							
Casing To (m)	<b>Details</b> Diam (mm	Water	Added To (m)												
10.20	177			Corr	Barro	<b>I</b> 1	Fluch	Type	Termination Reason	ated -					
				Core	. Darre	•	Wat	ter	Terminated at scheduled depth. 22/01/2	024 AGS					

	CAUSEWAY GEOTECH					Proje 23-0	ct No. 9881F	Project Client:	Name: NDFA So NDFA	ocial Housing	g Lot 3 - Cooli	aghknock Glebe	e Bor B	ehole ID H10A
Met	hod	Plant Lised	I T	on (m)	Base (m	Coorr	linates	Client's	Rep: Malone	O'Regan Co	nsulting Engli	neers	She	et 2 of 2
Sonic D	rilling	Fraste CRS-XL I	Duo	0.00	10.20			Final Dep	oth: 10.20 m	Start Date:	12/12/2023	Driller: RC	Sca	ale: 1:50
						71280	7.09 E	Elevatior	<b>1</b> : 101.20 mOD	End Date:	12/12/2023	Logger: AM	F	ΙΝΔΙ
Donth	Samplo /				Casing Water	Loval	Donth		101120 1100		12, 12, 2020			
(m)	Tests	Field Re	cords		Depth Depth (m) (m)	mOD	(m)	Legend		Desc	cription		R Mat	ackfill
														9.5 _
9.70 - 10.20	) B30													-
						91.00	- 10 20							10.0
						51.00	10.20			End of Bore	hole at 10.20m			-
														10.5
							-							
														-
														11.5 —
														-
							-							12.0
														-
														12.5 —
														-
														-
														- - 13.5 -
														-
							-							14.0
														15.0
														-
							-							15.5 -
							_							- 16.0
														-
														 16.5
														-
							-							
														-
														17.5 —
														18.0
														10 5
							-							
Struck at (m)	Wate	r Strikes	e to (m)	Remai	rks	nd duc +	1 20~							
Casing To (m) 10.20	Details Diam (mm 177	Water Add	l <b>ed</b> o (m)	No grou	Barrel	Flush	Type	Terminati	on Reason			last	Updated	
	Core Barrel					Wa	ter	Terminated	at scheduled depth	1.		22/	01/2024	AGS

						Proje	ct No.	Project	t Name: NDFA So	cial Housing Lot 3 - Coo	laghknock Glebe	Bore	hole ID
		AUSEW	/AY			23-0	881F	Client:	NDFA			BI	H11
	8 -	GEOT	ECH					Client's	s Rep: Malone	O'Regan Consulting Eng	neers		
Met	hod	Plant Used	Top (m) I	Base	(m)	Coord	dinates	- Einal Do	<b>onth</b> : 2.50 m	Start Date: 08/11/2022	Drillor: KE	Shee	t 1 of 1
Cable Per	rcussion	Dando 2000	0.00	3.5	0	67428	35.27 E		<b>:ptil.</b> 5.50 m	Start Date: 08/11/2023		Scal	e: 1:40
						71272	26.70 N	Elevatio	99.25 mOD	End Date: 09/11/2023	Logger: SR	FI	NAL
Depth (m)	Sample /	Field Records		Casing Depth	Water Depth	Level	Depth (m)	Legend		Description		ater Ba	ckfill
(,	10303			(m)	(m)	99.15	0.10		TOPSOIL	rough CLAY Sand is find to as	arra Cravalia	-	-
							-		subrounded fine to	coarse.	arse. Gravel is		-
0.50	ES1					98.75	0.50	×···×	Dense grey very sar	ndy slightly silty subangular to	subrounded fine to	-	0.5 -
							-	× × ×	coarse GRAVEL. San	id is fine to coarse.			-
1.00	В3						-	××××					1.0
1.00 1.00 - 1.38	ES2 SPT (C)	50 (8,12/50 for 225mn	n) :	1.00	Dry		-	×××					-
							-	× × ×					- • • 1.5
							-	××××					
2.00							-	××××					
2.00	В5 D4						-	××××					
2.00 - 2.39	SPT (C)	50 (7,10/50 for 240mn	n) [	2.00	0.00		-	×     ×    ×					
							-	×××					2.5 -
							-	× × ×				•	
3.00	B7						_	$\times$ $\times$ $\times$					3.0
3.00 - 3.45	SPT (C)	N=41 (7,6/10,14,7,10)	:	3.00	0.00		-	××××					
3.50 - 3.52	SPT (C)	50 (25 for 10mm/50 fc	or 15mm)	3.30	0.00	95.75	- 3.50	××××		End of Borehole at 3 50m			3.5
							-						-
							_						4.0
							-						-
							-						-
							-						4.5 -
							-						-
							-						5.0
							-						-
							-						5.5 -
							-						-
							-						6.0
							-						-
													6.5 -
							-						-
							-						-
							-						7.0
							-						-
	Wate	r Strikes		Chise	elling	, Details	;	Remarks					I
Struck at (m)	Casing to (m	n) Time (min) Rose to (n	n) From (r 1.00	n)	To (I 1.5	m) Tim 0	ie (hh:mm) 00:30	Inspection No obviou	n pit hand dug to 1.20 us groundwater strike	)m. s - water added during drilling			
			3.00		3.5	0	01:00			J			
Casing	Details	Water Added											
3.30	200	From (m)     Io (m)       0.50     3.50											
								Termina	tion Reason		Last U	pdated	
								Terminate	ed on refusal.		22/0	1/2024	AGS

	CAUSEWAY GEOTECH						ect No. )881F	Project Name: NDFA Social Housing Lot 3 - Coolaghknock Glebe     Client:   NDFA     Client:   NDFA	Borehole ID RC04
Meth	nod	Plant L	Jsed	Top (m)	Base (m	) Coor	dinates	Client's Rep: Malone O'Regan Consulting Engineers	Sheet 1 of 2
Sonic D	rilling	Fraste CRS	-XL Duo	0.00	10.20	67420	58.90 E	Final Depth: 10.20 m Start Date: 08/12/2023 Driller: RC	Scale: 1:49
						7127	19.93 N	Elevation:     98.62 mOD     End Date:     11/12/2023     Logger:     AM	FINAL
Depth (m)	Sample / Tests	Fie	eld Records		Casing Water Depth Depth (m) (m)	Level mOD	Depth (m)	Legend Description	Backfill
0.00		08-12-2023			0.00 Dry	98.32	0.30	TOPSOIL     Dark greyish brown very gravelly fine to coarse SAND with high cobble content. Gravel is subrounded fine to coarse. Cobbles are rounded.	0.5
1.20 - 1.65 1.20 - 1.70 1.20 - 2.70 1.20 - 1.65 1.20 1.20 1.70 - 2.30	D1 B13 SB2 SPT (S) B14	N=15 (2,3/3, 08-12-2023 11-12-2023	4,4,4)		1.20 0.30 0.00 Dry 0.00 Dry	97.42 96.92	1.20	Medium dense brown slightly gravelly slightly clayey fine to coarse     SAND. Gravel is subangular fine to medium of various lithologies.     Medium dense greyish brown sandy subangular fine to coarse     GRAVEL of various lithologies with low cobble content. Sand is fine to coarse. Cobbles are of limestone and siltstone.	1.5
2.30 - 2.70 2.70 - 3.15 2.70 - 3.65 2.70 - 4.20 2.70 - 3.15	B15 D3 B16 SB4 SPT (S)	N=13 (2,2/3,	3,4,3)		2.70 0.6	D			2.5
3.65 - 3.80 3.80 - 4.20 4.20 - 4.65 4.20 - 4.80 4.20 - 5.70 4.20 - 4.65 4.80 - 5.55	B17 B18 D5 B19 SB6 SPT (S) B20	N=40 (4,9/9,	9,10,12)		4.20 0.6	D			3.3
5.55 - 5.70 5.70 - 6.15 5.70 - 6.20 5.70 - 7.20 5.70 - 6.15 6.20 - 6.70	B21 D7 B22 SB8 SPT (S) B23	N=36 (6,6/7,	N=40 (4,9/9,9,10,12) 5.70 0.6 N=36 (6,6/7,9,10,10)				5.55	Stiff to very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are of limestone and siltstone.	5.5 - - - - - - - - - - - - - - - - - - -
6.70 - 7.20 7.20 - 7.58 7.20 - 8.00 7.20 - 8.70 7.20 - 7.58	B24 D9 B25 SB10 SPT (S)	50 (8,13/50 f	v=36 (6,6/7,9,10,10) 7.20 0.6 50 (8,13/50 for 225mm)				7.20	Very stiff reddish brown sand slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of various lithologies. Cobbles are of various lithologies.	7.0
8.00 - 8.70 8.70 - 10.20 8.70 - 8.93 <del>8.70 - 8.93</del>	B26 SB12 D11 SPT (S)	50 (11,13/50	l for 75mm	)	8.70 0.6	90.62	8.00	Very stiff brown sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are of various lithologies.	8.0
Struck at (m)	Wate Casing to (m	r Strikes	Rose to (r	Rema	rtion pit b	and dug to	1 20m		
Casing I To (m) 10.20	Casing Details Water Added   To (m) Diam (mm)   10.20 177						Type ter	Termination Reason Last Upc   Terminated on Engineer's instruction. 02/05/2	lated AGS

	CAUSEWAY				Proje 23-0	ct No. 881F	Project Client:	Name: NDF	A Social Housin	ng Lot 3 - Coola	aghknock Glebe	Bore	ehole ID RC04
	$\mathcal{D}$ –	GEOT	ECH				Client's	s Rep: Mal	one O'Regan Co	onsulting Engir	heers		
Meth	od	Plant Used	Top (m) B	ase (m)	Coord	linates						She	et 2 of 2
Sonic Dr	rilling	Fraste CRS-XL Duo	0.00	10.20	67426	58.90 E	Final De	epth: 10.2	0 m Start Date:	08/12/2023	Driller: RC	Sca	ale: 1:49
					71271	.9.93 N	Elevatio	on: 98.62 r	mOD End Date:	11/12/2023	Logger: AM	F	INAL
Depth (m)	Sample / Tests	Field Record	;	Casing Water Depth Depth (m) (m)	Level mOD	Depth (m)	Legend		Des	scription		Water	ackfill
9.50 - 10.20	B27 Water Casing to (m	Strikes	Remari m) Inspection No grou	ks on pit haa ndwater	88.42	10.20			End of Bore	ehole at 10.20m			9.5 10.0 10.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.0 11.5 11.5 11.0 11.5 1
10.20	Initial (filling)     Profile (fill)     Form (fill) </td <td>Flush</td> <td>Туре</td> <td>Termina</td> <td>tion Reason</td> <td></td> <td></td> <td>Last U</td> <td>pdated</td> <td></td>				Flush	Туре	Termina	tion Reason			Last U	pdated	
		=•	Wa	ter	Terminate	ed on Engineer's	instruction.		02/05	/2024	AGS		



# APPENDIX C SONIC SAMPLE PHOTOGRAPHS



#### BH01A Box 1 (1.20-2.70m)

	•		Y	Proj	ect: NDF	A Socia	6 Housing		Project No.	23-118	BLE				
				. ј. – вн м	No. BHOI	Ą	Box: 2	2	lepth: 2.70	-4.20	and a		H		
(m)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
		S.	词								All of			re-	5

#### 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)

	CAUSEWA GEOTECH		Project: BH No.:	NDFA S	occial Ho Box	using 2		Project No Project No	23-0 70-4	0881F				
(m)	0.1 0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	- 1.1	1.2	1.3	1.4	1.5
1	Ventile:	C. Martine	en e	736							Re la			

#### 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)



# NDFA Social Housing Lot 3; Coolaghknock Glebe Report No.: 23-0881F

#### 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)



# NDFA Social Housing Lot 3; Coolaghknock Glebe Report No.: 23-0881F

#### RC04 Box 1 (1.20-2.70m)

	Project: NDFA	social Housing	Project N	0. 23-088	BIF		F		
(m) 0.1 0.2 0.3 (	BH No.: RCO4	Box: 2	Depth: 2.	70 - 4.20	2	1.2	1.3	1.4	15
200		and the p		N.		A A A A A A A A A A A A A A A A A A A	200		

#### 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

			Proj	ect No.	Project	Name:		T	rial Pit ID
		<b>EWAY</b>	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe			
		GEOTECH	Coor	dinates	Client:				TP01
		BLOTECH	6740	12 01 E	NDFA				
Method:			7120	15.91 L	Client's	s Representative:		Sh	eet 1 of 1
Trial Pitting			/150	15.52 N	Malone	e O'Regan Consulting Engineers		S	cale: 1:25
Plant:			Elev	vation	Date:	L	ogger:		
8t Tracked Exca	avator		99.94	1 mOD	17/10/	2023 R:	S		FINAL
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Nater	
(,	10305		(	- (,		MADE GROUND: Firm brown slightly sandy slightly grave	lly CLAY. Sand is		
			99.78	0.15		fine to coarse. Gravel is subrounded fine to coarse.	ND with low	-	_
				-		cobble content and rare sheets of plastic. Gravel is round	led fine to		_
				-		coarse. Cobbles are rounded.			_
0.50	ES1			-					0.5 —
				-					-
				-					-
				-					-
			99.04	0.90		Grey sandy silty rounded fine to coarse GRAVEL with low	cobble content.	-	-
1.00	ES2			-	• × • • •	Sand is fine to coarse. Cobbles are rounded.			1.0
1.00 - 1.00	5			-	α Χ. αΧ. β				_
				-	• × • • • •				_
				-	م× مم×≀				_
			98 11	1 50	• × • • • × •				15
			50.44	1.50		End of trial pit at 1.50m			
				-					_
				-					_
				-					-
				-					2.0
				-					_
				-					_
				-					-
				-					_
				-					2.5
				-					
				-					_
				-					_
				-					3.0
				-					-
				-					-
				-					_
				-					-
				-					3.5 —
				-					_
				-					_
				-					_
				-					4.0
				-					-
				-					_
				-					-
				-					-
									4.5 —
				-					_
				-					_
				-					_
				-				+	
Water	Strikes	<b>a</b>	Rem	narks:	I				
Struck at (m)	Remarks	<b>Depth:</b> 1.50	HV r	not possibl	e.				
		Width: 1.00	Nog	groundwate	er encou	ntered.			
		Length: 2.50							
		Stability:	Tern	nination R	eason		Last U	pdate	
		Unstable	Term	ninated due	to collaps	2.	20/12	2/2023	AGS

				ect No.	Projec	Name:		Tri	al Pit ID
	CAUS	EWAY	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe		I .	
	G	EOTECH	Coor	dinates	Client:			•	TP02
Method:			6741	32.44 E	NDFA	Representative			
Trial Pitting			7129	89.26 N	Malon	e O'Regan Consulting Engineers		She Sc	et 1 of 1
Plant:			Elev	vation	Date:	Logge	r:		
8t Tracked Exc	cavator		106.70	) mOD	17/10/	2023 RS		ŀ	-INAL
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water	
			106.40	0.30		MADE GROUND: Firm brown slightly sandy gravelly CLAY with content. Sand is fine to coarse. Gravel is rounded fine to coarse are rounded. MADE GROUND: Grey very gravelly slightly silty fine to coarse low cobble content. Gravel is rounded fine to coarse. Cobbles	low cobble e. Cobbles SAND with are		
0.50	ES1		105.90	- 0.80		rounded. MADE GROUND: Grey sandy slightly silty rounded fine to coars with low cobble content. Sand is fine to coarse. Cobbles are ro	e GRAVEL unded.		0.5 — — — —
1.00 1.00 - 1.00	ES2 B5		105.40	1.30		MADE GROUND: Grey very sandy silty rounded fine to coarse ( with high cobble content. Sand is fine to coarse. Cobbles are	GRAVEL		1.0 — — —
2 00	86			- - - - - - - - - - -		subrounded.			1.5 — — — 2.0 —
2.00	ES3		104.60	2.10		MADE GROUND: Grey fine to coarse SAND.			2.5 —  2.5 — 
3.00 3.00	B7 ES4		103.70	- 3.00		End of trial pit at 3.00m			3.0
				-					-
				-					-
				• - - - - - -					4.0
				- - - -					-
				- - - - -					
				-					_
Wate Struck at (m)	er Strikes Remarks	Depth: 3.00 Width: 1.25	Ren HV r No g	narks: not possibl groundwate	e. er encou	ntered.			
		Length: 2.25							
		Stability:	Terr	nination R	eason		Last Up	dated	
		Unstable	Term	ninated at sc	cheduled o	lepth.	20/12/	2023	AGS

			Proj	ect No.	Project	Name:			Tria	al Pit ID
	CALIS	<b>EWAY</b>	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe				
		GEOTECH	Coor	dinates	Client:				Т	FP03
		BLOTECH	6741	76 21 E	NDFA					
Method:			7120	05 60 N	Client's	s Representative:			She	et 1 of 1
Trial Pitting			/120	93.09 N	Malone	e O'Regan Consulting Engineers			Sca	le: 1:25
Plant:			Elev	vation	Date:		Logger:		F	ΙΝΔΙ
8t Tracked Exc	avator		102.03	3 mOD	17/10/	2023	RS		<u> </u>	
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description			Water	
						MADE GROUND: Firm brown slightly sandy slightly	gravelly CLAY.	Sand is		_
				-		The to coarse. Gravel is rounded fine to coarse.				_
			101.73	0.30		Grow yory conducilty subrounded fine to coorse GB	AVEL Sand is	finato		_
					Î x	coarse.	AVEL. Sallu IS	line to		-
0.50	B3			-	Å x					0.5
0.50	ESI			-	×					-
					××`					_
				-	×××					_
1.00	ES2			-	×××					1.0
1.00 - 1.00	B4				×××					-
				[	××××					-
				-	×··×					_
					×××					
					××××					1.5
				-	× × ×					_
				-	××××					-
					×××					-
2.00	B5			-	××××					2.0
				-	××××					_
				[	××××					_
				-	××××					_
				-	××××					2.5
					××××					-
				[	× × ×					-
				-	× × ×					-
2.00	DC		00.02	2.00	× × ×					-
3.00	во		99.03	- 3.00		End of trial pit at 3.00m				3.0
				-						_
				-						-
				[						-
				-						3.5 —
				-						_
				[						_
				-						_
				-						4.0
				-						-
				-						-
				-						-
										45
				-						4.5
				-						_
				-						-
				E						-
				<u> </u>						
Water	Strikes	<b>Depth:</b> 3.00	Rem	narks:						
Struck at (m)	Remarks	Width: 0.60	Nog	groundwate	er encou	ntered.				
		Length: 3.00								
		Stability		nination P	00000			100411-	late -	
		Stability:	iern	mination R	eason			Last Upt	atea	
		Unstable	Term	nianted at sc	cheduled o	lepth.		20/12/2	.023	AGS

			Proj	ect No.	Project	Name:			Tria	al Pit ID
	CAUS	FWAY	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe				
		SEOTECH	Coor	dinates	Client:				٦	<b>P04</b>
			6741	58.32 E	NDFA					
Method:			7128	23.78 N	Client	s Representative:			She	et 1 of 1
Irial Pitting			Flor	vation	Data	O Regan Consulting Engineers	Loggor		Sca	le: 1:25
Rt Tracked Exca	avator		98.83		17/10/	2023	RS		F	INAL
Depth	Sample /		Level	Depth	1,,10,		no -		e	
(m)	Tests	Field Records	(mOD)	(m)	Legend	Description		( Cand is	Mat	
				-		fine to coarse. Gravel is subrounded fine to coarse.	Tavelly CLA	r. Sanu is		-
				-						-
			98.53	0.30		Firm brown slightly sandy slightly gravelly CLAY. San	d is fine to c	oarse.		_
0.50	B3			-		Gravel is rounded fine to medium.				0.5
0.50	ES1			-						_
				[						-
				-						_
1.00	FS2			-						10-
1.00 - 1.00	B4			-						
			97.63	1.20		Soft gravish brown slightly sandy slightly gravelly CI	AV Sand is f	ine to		-
						coarse. Gravel is subrounded fine to medium.				-
				-						_
				-						1.5
				-						_
										_
				-						_
2.00 - 2.00	B5			-						2.0
										_
				-						_
										-
				[						2.5
				-						_
										_
				-						_
3.00	B6		95.83	- 3.00		End of trial pit at 3.00m				3.0
				-						-
				-						-
										_
				-						3.5 —
										-
				-						-
				-						_
				-						4.0
				-						_
										-
				-						-
				-						-
										4.5 -
				-						_
										_
				-						_
Water	Strikes	<b>Depth:</b> 3.00	Ren No 9	narks: groundwate	er encou	ntered.				
Struck at (m)	Kemarks	<b>Width:</b> 0.60		<sub>D</sub> . Ganawali	er encou					
		Length: 3.00								
		Stability:	Terr	nination R	eason			Last Up	lated	
		Stable	Term	nianted at sc	heduled o	lepth.		20/12/2	2023	AGS

			Project No.		Project Name:			Trial Pit ID	
CALISEWAY		23-0	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe				
GEOTECH			<b>Coordinates</b>		Client:		TP05		
GLOTLETT					NDFA				
Method:			712801 EC N		Client's	Representative:		Sheet 1 of 1	
Trial Pitting			112004.30 N		Malone		Scale: 1:25		
Plant:			Elevation		Date:		FINAI		
8t Tracked Excavator			98.97 mOD		17/10/				
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water	
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY	with low	_	
				-		Cobbles are rounded.	oarse.	_	
				a.				_	
				-				_	
0.50	B3			-				0.5	
0.50	231		98.37	- 0.60		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coa	arse.	-	
				-		Gravel is rounded fine to coarse.			
				-				_	
1.00	B4			-				1.0	
1.00	ES2		07.02	1 1 5				-	
			97.82	- 1.15	×××	Grey very sandy slightly silty rounded fine to coarse GRAVEL. Sand	d is fine	-	
				-	××××	to coarse.		_	
				-	× × ×			-	
				-	× × ×			1.5 —	
				-	× × ×			_	
					×××			_	
				-	×××			_	
2.00 - 2.00	B5			-	××××			2.0	
				-	×××			-	
				e 8	××××				
				-	××××			_	
				-	××××			2.5	
				-	××××			_	
				-	××××			-	
				-	×××			-	
2.00	D.C		05.07	- 2.00	××××				
3.00	во		95.97	- 5.00		End of trial pit at 3.00m		5.0	
				-				_	
				-				_	
								_	
								3.5 —	
				-				-	
				-					
				ar ar				_	
				-				4.0	
				-				=	
								_	
				<b>.</b>				_	
				-				4.5	
				-				_	
				-					
				-					
				-					
Water	Strikes	<b>Depth:</b> 3.00	Rem	harks:	0				
Struck at (m)	Remarks	<b>Width:</b> 0.60	No g	roundwate	e. er encou	ntered.			
		Length: 3.00							
		Stability:	Termination Reason					ated 🗖 – 🏲	
		Unstable	Term	inated at so	scheduled depth. 20/12				
Unstable -				reminated at scheduled depth. 20/12/20					

			Project No.		Project Name:				l Pit ID		
CALISEWAY		23-0881F		NDFA Social Housing Lot 3 - Coolaghknock Glebe							
GEOTECH			Coordinates		Client:				TP06		
GLOTLETT			674235 38 F		NDFA						
Method:			712746 26 N		Client's	s Representative:		Shee	et 1 of 1		
Trial Pitting			/12/46.26 N		Malone	e O'Regan Consulting Engineers		Scale: 1:25			
Plant:			Elevation		Date: Logger:				<b>ΓΙΝΙΔΙ</b>		
8t Tracked Excavator			97.41 mOD		17/10/2023 RS				INAL		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water			
				-		MADE GROUND: Firm brown slightly sandy slightly gravelly CLA	Y. Sand is				
						fine to coarse. Gravel is rounded fine to coarse.					
				-					_		
			0.5.05	-					_		
0.50	B3		96.96	0.45		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to c	oarse.		0.5 —		
0.50	ES1			-					_		
				-					_		
				-							
1.00	ES2			-					1.0		
1.00 - 1.00	B4			-					_		
				-	<u> </u>				_		
			96.11	1.30		Brown gravelly very silty fine to coarse SAND. Sand is fine to coarse sand is sand is fine to coarse sand is fine to coarse sand is sand is fine to coarse sand is s	arse.		_		
				-	$\times \times \times$	Gravel is rounded fine to coarse.			_		
				-	××××				1.5 —		
				-	××××						
				-	× × ×				_		
				-	× × ×				_		
2.00	B5			-	××××				2.0		
				-	×× ×				_		
				-	×× ×				_		
			95.11	- 2.30	÷ X	Grey very sandy slightly silty rounded fine to coarse GRAVEL with	th		_		
				-	a X, o A, o	medium cobble content. Sand is fine to coarse. Cobbles are rou	inded.				
				-	a X, , a X (				2.5		
				-	a X: ∘ a X 8				_		
				-	a X. , a X. 9				_		
				-	a×, ∘a× (				_		
3.00	B6		94.41	- 3.00	a construction	End of trial pit at 3.00m			3.0		
				-					_		
				-					_		
				-					_		
				-					3.5 —		
				-					_		
				-					_		
				-					_		
				-					-		
				_					4.0		
				-					_		
				-					_		
				-					_		
				-					4.5		
				-					_		
				-					_		
				-							
				-							
Mator	Strikes		Rem	narks:							
Struck at (m)	Remarks	<b>Depth:</b> 3.00	HV r	HV not possible.							
		<b>Width:</b> 0.60	No g	groundwat	er encou	ntered.					
		Length: 3.00									
		Stability:	Termination Reason Last L					lated			
		Stable	Term	Terminated at scheduled depth. 20/12							

			Project No.		Project Name:				Trial Pit ID	
CALISEWAY		23-0	0881F	NDFA Social Housing Lot 3 - Coolaghknock Glebe						
GEOTECH			Coordinates		Client: NDFA				TP07	
Georeen										
Method:			712710 E1 N		Client'	s Representative:		Sheet 1 of 1		
Trial Pitting			/12/40.51 N		Malone O'Regan Consulting Engineers				Scale: 1:25	
Plant:			Elevation		Date: Logger:				FINAL	
8t Tracked Excavator			101.38 mOD		17/10/2023 RS					
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water		
				[	4. 10° 0.	Firm brown slightly sandy slightly gravelly CLAY with low cobble	content.		_	
				Ē		rounded.	are		_	
				-					_	
				Ē					_	
0.50	B3 FS1			- }					0.5	
0.50	231		100.68		نط : رطن . ا من من من ا					
			100.08	- -	م × ہو ،	Brown slightly sandy slightly silty rounded fine to coarse GRAVE	L with		_	
				- F	• × • • • •	Tow couple content. Sand is nife to course. Couples are rounded			_	
1.00	ES2				م × ۰ مک				1.0	
1.00 - 1.00	B4			Ē	م × ہو ،				_	
			100.08	1 20	م × ہو ،				_	
			100.08	1.30	a X: o dX (	Grey sandy slightly silty rounded fine to coarse GRAVEL with low	v cobble			
				-	a X: , a X )				1.5 —	
				[	م × ہو ،				_	
				Ē	م × ، م م				_	
				-	م × ہو ،				_	
2 00	B5			F	م × ، م م				2.0	
				- F	a X: , aX )				_	
				[	a X: , aX:				_	
				Ē	a X, b a X i				_	
				- E	a X, b a X i					
				Ē	a X • X					
				-	a X • X				_	
				[	,				_	
				-	• × • × •				_	
3.00	86		98.38	- 3.00		End of trial pit at 3.00m			3.0	
				Ē					_	
				-					_	
				Ē					_	
				-					3.5 —	
				[						
				Ē					_	
				Ē					_	
				-					4.0	
				- t					_	
				[						
				Ē					_	
				-					4.5	
				Ē					_	
				- t					-	
				F					_	
				- 				$\rightarrow$		
Water	Strikes	<b>_</b>	Rem	arks:	1	1				
Struck at (m)	Remarks	Depth: 3.00	HV r	ot possibl	e.	ad and d				
		width: 0.60	Nog	roundwate	er encou	nterea.				
		Length: 2.00							·	
		Stability:	Tern	nination R	eason		Last Upd	ated		
		Unstable	Term	Terminated at scheduled depth. 20/12						



# APPENDIX E TRIAL PIT PHOTOGRAPHS





Report No.: 23-0881F

















**TP01** 



**TP01** 



Report No.: 23-0881F



**TP01** 



#### Report No.: 23-0881F



**TP01** 



**TP01** 



#### Report No.: 23-0881F



**TP01** 



**TP01** 





**TP01** 



Report No.: 23-0881F



**TP02** 


## Report No.: 23-0881F





## Report No.: 23-0881F



**TP02** 



# Report No.: 23-0881F



**TP02** 





# Report No.: 23-0881F



**TP02** 





## Report No.: 23-0881F



**TP03** 





## Report No.: 23-0881F





## Report No.: 23-0881F



**TP03** 



## Report No.: 23-0881F



**TP03** 





Report No.: 23-0881F



**TP03** 



## Report No.: 23-0881F



**TP04** 





## Report No.: 23-0881F



**TP04** 





## Report No.: 23-0881F



**TP04** 



## Report No.: 23-0881F



**TP04** 



## Report No.: 23-0881F





## Report No.: 23-0881F



**TP05** 





Report No.: 23-0881F



**TP05** 



Report No.: 23-0881F



**TP05** 



# Report No.: 23-0881F



**TP05** 





## Report No.: 23-0881F



**TP06** 





Report No.: 23-0881F



**TP06** 



Report No.: 23-0881F





# Report No.: 23-0881F



**TP06** 



**TP06** 



# Report No.: 23-0881F





# Report No.: 23-0881F



**TP07** 





## Report No.: 23-0881F





Report No.: 23-0881F



**TP07** 



# Report No.: 23-0881F



**TP07** 





# Report No.: 23-0881F





## Report No.: 23-0881F



IT01



IT01



# Report No.: 23-0881F



IT01



IT01



## Report No.: 23-0881F



IT01



## Report No.: 23-0881F



IT01



## Report No.: 23-0881F



IT01



# Report No.: 23-0881F



**IT02** 



## Report No.: 23-0881F



**IT02** 



## Report No.: 23-0881F



IT02



**IT02** 


#### Report No.: 23-0881F



IT02





#### Report No.: 23-0881F









#### Report No.: 23-0881F



**IT03** 



#### Report No.: 23-0881F



**IT03** 



## Report No.: 23-0881F



**IT03** 





## Report No.: 23-0881F







# APPENDIX F SLIT TRENCH LOGS AND DRAWINGS



			Proje	ect No.	Project	Name:			Tria	al Pit ID
		EWAY	23-0881F		NDFA Social Housing Lot 3 - Coolaghknock Glebe					
	G	EOTECH	Coordinates		Client:				ST01	
			6740 <sup>.</sup>	78.48 E	NDFA					
Nietnoa:			712926.48 N		Client's	Client's Representative:				
Slit Trenching					Deter	e O'Regan Consulting Engineers		Sca	ale: 1:25	
Plant: 8t Tracked Evca	vator		99 30 mOD		18/10/	2023	Logger:		F	INAL
Denth			level	Denth	10/10/	2023	11.5		۲.	
(m)	Tests	Field Records	(mOD)	(m)	Legend	Description			Wat	
				E		fine to coarse. Gravel is rounded fine to coarse.	avelly CLAY.	Sand is		-
				F						-
			99.00	- 0.30		MADE GROUND: Grey sandy silty angular fine to coars	se GRAVEL	with		-
				-		high cobble content. Sand is fine to coarse. Cobbles a	re subangu	lar.		0.5 —
				F						-
			98.60	0.70	×****	Stiff brown slightly sandy slightly gravelly SILT with lov	w cobble co	ontent.		-
				F F	××.×.	Sand is fine to coarse. Gravel is rounded fine to coarse	e. Cobbles a	are		_
				É	× × × ×	Tounded.				10
				ŀ	× × × ×					
				Ĺ	$  \times \times$					_
				+ -	$  \times \times$					_
				F	$\times \times $					-
				Ē	$\times \times $					1.5 —
				F F	$\times \times $					_
				E	× × × ×					-
				ŀ	× × × ×					-
				F	× × × ×					2.0
				Ē	<pre> * * * * * * * * * * * * * * * * * * *</pre>					_
				F	<pre> * * * * * * * * * * * * * * * * * * *</pre>					_
				Ē	$\times \times \times \times$					-
			96.80	- 2.50	C ** • X • X •	End of trial pit at 2.50m				2.5 —
				E						_
				ŀ						_
				F						_
				-						3.0
				F						-
				Ē						_
				F						-
				Ē						3.5 —
				F						-
				É						_
				ŀ						_
				F						4.0
				-						-
				F						_
				ŀ						_
				F						4.5
				-						_
				F						-
				ļ						_
				<u> </u>	<u> </u>				+	
Water	Strikes	Donth: 0.50	Rem	narks:	<u>.                                    </u>					
Struck at (m)	Remarks	Width: 0.50	Nog	groundwate	er encou	ntered.				
		length: 6.50								
		Ctability	<b></b> _	nin-ti-				1000	<u></u>	
		Stability:	lern	nination R	eason			Last Upd	ated	
		Stable	Term	inated at sc	heduled c	lepth.		20/12/2	023	AGS



		(			Detailo, Certificitio
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
-	•	•	•	•	

	DCATION:	ST01
3 Tonne	e Excav	vator & Hand Tools
TRENCH	H - ORIENT	TATION
W 270° W 270° SW		N N N N N S N S N S S S S S S S S S S S
COORDIN	IATES: DAT	ГИМ
EASTING:	- 674	.078.48
	6:- 712 N:- 99.3	926.48 30
TRENCH L	ENGTH (m) :	6.50
TRENCH I	DEPTH (m) :	2.50
TRENCH	VIDTH (m) :	0.50
STABILITY	<i>!</i> :	Stable
GROUND	VATER:	None
SCALE:		EA@A3
DRAWN:		DL
CHECKE	D:	SR
DATE EXC	CAVATED:	18/10/2023
	c	AUSEWAY GEOTECH

			Proje	ect No.	Projec	t Name:		Tria	al Pit ID		
	CAUS	FWAY	23-0881F		NDFA Social Housing Lot 3 - Coolaghknock Glebe						
	G	EOTECH	Coordinates		Client:				ST02		
			6740 <sup>-</sup>	76.79 E	NDFA						
Method:			712922.28 N		Client	s Representative:		Sheet 1 of 1			
Slit Irenching			Els.		Malon	e O'Regan Consulting Engineers		Scale: 1:25			
Plant:	votor		Elev	/aπon		Date: Logger:			INAL		
Bonth			99.41	. MOD	18/10/	2023 RS		2			
(m)	Tests	Field Records	(mOD)	(m)	Legend	Description		Wate			
				ŀ		MADE GROUND: Light brown slightly sandy very silty rounded f coarse GRAVEL. Sand is fine to coarse	ine to		_		
				F					_		
				Ē					_		
			99.01	0.40	°××××	Stiff brown slightly sandy slightly gravelly SILT with low cobble o	ontent.		_		
				E	$\times \times \times \times$	Sand is fine to coarse. Gravel is rounded fine to coarse. Cobbles rounded	are		0.5		
				F	$\times \times \times \times$				_		
				F	$\times \times \times \times$				_		
				Ē	$\times \times \times \times$				_		
				  -	$\times \times \times \times$				1.0		
				E	$\times \times \times \times$				_		
				-	$\langle \times \times \times \rangle$				_		
				F	$\times \times \times \times$				_		
				ŧ	$\times \times \times \times$				1.5 —		
				-	$\times \times \times \times$				_		
				F	$\times \times \times \times$				_		
				Ē	$\times \times \times \times$				_		
			97.41	2.00	×***>	End of trial ait at 2.00m			2.0		
				F		End of that pit at 2.00m			-		
				Ē					_		
				F					_		
				E							
				ŀ					2.5		
				F					_		
				Ĺ					-		
				F F					_		
				E					3.0		
				-					_		
				F					-		
				Ĺ					_		
				F					3.5		
				F					_		
				F					_		
				F					_		
				F					4.0		
				ŀ					_		
				F					_		
				Ē					_		
				F					4.5		
				Ē					-		
				-					-		
				Ē					_		
								$\square$			
Water	Strikes		Rem	narks:	1						
Struck at (m)	Remarks	<b>Depth:</b> 2.00	No g	groundwate	er encou	ntered.					
		wiath: 0.50									
		Length: 10.00	<u> </u>								
		Stability:	Tern	nination R	eason		Last Upd	ated			
		Unstable	Term	inated at sc	heduled o	Jepth.	20/12/20	023	AGS		



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

IDMENT	LOCATION:	ST02
3 Tonn	e Excav	ator & Hand Tools
TRENC		ΓΑΤΙΟΝ
	225°W	N 0° 45° 90°E 180° S
TRENCI	H ORIENTA <sup>-</sup>	TED : 50° FROM NORTH
COORD	ΙΝΔΤΕS' ΠΔΤ	1 M
EASTING NORTHII ELEVATI	00:- 99.4	922.28 1
TRENCH	LENGTH (m) :	10.00
TRENCH	I DEPTH (m) :	2.00
TRENCH	HWIDTH (m) :	0.50
STABILI	TY:	Stable
GROUN	DWATER:	None
SCALE:		NTS@A3
DRAWN	l:	DL
СНЕСК	ED:	SR
DATE E	XCAVATED:	18/10/2023
	c	AUSEWAY GEOTECH

			Proj	ect No.	Project	Name:		Tri	al Pit ID
	CAUS	EWAY	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe			
	G	EOTECH	Coor	dinates	Client:			ST03	
			6741	16.21 E	NDFA	Deserves			
Nietnoa:			7128	89.83 N	Client's Representative:			She	et 1 of 1
Diant:			Floy	vation	Date:	Date:		Sca	ale: 1:25
8t Tracked Exca	vator		98.90	) mOD	18/10/	8/10/2023 RS		F	INAL
Depth	Sample /	Field Deserves	Level	Depth				ter	
(m)	Tests	Field Records	(mOD)	(m)	Legend	Description	(Sand is	Ma	
				-		fine to coarse. Gravel is rounded fine to coarse.	1. 34110 13		_
				-					_
			98 50	0.40					_
			50.50	- 0.40		MADE GROUND: Grey sandy silty angular fine to coarse GRAVEL high cobble content. Sand is fine to coarse. Cobbles are angular	. with		0.5
						б · · · · · · · · · · · · · · · · · · ·			_
			98.20	0.70		Stiff brown slightly sandy gravelly SILT with low cobble content.	Sand is		_
				-	$\times \times $	fine to coarse. Gravel is rounded fine to coarse. Cobbles are sub	rounded.		_
				-	(***.× ****				1.0
				-	$\times \times $				_
				-	( * * * * * * * * *				_
				-	$\times \times $				_
				-	$\langle \times \times \times \\ \times \times \times \rangle$				15
				-	( * * × * * * * * *				
				-	( * * × * * * * * *				_
				-	$\langle \times \times \times \\ \times \times \rangle$				_
				-	$\langle \times \times \times \\ \times \times \rangle$				_
				-	$\langle \times \times \times \\ \times \times \rangle$				2.0
			96.70	2.20	XXXX	End of trial pit of 2.20m			_
				-		End of that pit at 2.20m			_
				-					_
				-					2.5
				-					_
				-					_
				-					_
				-					3.0
				-					_
				-					_
				-					_
				-					3.5 —
				-					_
				-					_
				-					_
				-					4.0
				-					_
				-					_
				-					_
				-					4.5
				-					_
				-					-
				-					_
				-					
Water	Strikes	Depth: 2.20	Rem	harks:		1			
Struck at (m)	Remarks	Width: 0.50	Nog	groundwate	er encou	ntered.			
		Length: 4.00							
		Stability:	Torm	nination P	ason		act line	hated	
		Stability:	lern		casUII		Last Opt	ated	
		Unstable	Term	ninated at sc	neduled o	ieptn.	20/12/2	.023	AGS



		ST03
3 Ionne	e Excav	ator & Hand Tools
TRENCI	H - ORIENT	TATION
W 270° W 270° SW	ORIENTAT	N N N N M M M M M M M M M M M M M
COORDIN	NATES: DAT	
EASTING:	- 674	
ELEVATIO	<sub>N:-</sub> 98.9	
TRENCH L	ENGTH (m) :	4.00
TRENCH	DEPTH (m) :	2.20
TRENCH	WIDTH (m) :	0.50
STABILIT	<i>(</i> :	STABLE
GROUND	WATER:	NONE
SCALE:		NTS@A3
DRAWN:		DL
CHECKEI	D:	SR
DATE EX	CAVATED:	18/10/2023
	c	AUSEWAY GEOTECH

			Proje	ect No.	Project	Name:		Tr	ial Pit ID	
CAUSEWAY			23-0881F		NDFA Social Housing Lot 3 - Coolaghknock Glebe					
	G	EOTECH	Coordinates		Client:				ST04	
	0		6741	15 75 F	NDFA					
Method:			712885.72 N		Client's	Representative:		Sheet 1 of 1		
Slit Trenching			/1200	55.72 N	Malone O'Regan Consulting Engineers				ale: 1:25	
Plant:			Elev	vation	Date:	Date: Logger:			FINAI	
8t Tracked Exca	vator		98.88	3 mOD	18/10/	2023 RS				
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water		
				[		MADE GROUND: Firm brown slightly sandy slightly gravel	ly CLAY with low		_	
				ŀ		rounded fine to coarse. Cobbles are rounded.	coarse. Gravel is		_	
				F					_	
				-					-	
				t F					0.5	
				£					_	
			98.08	0.80					_	
				F	$\times \times \times$	Stiff brown slightly sandy slightly gravelly SILT with low co Sand is fine to coarse. Gravel is rounded fine to coarse. Co	obble content.		-	
				Ē	$\times \times \times$	rounded.			1.0	
				ŀ	× × × ×				-	
				É	× × × ×				_	
				-					_	
				F					1.5 —	
				Ĺ	$\times \times $				-	
				ŀ	× × × × × × ×				_	
				E	× × × × × × ×				_	
				i F	× × × × × × ×				2.0	
				F	× × × × × × ×				_	
				Ē	× × × × × × ×				-	
				ŀ	$\times \times \times \times$				-	
			06.28	250	$\times \times \times \times$					
			90.38	- 2.50		End of trial pit at 2.50m			2.5	
				F					_	
				Ē					-	
				+ F					_	
				F					3.0	
				Ĺ					_	
				t F					_	
				£					_	
				F F					3.5 —	
				F					-	
				Ē					_	
				F					_	
				F					4.0	
				ŀ					-	
				F					_	
				Ē					_	
				F					4.5	
				Ē					-	
				ŀ					_	
				E					_	
								$\square$		
Water	Strikes		Rem	narks:						
Struck at (m)	Remarks	<b>Depth:</b> 2.50	No g	groundwate	er encou	ntered.				
		Width: 0.50								
		Length: 8.00	_							
		Stability:	Tern	nination Re	eason		Last U	dated		
		Stable	Term	inated at sc	heduled c	lepth.	20/12	/2023	AGS	



		ST04
3 Ionn	e Excav	ator & Hand Tools
TREN	CH - ORIENT	TATION
W 270° S TRENC	H ORIENTAT	N 0° 45° 90°E 90°E 135° SE TED : 230° FROM NORTH
COORD	INATES: DAT	UM
EASTING NORTHI ELEVAT	): - 674 NG:- 712 ION:- 98.E	115.75 885.72 38
TRENCH	I LENGTH (m) :	8.00
TRENCI	H DEPTH (m) :	2.50
TRENC	H WIDTH (m) :	0.50
STABILI	TY:	STABLE
GROUN	DWATER:	None
SCALE	:	NTS@A3
DRAWN	1:	D
СНЕСК	ED:	SR
DATE E	XCAVATED:	18/10/2023
	c	AUSEWAY GEOTECH

			Proje	ect No.	Project	t Name:	Т	rial Pit ID	
	CAUS	EWAY	23-0	0881F	NDFA S	Social Housing Lot 3 - Coolaghknock Glebe	CTOF		
	G	EOTECH	Coordinates		Client:	\$105			
Method:			6741	86.58 E	Client'	Sheet 1 of 1			
Slit Trenching			71282	22.31 N	Malone	e O'Regan Consulting Engineers	Scale: 1:25		
Plant:			Elev	vation	Date:	Date: Logger:			
8t Tracked Exca	vator		98.68	3 mOD	18/10/	2023 RS	FINAL		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water		
()				[		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low	v		
				F		coarse. Cobbles are subrounded.		_	
				E				_	
			98.28	0.40		MADE GROUND: Stiff brown slightly sandy gravelly CLAY with low cobble		_	
				Ē		content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular.		0.5	
				- -				_	
				Ĺ				_	
				+ -				_	
				Ē				1.0	
				t F				_	
				Ē				-	
				F				_	
				Ē				1.5	
				+				_	
				É				_	
				F				_	
			96.68	- 2.00	*****	End of trial pit at 2.00m	_	2.0	
				F F				_	
				É				-	
				+ F				_	
				Ē				2.5	
				- -				_	
				Ĺ				_	
				+				-	
				Ē				3.0	
				F				_	
				Ē				_	
				F				_	
				Ē				3.5	
				F F				_	
				Ē				-	
				F				_	
				Ē				4.0	
				F				_	
				Ĺ				-	
				F				_	
				-				4.5	
				F				_	
				-				-	
				[					
\A/ator	Strikes		Rem	narks:					
Struck at (m)	Remarks	<b>Depth:</b> 2.00	Nog	groundwat	er encou	ntered.			
		Width: 0.50							
		Length: 10.00	_						
		Stability:	Tern	nination R	eason	Last U	pdate		
		Stable	Term	inated at sc	heduled o	depth. 20/1	2/2023	AGS	



	LOCATION: ST05
3	Tonne Excavator & Hand Tools
	TRENCH - ORIENTATION
	Ν
_	
	315° 45° 45°
	w 270° 90° г
	225° SW SE
	180°
	TRENCH ORIENTATED : 220° FROM NORTH
	COORDINATES: DATUM
	EASTING: - 674186.58
	NORTHING: - 712822.31
	ELEVATION: - 08.08
	IRENCH WIDTH (m): 0.50
	STABILITY: STABLE
	GROUNDWATER <sup>.</sup> NIDNE
	SCALE: NTS@A3
	DRAWN: J D
	CHECKED: SR
	DATE EXCAVATED: 18/10/2023
	CAUSEWAY GEOTECH

			Proje	ect No.	Project	t Name:		Tria	al Pit ID		
GEOTECH			23-(	23-0881F		NDFA Social Housing Lot 3 - Coolaghknock Glebe					
			Coordinates		Client: NDFA			S	т06		
Method:			6/4186.33 E		Client's Representative:			Sheet 1 of 1			
Slit Trenching <b>Plant:</b> 8t Tracked Excavator			712826.30 N		Malone O'Regan Consulting Engineers			Scale: 1:25			
			Elev	Elevation		Date: Logger:					
			98.80 mOD		18/10/2023 RS			F	INAL		
Depth	Sample /	Field Records	Level	Depth	Legend	Description		/ater			
(m)	lests		(mOD)	(m)		ADE GROUND: Firm brown slightly sandy slightly gravelly C	LAY. Sand is	5			
				ī		fine to coarse. Gravel is rounded fine to coarse.			-		
				-					_		
				-					_		
				Ē					0.5		
			98.20	0.60		MADE GROUND: Grev slightly sandy slightly silty angular fine	to coarse		-		
				-		GRAVEL with low cobble content. Sand is fine to coarse. Cobl	oles are		-		
			07.00			angular.			-		
			97.90	· 0.90		Firm brown slightly sandy slightly gravelly SILT with low cobb	le content.		10		
				-	× × × ×	subrounded.	obles are		-		
				-	× × × ×				_		
				- +	××××	4			_		
				-	××××				-		
				-	××××				1.5 —		
				- -	CXXX				_		
				- r	CXXX				_		
				-					-		
				- 					2.0		
				- r					_		
				-					_		
				- -	$\sim$				_		
			96.30	2.50	× × × ×	End of trial nit at 2.50m			2.5 —		
				-		End of that pit at 2.50m			-		
				-					-		
				- r					-		
				- -							
				- -					3.0		
				- ſ					_		
				- - -					-		
				-					_		
				-					3.5 —		
				- -					_		
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									4.0		
				-					-		
				- -					_		
				- r					_		
				- - L					4.5		
				-					_		
				ī					-		
				- -					_		
				-	<u> </u>						
Water	Strikes		Rem	arks:	<u> </u>	1					
Water Strikes Depth: 2.50   Struck at (m) Remarks		No g	No groundwater encountered.								
		Width: 0.50									
		Length: 10.00									
		Stability:	Term	nination R	eason		Last Upd	lated			
Un		Unstable	Term	Terminated at scheduled depth. 20/12				.023	<u>AGS</u>		



	DCATION:	ST06						
3 Tonne Excavator & Hand Tools								
TRENCH	TRENCH - ORIENTATION							
W 270° W 270° SW	ORIENTAT	N N N M M M M M M M M M M M M M						
COORDIN	COORDINATES: DATUM							
EASTING:	EASTING: - 674186.33							
ELEVATIO	NORTHING: - 712826.30 ELEVATION: - 98.80							
TRENCH L	ENGTH (m) :	10.00						
TRENCH I	DEPTH (m) :	2.50						
TRENCH	VIDTH (m) :	0.50						
STABILITY	/.	Stable						
GROUND	VATER:	None						
SCALE:		NTS@A3						
DRAWN:		DL						
CHECKED	):	SR						
DATE EXC	CAVATED:	18/10/2023						
	c	AUSEWAY GEOTECH						



# APPENDIX G SLIT TRENCH PHOTOGRAPHS

Report No.: 23-0881F





Report No.: 23-0881F





## Report No.: 23-0881F



**ST01** 





Report No.: 23-0881F



**ST02** 



#### Report No.: 23-0881F





#### Report No.: 23-0881F



**ST02** 





#### Report No.: 23-0881F





Report No.: 23-0881F



**ST03** 



#### Report No.: 23-0881F



**ST03** 



Report No.: 23-0881F



**ST03** 



Report No.: 23-0881F



**ST04** 



#### Report No.: 23-0881F



**ST04** 



Report No.: 23-0881F



**ST04** 



#### Report No.: 23-0881F





#### Report No.: 23-0881F



**ST04** 




## Report No.: 23-0881F









**ST05** 



January 2024

## Report No.: 23-0881F





## Report No.: 23-0881F





## Report No.: 23-0881F





## Report No.: 23-0881F







Report No.: 23-0881F



**ST06** 



January 2024

Report No.: 23-0881F



**ST06** 



January 2024

## Report No.: 23-0881F



**ST06** 





## Report No.: 23-0881F







# APPENDIX H SOAKAWAY PIT LOGS AND TEST RESULTS



			Proj	ect No.	Project	Name:		Т	rial Pit ID
	CAUS	EWAY	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe			1701
	G	EOTECH	Coor	dinates	NDFA				1101
Method:			6741	15.39 E	Client'	Representative:		SI	neet 1 of 1
Soakaway Pit			7129	05.52 N	Malone	e O'Regan Consulting Engineers		S	cale: 1:25
Plant:			Elev	vation	Date:		Logger:		
8t Tracked Exca	vator		99.55	5 mOD	17/10/	2023	RS		FINAL
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description		Water	
				-		Firm brown slightly sandy slightly gravelly CLAY. Sand is Gravel is rounded fine to coarse.	s fine to coar	se.	_
				-					_
			99.25	0.30		Firm light brown slightly sandy slightly gravelly CLAY. So	and is fine to	)	
				-		coarse. Graver is rounded line to coarse.			0.5 —
			98.95	0.60		Soft brown slightly sandy slightly gravelly CLAY. Sand is	fine to coars	se.	_
						Gravel is rounded fine to coarse.			
				-					_
									1.0
				-					_
				-					_
				-					_
			98.05	- 1.50		End of trial pit at 1.50m			1.5 —
				-					_
				-					_
				-					-
				-					2.0
									_
				-					_
				-					2.5 —
				-					
				-					_
				-					
				-					3.0
				-					_
				-					
				-					_
				-					3.5 —
				-					
				-					_
				-					_
				-					4.0
				-					_
				-					_
				-					45
				-					
				-					
			<b>_</b>	-					
Water	Strikes	<b>Denth</b> : 150	Ren	narks:	1			I	1
Struck at (m)	Remarks	Width: 0.45	No g	groundwat	er encou	ntered.			
		Length: 1.30							
		Stability:	Terr	nination R	eason		I	Last Update	d
		Stable	Term	ninated at so	cheduled o	lepth.		20/12/2023	AGS

### **Soakaway Infiltration Test**

length (m)

1.30

0.60

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

width (m)

0.45

0.30



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

depth to groundwater before adding water (m) = Dry

test pit depth (m) 1.50						
	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				
	-					

test pit top dimensions

test pit base dimensions

### **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

	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 <sup>3</sup> )	(m <sup>2</sup> )	(m/min)	(m/h)
	0.46	1.04	NI / A				
	1.15	0.35	N/A				



			Proj	ect No.	Project	t Name:			Tria	al Pit ID
			23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe				
	CAUS	EVVAI	Coor	dinates	Client:				I	IT02
	G	EOTECH	67.49		NDFA					
Method:			6/42	27.20 E	Client's	s Representative:			She	et 1 of 1
Soakaway Pit			7128	42.87 N	Malone	e O'Regan Consulting Engineers			Sca	ale: 1:25
Plant:			Elev	vation	Date:		Logger:			
8t Tracked Exca	vator		101.03	3 mOD	17/10/	2023	RS		F	INAL
Depth	Sample /	Field Records	Level	Depth	Legend	Description			/ater	
(m)	lests		(mob)	(m) -		Firm brown slightly sandy slightly gravelly CLAY. San	d is fine to co	arse.	<u> </u>	
				-		Gravel is rounded fine to coarse.				_
				-						
				-						_
				-						0.5
				-						_
				-						_
				-						_
				-						_
			99.98	1.05		Grey gravelly silty fine to coarse SAND with low cob	ble content.	Gravel is		1.0
				-	× × ×	rounded fine to coarse. Cobbles are rounded.				_
				-	×°×°×					_
				-	×~×~×					_
			99.53	- 1.50		End of trial pit at 1.50m				1.5
				-						_
				-						_
				-						
				-						2.0
				-						-
				-						_
				-						_
				-						_
				-						2.5
				-						_
				-						_
				-						-
				-						3.0
				-						_
				-						_
				-						_
				-						3.5
				-						-
				-						_
				-						_
				-						4.0
				- r						_
				-						-
				-						-
				-						_
				-						4.5
				-						_
				-						_
				-						-
Water	Strikes	<b>Depth:</b> 1.50	Rem	narks: aroundwat	erencou	ntered				
Struck at (m)	Remarks	<b>Width:</b> 0.40		, ounuwdl	er encou	incicu.				
		Length: 1.40								
		Stability:	Tern	nination R	eason			Last Upd	ated	
		Stable	Term	ninated at so	heduled o	depth.		20/12/2	023	ACS
					•			, ==, =		

## Soakaway Infiltration Test

Project No.:   23-0881F     Site:   NDFA Social Housing Lt3 - Coolaghknock Glebe     Fest Location:   T7 October 2023     Test Date:   17 October 2023     test pit sop imensions   0.30   1.50     test pit depth (m)   1.50     test pit depth (m)   1.50     depth to generating (m)   depth to generating (m)     0   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.56   0.94     1   0.57   0.75     30   0.77   0.73     30   0.77   0.73     30   0.77   0.73     30   0.72   0.73     30   0.72   0.73     30   0.72   0.73			<u>30</u>	<u>akaway II</u>	IIII ation 1	<u>est</u>			
Site:   NDFA Social Housing Lot 3 - Coolaghkmock Glebe   Image: Construct of the second of the seco	Project No.:	23-088	81F						
Test Location:   ITO2     Test Date:   ITO2     Test pit to   Itom dimensions   0.30   1.50   Analysis using method as described in BRE Digest 365     test pit to depth (m)   1.50   depth to groundwater before adding water (m) = Dry     Time   Depth to   Head of water   of the depth (m)   Colspan="2">Colspan="2">Analysis using method as described in BRE Digest 365     0   0.56   0.94   0   depth to groundwater before adding water (m) = Dry     Verter water surface   0   0.56   0.94   0   <	Site:	NDFA S	Social Housing I	sing Lot 3 - Coolaghknock Glebe					
Test Date:   17 October 2023     test pit tog dimensions   0.30   1.50   analysis using method as described in BRE Digest 365 ond CIRIA Report C697-The SUDS Manual test pit base dimensions     test pit dept (m)   1.50   depth to groundwater before adding water (m) = Dry     Time   Depth to (m)   1.50   depth to groundwater before adding water (m) = Dry     Time   Depth to (m)   1.50   depth to groundwater before adding water (m) = Dry     Time   Water Surface   Impit (m)   Metadof water   Metadof water     1   0.56   0.94   1   0.56   0.94     2   0.58   0.92   4   0.61   0.89     4   0.66   0.85   10   75% head of water at 0.71 m depth to water surface (target) 0.80 m time to reach target depth 36.5 mins     15   0.71   0.80   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     120   1.10   0.40   0.27   0.78   0.26   0.27     300   1.31   0.19   17.5   0.16   1.61   58   0.03     120   1.10   0.40	Test Location:	IT02		GEOTECH					
width (m) test pit top dimensionsiength (m) 0Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual Action and CIRIA Report C697-The SUDS Manual Action and CIRIA Report C697-The SUDS Manual and CIRIA Report C697-The SUDS Manualtest pit depth (m)1.50depth to groundwater before adding water (m) = DryTime (mn)Nead of water (m)RESULTS (FROM GRAPH BELOW) Test start To 5% 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 200RESULTS (FROM GRAPH BELOW) Test start Test start Test start Test end 25% head of water at 0.24 m depth to water surface (target) 1.27 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 2100 mins time to reach target depth 200 mins time to reach target depth 200 mins 	Test Date:	17 Octo	ober 2023						
width (m)   Analysis using method as described in BRE Digest 365     test pit to dimensions   0.30   1.50   ond CIRIA Report C697-The SUDS Monual test pit base dimensions     test pit depth (m)   1.50   depth to groundwater before adding water (m) = Dry     Water surface   (m)   (m)   Colspan="2">Colspan="2"   Colspan="2"    Colspan="2"   Colspan="2"   Colspan="2"									
test pit top dimensions   0.30   1.50   and CIRA Report Cosy-The SUDS Monual test pit base dimensions     test pit base dimensions   0.30   1.50   and CIRA Report Cosy-The SUDS Monual test pit depth (m)     Time   Depth to water surface   lead of water   n pit   (m)     0   0.56   0.94   0.94   1   0.56   0.94     1   0.56   0.94   1   0.56   0.94     2   0.58   0.92   75% head of water at 0.71 m   depth to water surface (target) 0.80 m   time to reach target depth 36.5 mins     10   0.67   0.83   0.68   0.92   25% head of water at 0.24 m   depth to water surface (target) 1.27 m   time to reach target depth 210.0 mins     45   0.83   0.68   0.62   0.57   0.77   0.73     45   0.83   0.68   0.62   10.10   0.40   180   1.23   0.27     240   1.29   0.21   30.0   0.30   1.73   0.16   1.61   5.8E-04   0.035     100   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035  <			width (m)	length (m)	Analys	is using method as a	lescribed in BF	RE Digest 365	
test pit base dimensions   0.30   1.00     test pit depth (m)   1.50   depth to groundwater before adding water (m) = Dry     Time   water surface   in pit     (mins)   (m)   (m)     0   0.56   0.94     1   0.56   0.94     2   0.58   0.92     4   0.61   0.89     6   0.64   0.86     0   0.66   0.89     10   0.67   0.63     15   0.71   0.80     20   0.72   0.75     30   0.77   0.73     45   0.83   0.66     60   0.89   0.62     120   1.10   0.40     180   1.23   0.27     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time   stringit   water lost     depth to water   in pit   elapsed   water lost     (mins)   (m)   (m)   (m)     365   0.80   0.71   173.5 <td>test pit i</td> <td>top dimensions</td> <td>0.30</td> <td>1.50</td> <td></td> <td>ana CIRIA Rep</td> <td>ort 0.697-1 ne 3</td> <td>SUDS Manual</td>	test pit i	top dimensions	0.30	1.50		ana CIRIA Rep	ort 0.697-1 ne 3	SUDS Manual	
test pit depth (m)     1.50     depth to groundwater before adding water (m) = Dry       Image     Depth to water surface     Head of water (m)     Image     Results       0     0.56     0.94     1     0.56     0.94       1     0.56     0.94     1     0.56     0.94       2     0.58     0.92     1     0.56     0.94       4     0.61     0.89     0.66     0.85     1     0.67     0.83       10     0.667     0.83     0.67     0.83     1     0.67     0.83       15     0.71     0.80     25% head of water at 0.24 m     depth to water surface (target) 1.27 m     time to reach target depth 210.0 mins       45     0.83     0.66     0.27     0.73     test infiltration rate (q) = 0.03 m/h       180     1.23     0.27     0.27     0.27     0.27     0.27       240     1.29     0.21     0.30     1.01     0.40     base at 50% drog (m/m)     q     q       (mins)     (mins)     (mins)     1.73<	test pit base dimensions 0.30 1.00								
Depth to water surface (mins)     Depth to (m)     Head of water (m)       0     0.56     0.94       1     0.56     0.94       1     0.56     0.94       2     0.58     0.92       4     0.61     0.89       6     0.64     0.86       8     0.66     0.85       10     0.67     0.83       15     0.71     0.80       20     0.72     0.78       25     0.75     0.75       30     0.77     0.73       30     0.77     0.73       30     0.77     0.73       300     1.31     0.19       180     1.23     0.27       240     1.29     0.21       300     1.31     0.19       TARGET DEPTHS AND CALCULATED VALUES       fmins     (m)     (m)       (m)     (m)     (m)     (m)       301     1.27     0.24     173       100     1.61	tes	st pit depth (m)	1.50	de	pth to groundv	vater before adding	water (m) =	Dry	
Imme (mins)     water surface (m)     in pit (m)       0     0.56     0.94       1     0.56     0.94       1     0.56     0.94       2     0.58     0.92       4     0.61     0.89       6     0.64     0.86       6     0.66     0.85       10     0.67     0.83       15     0.71     0.80       20     0.72     0.78       25     0.75     0.75       30     0.77     0.73       30     0.77     0.73       180     1.23     0.27       300     1.31     0.19       TARGET DEPTHS AND CALCULATED VALUES       time surface (m)       depth to water     head of water       immed (m)     (m)     chaged (mins)     Area of walls and (m)       36.5     0.80     0.71     173.5     0.16     1.61     5.8E-04     0.035       100     0.70     0.71     173.5     0.16	T:	Depth to	Head of water						
$ \begin{array}{ c c c c } (III) & (III) & (III) \\ \hline 0.056 & 0.94 \\ \hline 1 & 0.56 & 0.94 \\ \hline 1 & 0.56 & 0.94 \\ \hline 2 & 0.58 & 0.92 \\ \hline 2 & 0.58 & 0.92 \\ \hline 4 & 0.61 & 0.89 \\ \hline 6 & 0.64 & 0.86 \\ \hline 8 & 0.66 & 0.85 \\ \hline 8 & 0.66 & 0.83 \\ \hline 15 & 0.71 & 0.80 \\ \hline 20 & 0.72 & 0.78 \\ \hline 25 & 0.75 & 0.75 \\ \hline 30 & 0.77 & 0.73 \\ \hline 45 & 0.83 & 0.68 \\ \hline 60 & 0.89 & 0.62 \\ \hline 10 & 0.40 \\ \hline 180 & 1.23 & 0.27 \\ \hline 240 & 1.29 & 0.21 \\ \hline 300 & 1.31 & 0.19 \\ \hline 120 & 1.10 & 0.40 \\ \hline 180 & 1.23 & 0.27 \\ \hline 240 & 1.29 & 0.21 \\ \hline 300 & 1.31 & 0.19 \\ \hline \\ $	(minc)	(m)	in pit						
1     0.55     0.94       1     0.56     0.94       2     0.58     0.92       4     0.61     0.89       6     0.64     0.86       8     0.66     0.83       15     0.71     0.80       20     0.72     0.78       25     0.75     0.75       30     0.77     0.73       45     0.83     0.66       120     1.10     0.40       180     1.23     0.27       240     1.29     0.21       100     0.40       130     0.19       Target howater     time to reach target depth 210.0 mins       time to reach target depth 210.0 mins     time to reach target depth 210.0 mins       120     1.10     0.40       1300     1.23     0.27       300     1.21     0.21       300     1.22     0.21       300     1.23     0.27       300     1.29     0.21	0	0.56	0.94						
1   0.556   0.94     2   0.58   0.92     4   0.61   0.89     6   0.64   0.86     8   0.66   0.85     10   0.67   0.83     15   0.71   0.80     20   0.72   0.78     25   0.75   0.75     30   0.77   0.73     45   0.83   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   0.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     TARGET DEPTHS AND CALCULATED VALUES     time or acid stard of water at 0.24 m     depth to water surface (target) 0.30 m/h   (m/m)     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time to reach target depth 210.0 mins     water lost   (m <sup>m</sup> ) (m <sup>m</sup> )   (m/h)     (mins)   (m)   (m <sup>m</sup> )   (m <sup>m</sup> )     0.100   0.11   1.61   5.8F-04 <td>1</td> <td>0.56</td> <td>0.94</td> <td></td> <td>RESULT</td> <td>S (FROM GRAPH BI</td> <td>FLOW)</td> <td></td>	1	0.56	0.94		RESULT	S (FROM GRAPH BI	FLOW)		
1   0.000   0.01     2   0.58   0.92     4   0.61   0.89     6   0.64   0.86     8   0.66   0.83     10   0.67   0.83     15   0.71   0.80     20   0.72   0.78     25   0.77   0.73     45   0.83   0.68     60   0.89   0.62     120   1.10   0.40     180   1.23   0.277     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time to reach target depth 210.0 mins   test infiltration rate (q) = 0.03 m/h     180   1.23   0.277     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time (mins)   (m)   (m)   (m/h)     36.5   0.80   0.71   173.5   0.16   1.61   5.8E-04   0.035     0.00   0.00   0.00<	1	0.56	0.94		ILLS011				
4   0.61   0.89     6   0.64   0.86     8   0.66   0.85     10   0.67   0.83     15   0.71   0.80     20   0.72   0.78     25   0.75   0.75     30   0.77   0.73     45   0.89   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   0.71   0.78     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time fume surface (mins)     (m)   (m)   (mins)     (m)   (m)   (mins)     210   1.27   0.24     Volume of water load of water (mins)     (m)   (m)   (m)     (m)   (m)   (m)     36.5   0.80   0.71     1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035	2	0.58	0.92		Test start				
6   0.64   0.86     8   0.66   0.85     10   0.67   0.83     15   0.71   0.80     20   0.72   0.78     25   0.75   0.75     30   0.77   0.73     45   0.89   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     trace (in pit (mins)     (mins)   (m)   (mins)     (mins)   0.71   173.5   0.16   1.61   5.8E-04   0.035     100   0.04   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     100   0.04   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     100   0.05   1.27   0.24   173.5   1.61   1.61   5.8E-04   0.035     0.04   1.27   0.24   1.27   1.	4	0.61	0.89		75	% head of water at	0.71 m		
8   0.66   0.85     10   0.67   0.83     15   0.71   0.80     20   0.72   0.78     25   0.75   0.75     30   0.77   0.73     45   0.83   0.68     60   0.89   0.62     120   1.10   0.40     180   1.23   0.27     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time to reach target depth 36.5 mins     180   1.23   0.27     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time (mins)   (m)   (m <sup>3</sup> )   (m <sup>2</sup> )   (m/m)   (m/h)     36.5   0.80   0.71   173.5   0.16   1.61   5.8E-04   0.035     100   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     100   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     100   1.27   0.24   1.	6	0.64	0.86		depth to wa	ter surface (target)	0.80 m		
$ \begin{array}{ c c c c c } \hline 10 & 0.67 & 0.83 \\ \hline 15 & 0.71 & 0.80 \\ \hline 20 & 0.72 & 0.78 \\ \hline 25 & 0.75 & 0.75 \\ \hline 30 & 0.77 & 0.73 \\ \hline 45 & 0.83 & 0.68 \\ \hline 60 & 0.89 & 0.62 \\ \hline 120 & 1.10 & 0.40 \\ \hline 180 & 1.23 & 0.27 \\ \hline 240 & 1.29 & 0.21 \\ \hline 300 & 1.31 & 0.19 \\ \hline \\ $	8	0.66	0.85		time to	reach target depth	36.5 mins		
$ \begin{array}{ c c c c c c } \hline 15 & 0.71 & 0.80 \\ \hline 20 & 0.72 & 0.78 \\ \hline 25 & 0.75 & 0.75 \\ \hline 30 & 0.77 & 0.73 \\ \hline 30 & 0.77 & 0.73 \\ \hline 45 & 0.83 & 0.68 \\ \hline 60 & 0.89 & 0.62 \\ \hline 120 & 1.10 & 0.40 \\ \hline 180 & 1.23 & 0.27 \\ \hline 240 & 1.29 & 0.21 \\ \hline 300 & 1.31 & 0.19 \\ \hline \\ $	10	0.67	0.83						
$ \begin{array}{ c c c c c c c } \hline 20 & 0.72 & 0.78 & \\ \hline 25 & 0.75 & 0.75 & \\ \hline 30 & 0.77 & 0.73 & \\ \hline 45 & 0.83 & 0.68 & \\ \hline 60 & 0.89 & 0.62 & \\ \hline 120 & 1.10 & 0.40 & \\ \hline 180 & 1.23 & 0.27 & \\ \hline 240 & 1.29 & 0.21 & \\ \hline 300 & 1.31 & 0.19 & \\ \hline \\$	15	0.71	0.80		Test end				
25   0.75   0.75     30   0.77   0.73     45   0.83   0.68     60   0.89   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     TARGET OF MALLIAND VALUES     100   0.16   Area of walls and base at 50% drop (m <sup>2</sup> )   q   q     (mins)   (m)   (mins)   0.16   1.61   5.8E-04   0.035     100   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     0.10   0.10 <th< td=""><td>20</td><td>0.72</td><td>0.78</td><td colspan="5">25% head of water at 0.24 m</td></th<>	20	0.72	0.78	25% head of water at 0.24 m					
30   0.77   0.73     45   0.83   0.68     60   0.89   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     TARGET of water surface (mins)   (m/m)   (m/m)     0.131   0.19   0.19   Name of water of water of water of water lost (mins)   Area of walls and base at 50% drop (m <sup>2</sup> )   q   q     (mins)   (m)   (m/m)   173.5   0.16   1.61   5.8E-04   0.035     1.00   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     0.00   0.00   1.61   5.8E-04   0.035   0.035     0.00	25	0.75	0.75		depth to wa	ter surface (target)	1.27 m		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	30	0.77	0.73	time to reach target depth 210.0 mins					
60   0.89   0.62     120   1.10   0.40     180   1.23   0.27     240   1.29   0.21     300   1.31   0.19     TARGET DEPTHS AND CALCULATED VALUES     time   depth to water   head of water     in pit   (mins)   (mins)   Area of walls and     (mins)   (m)   (mins)   (m <sup>3</sup> )   (m <sup>2</sup> )   q     210   1.27   0.24   173.5   0.16   1.61   5.8E-04   0.035     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   0.005   0.005     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	45	0.83	0.68						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	60	0.89	0.62		test infiltration rate (q) = 0.03 m/h				
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	120	1.10	0.40						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	180	1.23	0.27						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	240	1.29	0.21						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	300	1.31	0.19		TARGET DEP	THS AND CALCULA	TED VALUES		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	time	depth to water	head of water	time	volume of	Area of walls and	a	a	
36.5 0.80 0.71 173.5 0.16 1.61 5.8E-04 0.035   1.00 0.90 0.90 0.00 0.00 0.00 0.00 0.00   0.80 0.70 0.24 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	(mins)	(m)	(m)	(mins)	$(m^3)$	$(m^2)$	q (m/min)	ې (m/h)	
0.00 0.01 0.01 1.61 5.8E-04 0.035   1.00 0.90 0.00 0.00 0.00 0.00   0.80 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	36.5	0.80	0.71	()	()	()	(,)	(/)	
1.00 0.90 0.80 0.70 0.60 0.40 0.30 0.20	210	1.27	0.24	173.5	0.16	1.61	5.8E-04	0.035	
0.90 0.80 0.70 0.70 0.60 0.50 0.40 0.30 0.20	1.00	1.27	0.24						
0.80 0.80 0.70 0.70 0.60 0.50 0.40 0.40 0.30 0.20	0.90								
0.80 0.70 0.60 0.60 0.50 0.40 0.40 0.30 0.20	0.50								
0.70 0.60   0.50 0.40   0.30 0.20	0.80								
0.60 0.50 0.40 0.30 0.20	Ê <sup>0.70</sup>								
0.50 0.40 0.30 0.20	.60 <u><u></u></u>								
text 0.40   text 0.30   0.20 0.20	.E も 0.50								
	0.40	<b> </b>							
	o ut 0.30								
	0.20	<b></b>				1			
	0.10								

time (mins)

0.00 

			Proj	ect No.	Projec	Name:			Trial Pit ID
	CAUS	EWAY	23-	0881F	NDFA S	ocial Housing Lot 3 - Coolaghknock Glebe			
	G	EOTECH	Coor	dinates	Client:				IT03
Method:			6743	07.47 E	Client'	Renresentative			
Soakawav Pit			7127	57.77 N	Malon	e O'Regan Consulting Engineers			Sheet 1 of 1 Scale: 1:25
Plant:			Elev	vation	Date:		Logger:		
8t Tracked Exca	vator		99.61	L mOD	17/10/	2023	RS		FINAL
Depth (m)	Sample /	Field Records	Level	Depth (m)	Legend	Description		1. ther	
(11)	16313		(1100)	-		Firm brown slightly sandy slightly gravelly CLAY. San	d is fine to coarse		
				-		Gravel is rounded fine to coarse.			
			99.31	0.30		Grow slightly growelly slightly silty fine to coorse SAN	D. Gravel is round	lod	_
				-	$\mathbf{x} \mathbf{x} \mathbf{x}$	fine to coarse.	D. Graver is round	cu	-
				-	$\times \times \times \times \times$				0.5
				-	$\times \times \times \times \times$				
				-	$\times \times \times \times \times \times \times$				_
				-	× × ×				-
				-	×××××				1.0
				-	× × ×				
				-	×`×`×				_
				-	× × ×				-
			98.11	- 1.50	~~~	End of trial pit at 1.50m			1.5 —
				-					
				-					_
				-					-
				-					2.0
				-					_
				-					-
				-					-
				-					2.5
				-					
				-					-
				-					-
				-					3.0
				-					_
				-					-
				-					
				-					3.5
				-					_
				-					_
				-					40
				-					4.0
				-					-
				-					-
				-					45
				-					_
				-					_
				-					
				-					
Water	Strikes		Rem	narks:	<u> </u>				
Struck at (m)	Remarks	Depth: 1.50	Nog	groundwat	er encou	ntered.			
		length: 1.40							
		Stability	Torr	nination P	0250P			t I Inda	ted -
		Moderately stable	Term	ninated at so	heduled (	lepth.	2	0/12/20	
						·		,, 20,	AUD

## Soakaway Infiltration Test

		<u>30</u>	<u>akaway n</u>		<u>est</u>		
Project No.: Site: Test Location: Test Date:	23-0881F NDFA Social Housing Lot 3 - Coolaghknock Glebe n: IT03 17 October 2023						WAY OTECH
test pit top dimensions test pit base dimensions test pit depth (m)		width (m) 0.40 0.30 1.50	length (m) 1.40 1.06 depth to groundwater before adding water (m) = Dry				
Time (mins) 0 1	Depth to water surface (m) 0.21 0.23	Head of water in pit (m) 1.29 1.28		RESULT	'S (FROM GRAPH BI	ELOWI	
1 1 2 4 6	0.24 0.26 0.30 0.33	1.26 1.25 1.20 1.17		Test start 75 depth to wa	% head of water at ter surface (target)	0.97 m 0.53 m	
8 10 15 30	0.36 0.39 0.44 0.57	1.14 1.12 1.06 0.93		time to reach target depth 25.0 mins Test end 25% head of water at 0.32 m			
60 90 180 210	0.71 0.84 1.15 1.23	0.79 0.66 0.35 0.27		time to reach target depth 190.0 mins test infiltration rate (q) = 0.04 m/h			
				TARGET DEP	THS AND CALCULA	TED VALUES	
time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m <sup>3</sup> )	Area of walls and base at 50% drop (m <sup>2</sup> )	q (m/min)	q (m/h)
25 190	0.53	0.97 0.32	165	0.27	2.22	7.3E-04	0.044
1.40 1.20 1.00 (E) 1.00 (E) 1.							

time (mins)



# 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

> Registered in Ireland. 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.

John Wohn

Stephen Watson Laboratory Manager Signed for and on behalf of Causeway Geotech Ltd



|--|

**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 subcontracting 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 <i>(UKAS 2139)</i>	pH Value of Soil		8
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited (UKAS 2139)	Sulphate Content water extract		8

CAUSEWAY GEOTECH			Summary of Classification Test Results													
Project No. Pro			Project	Project Name												
23-0881F				NDFA Social Housing Lot 3 - Coolaghknock Glebe												
Hole No.	San Ref Top		nple	Туре	Specimen Description	Density bulk dry		W	Passing 425µm	LL	PL	PI	Particle density	Casagrande		
			Duoo	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Mg/m3		%	%	%	%	%	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 perfo	rmed in a	accordan	ce with E	3S1377:"	1990 unless specified other	wise							LAE	3 01R Version 6		
Key Density test Linear measurement unless : wd - water displacement				Liquid Limit Particle density 4pt cone unless : sp - small pyknomete cas - Casagrande method gj - gas jar				Date F	023	Approved By						
wi - immersion in water				1pt - single point test									Stephen Watson 10122			











LAB 05R - Version 6

Approved

Stephen Watson



Remarks

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



LAB 05R - Version 6

Approved Stephen Watson

62

59

55

51

45

0.425

0.3

0.212

0.15

0.063

8

Mg/m3

2.65





Remarks

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



LAB 05R - Version 6

Approved

62

59

56

52

49

43

Particle density (assumed)

2.65

Mg/m3

0.6

0.425

0.3

0.212

0.15

0.063

Stephen Watson



#### Remarks

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



LAB 05R - Version 6

Approved

74

68

60

52

43

0.425

0.3

0.212

0.15

0.063

Stephen Watson

Mg/m3

2.65













Certificate Number 23-26103

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

Our Reference 23-26103

*Client Reference* 23-0881F

Order No (not supplied)

Contract Title COOLAGHKNOCK GLEBE

Description 8 Soil samples.

Date Received 04-Nov-23

Date Started 06-Nov-23

Date Completed 10-Nov-23

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

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

Approved By

lymood.

Kirk Bridgewood General Manager



Derwentside Environmental Testing Services Limited Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY Tel: 01207 582333 • email: info@dets.co.uk • www.dets.co.uk

Issued: 10-Nov-23



# 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
		.Sa	ample 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
		Sam	ple Type	В	В	В	В	В	В	В	В
		Sampl	ing 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						
Test	Method	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**

				Holding time	Inannronriate
		Date		exceeded for	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		
Kaun D. Dia at	i a T. Tuda				

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

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> Registered in Ireland. Company Number: 633786

www.causewaygeotech.com

## SOIL AND ROCK SAMPLE ANALYSIS LABORATORY TEST REPORT

21 November 2023

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

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

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

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

Hopen Worton

Stephen Watson Laboratory Manager Signed for and on behalf of Causeway Geotech Ltd



Project Name:	NDFA Social Housing Lot 3 -	Coolaghknock Glebe
		000000000000000000000000000000000000000

**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 subcontracting 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 <i>(UKAS 2139)</i>	pH Value of Soil		2
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited <i>(UKAS 2139)</i>	Sulphate Content water extract		2

•	AUSEW GEOT	AY ECH			Summary of Classification Test Results									
Project No.			Project	Name										
2	3-0881F				NDFA Social Housing Lot 3 - Coolaghknock Glebe									
Hole No.	Ref	Sar Top	nple Base	Туре	Specimen Description	Dens bulk Mg/m	ity dry 13	W %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Casagrande 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
All tests per	formed in a	accordan	ce with E	3S1377:	1990 unless specified other	wise							LAE	3 01R Version 6
Key Dens Line wd -	sity test ar measuremen water displace	nt unless : ement		Liquid Lim 4pt cone u cas - Casa	it Partic Inless : sp - sr agrande method gj - ga	le density nall pyknom is jar	eter	Date F	Printed 21/11/20	23	Appr	roved	Ву	
wi -	immersion in v	vater		1pt - single	e point test						Step	hen	Watson	10122





LAB 05R - Version 6

Approved

66

58

0.15

0.063

Stephen Watson



Remarks

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



LAB 05R - Version 6

Approved

82

79

75

68

61

46

Particle density (assumed)

2.65

Mg/m3

0.6

0.425

0.3

0.212

0.15

0.063

Stephen Watson



.



Remarks

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



LAB 05R - Version 6

Approved

68

64

58

54

50

0.425

0.3

0.212

0.15

0.063

Stephen Watson

Mg/m3

2.65



Remarks

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



LAB 05R - Version 6

Approved

69

64

58

53

49

0.425

0.3

0.212

0.15

0.063

Stephen Watson

8

Mg/m3

2.65







Issued:

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

emood.

Kirk Bridgewood General Manager



Derwentside Environmental Testing Services Limited Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY Tel: 01207 582333 • email: info@dets.co.uk • www.dets.co.uk 16-Nov-23



## Summary of Chemical Analysis Soil Samples Our Ref 23-26601

			Lab No	2261155	2261156
		.S	ample ID	BH04	BH05
			Depth		1.00
			Other ID	4	5
		Sam	ple Type	В	В
		Samp	ling Date	09/11/2023	09/11/2023
		Sampl	ling 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



## Information in Support of the Analytical Results

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

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

		Date		Holaing time exceeded for	inappropriate 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





Issued:

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

lymood

Kirk Bridgewood General Manager



06-Nov-23



			Lab No	2254876	2254877	2254878	2254879	2254880	2254881
		.Sa	mple ID	TP01	TP02	TP02	TP02	TP04	TP05
			Depth	0.50	0.50	1.00	3.00	0.50	1.00
		(	Other ID						
		Sam	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
		Sampl	ing 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#		pН	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		<u>г г</u>	-						
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



	L		Lab No	2254876	2254877	2254878	2254879	2254880	2254881
		.Sa	ample ID	TP01	TP02	TP02	TP02	TP04	TP05
			Depth	0.50	0.50	1.00	3.00	0.50	1.00
		(	Other ID						
		Sam	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	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			0, 0						
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.7	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	1.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.9	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.6	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	5.6	< 1.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenols			5, 8						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
		0.0	0. 10						



			Lab No	2254882	2254883
		.Sa	ample ID	TP06	TP07
			Depth	0.50	0.50
			Other ID		
		Sam	ple Type	SOIL	SOIL
		Sampl	ing Date	17/10/2023	17/10/2023
		Sampl	ing 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		1	0, 0		
PH	DETSC 2008#		Ha	7.8	7.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	<u> </u>	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



			Lab No	2254882	2254883
		.Sa	ample ID	TP06	TP07
			Depth	0.50	0.50
			Other ID		
		Sam	ple Type	SOIL	SOIL
		Samp	ing Date	17/10/2023	17/10/2023
		Sampl	ing 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	1				
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

			Lab No	2254884	2254885	2254886	2254887	2254888	2254889	2254890	2254891
		.Sa	mple 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								
		Samp	ole Type	LEACHATE							
		Sampli	ng 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
		Sampli	ng Time	n/s							
Test	Method	LOD	Units								
Preparation											
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y	Y
Inorganics											
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	< 0.02	0.02	0.03	0.02	0.04	0.02	< 0.02



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

Sample Numbers 2254876 2254884 Date Analysed 06/11/2023

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

Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg		Inert		Hazardous
	10:1	LS10		Waste	SINKIIW	Waste
DETSC 2306 Arsenic as As	0.49	< 0.01	1	0.5	2	25
DETSC 2306 Barium as Ba	1.8	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	0.97	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.23	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	0.29	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	780	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1		10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2500	< 50		500	800	1000
Additional Information				TBE -	To Be Evalua	ated
DETSC 2008 pH	9.4			SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	46.4				Hazardous V	Vaste
* Temperature*	18.0		-			
Mass of Sample Kg*	0.100					
Mass of dry Sample Kg*	0.094					
Stage 1						
Volume of Leachant L2*	0.932					
Volume of Eluate VE1*	0.88					

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

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

Sample Numbers 2254877 2254885 Date Analysed 06/11/2023

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

					o Leachate
Determinend and Method Deference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert		Hazardous
	10:1	LS10	Waste		Waste
DETSC 2306 Arsenic as As	0.39	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.88	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.3	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	660	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	29000	290	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2900	< 50	500	800	1000
Additional Information		_	TE	E - To Be Evalu	ated
DETSC 2008 pH	9.1		SNRH	N - Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	40.7			Hazardous	Waste
* Temperature*	18.0				
Mass of Sample Kg*	0.100				
Mass of dry Sample Kg*	0.095				
Stage 1					
Volume of Leachant L2*	0.942				
Volume of Eluate VE1*	0.89				

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

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

Sample Numbers 2254878 2254886 Date Analysed 06/11/2023

Test Besults On Weste	est Results On Waste				WAC Limit Values		
Test Results On Waste				Inert		Hazardous	
Determinand and Method Reference	Units	Result		Waste	SINKITV	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 (pH	4) mol/kg	4.8		n/a	TBE	TBE	
DETSC 2073* Acid Neutralisation Capacity (pH	7) mol/kg	< 1.0		n/a	TBE	TBE	
Test Desults On Leeshets				WAC Limit Values			
Test Results On Leachale				Limit values for LS10 Leachate			
	Conc in Eluate ug/l	Amount Leached* mg/k	g	Inert		Hazardous	

					JLeachale	
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg		Inert		Hazardous
	10:1	LS10		Waste	SINKIIV	Waste
DETSC 2306 Arsenic as As	0.17	< 0.01	1 [	0.5	2	25
DETSC 2306 Barium as Ba	3.6	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.16	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	5.7	0.057		4	50	200
DETSC 2055 Chloride as Cl	850	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	1700	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	18000	180		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2800	< 50		500	800	1000
Additional Information		_	- F	TBE -	To Be Evalua	ated
DETSC 2008 pH	8.7			SNRHW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	25.3				Hazardous V	Vaste
* Temperature*	18.0					
Mass of Sample Kg*	0.100					
Mass of dry Sample Kg*	0.094					
Stage 1	_					
Volume of Leachant L2*	0.939					
Volume of Eluate VE1*	0.88					

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

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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

ost Results On Waste			WAC Limit Values			
Test Results On Waste			Inert		Hazardous	
Determinand and Method Reference	Units	Result	Waste	SINKIIV	Waste	
DETSC 2084# Total Organic Carbon	%	1.2	3	5	6	
DETSC 2003# Loss On Ignition	%	0.85	n/a	n/a	10	
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a	
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a	
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a	
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a	
DETSC 2008# pH	pH Units	8.8	n/a	>6	n/a	
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE	
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE	
Test Results On Leachate				WAC Limit Values Limit values for LS10 Leachate		

					e zeaenate
Determinand and Mathod Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert		Hazardous
Determinand and Method Reference	10:1	LS10	Waste	SINKITW	Waste
DETSC 2306 Arsenic as As	0.28	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.66	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.13	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	8.5	0.085	4	50	200
DETSC 2055 Chloride as Cl	650	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2600	< 50	500	800	1000
Additional Information			TBE	- To Be Evalu	ated
DETSC 2008 pH	9.0		SNRHW	- Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	46.6			Hazardous \	Waste
* Temperature*	18.0				
Mass of Sample Kg*	0.100				
Mass of dry Sample Kg*	0.096				
Stage 1					
Volume of Leachant L2*	0.954				
Volume of Fluate VF1*	0.9				

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

V.2.06



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

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

			Elitile values for ESTO Feach		o Ecacitate
Determinand and Mathed Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert		Hazardous
Determinand and Method Reference	10:1	LS10	Waste	SINKIIV	Waste
DETSC 2306 Arsenic as As	0.26	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.2	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.81	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.4	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	700	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	210	2.1	10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	19000	190	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50	500	800	1000
Additional Information			ТВ	E - To Be Evalu	ated
DETSC 2008 pH	8.2	1	SNRHV	V - Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	27.2			Hazardous	Naste
* Temperature*	18.0				
Mass of Sample Kg*	0.120				
Mass of dry Sample Kg*	0.101				
Stage 1					
Volume of Leachant L2*	0.994				
Volume of Eluate VE1*	0.94				

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

V.2.06



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

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

Test Results On Leachate				Limit values for LS10 Leachate		
Determinend and Mathed Deference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert	CNIDUNA	Hazardous	
	10:1	LS10	Waste	SINKIIW	Waste	
DETSC 2306 Arsenic as As	0.16	< 0.01	0.5	2	25	
DETSC 2306 Barium as Ba	3.2	< 0.1	20	100	300	
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5	
DETSC 2306 Chromium as Cr	0.61	< 0.1	0.5	10	70	
DETSC 2306 Copper as Cu	0.46	< 0.02	2	50	100	
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2	
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30	
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40	
DETSC 2306 Lead as Pb	0.15	< 0.05	0.5	10	50	
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5	
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7	
DETSC 2306 Zinc as Zn	32	0.32	4	50	200	
DETSC 2055 Chloride as Cl	840	< 100	800	15,000	25,000	
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500	
DETSC 2055 Sulphate as SO4	6800	< 100	1000	20,000	50,000	
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000	
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a	
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000	
Additional Information		_	TBE	- To Be Evalu	ated	
DETSC 2008 pH	7.8		SNRHW	- Stable Non-	Reactive	
DETSC 2009 Conductivity uS/cm	52.7			Hazardous	Waste	
* Temperature*	18.0	J				
Mass of Sample Kg*	0.110					
Mass of dry Sample Kg*	0.096					
Stage 1						
Volume of Leachant L2*	0.943					
Volume of Eluate VE1*	0.89					

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

V.2.06



Our Ref 23-25555 Client Ref 23-0881F Contract Title COOLNAGHKNOCK GLEBE Sample Id TP06 0.50

Sample Numbers 2254882 2254890 Date Analysed 06/11/2023

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

	lest	Results	On	Leachate	
Г					

Test Results On Leachate				Limit values for LS10 Leachate		
	Conc in Eluate ug/l	Amount Leached* mg/kg		Inert	CN 101 114	Hazardous
Determinand and Method Reference	10:1	LS10		Waste	SNRHW	Waste
DETSC 2306 Arsenic as As	0.37	< 0.01		0.5	2	25
DETSC 2306 Barium as Ba	6.5	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	1.1	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.16	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	870	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	240	2.4		10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	44000	440		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50		500	800	1000
Additional Information				TBE -	To Be Evalua	ated
DETSC 2008 pH	7.6			SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	62.4				Hazardous V	Vaste
* Temperature*	18.0					
Mass of Sample Kg*	0.120					
Mass of dry Sample Kg*	0.102					
Stage 1						
Volume of Leachant L2*	0.997					
Volume of Eluate VE1*	0.94					

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

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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

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

#### Test Results On Leachate

Test Results On Leachate	wac Limit values				
	Limit va	Limit values for LS10 Leachate			
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert	SNRHW	Hazardous
	10:1	LS10	Waste		Waste
DETSC 2306 Arsenic as As	0.41	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	1.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.55	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.74	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1.1	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.48	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4	50	200
DETSC 2055 Chloride as Cl	2000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2200	< 50	500	800	1000
Additional Information		_	TBE -	To Be Evalu	ated
DETSC 2008 pH	7.6	1	SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	52.4			Hazardous \	Naste
* Temperature*	18.0				
Mass of Sample Kg*	0.120				
Mass of dry Sample Kg*	0.102				
Stage 1					
Volume of Leachant L2*	0.998				
Volume of Eluate VE1*	0.94				

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.

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

# *I* DETS

# 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.



Inappropriate

## Information in Support of the Analytical Results

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

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

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	Holding 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

Acronym

#### Det

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

End of Report



Issued:

Certificate Number 23-25930

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

lymood

Kirk Bridgewood General Manager



13-Nov-23



	Lab No			2257358	2257359	2257360
		.Sample ID		BH05	BH08	BH04
			Depth	0.50	0.50	0.50
			Other ID	1	1	1
		Sam	ple Type	ES	ES	ES
		Sampl	ing Date	25/10/2023	26/10/2023	23/10/2023
		Sampl	ing 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#		pН	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



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



# Summary of Chemical Analysis Leachate Samples

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


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

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

			Linne vai	UC3 IOI LJI	
Determinend and Method Deference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert		Hazardous
Determinand and Method Reference	10:1	LS10	Waste	SINKITW	Waste
DETSC 2306 Arsenic as As	0.29	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	4.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.9	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.21	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.28	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	740	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	130	1.3	10	150	500
DETSC 2055 Sulphate as SO4	2300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	35000	350	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2100	< 50	500	800	1000
Additional Information		_	TBE -	To Be Evalua	ated
DETSC 2008 pH	7.4	1	SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	49.7			Hazardous V	Vaste
* Temperature*	17.0				
Mass of Sample Kg*	0.110				
Mass of dry Sample Kg*	0.094				
Stage 1	_				
Volume of Leachant L2*	0.921				
Volume of Eluate VE1*	0.87				

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

V.2.06



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

Sample Numbers 2257359 2257362 Date Analysed 13/11/2023

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

				Limit Val	ues for LST	JLeachate
Determinand and Mathed Reference	Conc in Eluate ug/l	Amount Leached* mg/kg		Inert		Hazardous
	10:1	LS10		Waste	SINKHW	Waste
DETSC 2306 Arsenic as As	0.79	< 0.01	1 [	0.5	2	25
DETSC 2306 Barium as Ba	5.8	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	0.8	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.17	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	950	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	29000	290		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2100	< 50		500	800	1000
Additional Information		_	- F	TBE -	To Be Evalua	ated
DETSC 2008 pH	6.7	1		SNRHW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	41.3				Hazardous V	Vaste
* Temperature*	18.0					
Mass of Sample Kg*	0.120					
Mass of dry Sample Kg*	0.095					
Stage 1						
Volume of Leachant L2*	0.927					
Volume of Eluate VE1*	0.87					

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

V.2.06



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

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

				Limit vai	ues for LST	JLeachate
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg		Inert		Hazardous
	10:1	LS10		Waste	SINKHW	Waste
DETSC 2306 Arsenic as As	0.32	< 0.01	] [	0.5	2	25
DETSC 2306 Barium as Ba	6	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	0.84	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.092	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	770	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	2300	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	42000	420		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50		500	800	1000
Additional Information			ן י	TBE -	To Be Evalua	ated
DETSC 2008 pH	6.7	1		SNRHW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	59.5				Hazardous V	Vaste
* Temperature*	17.0		-			
Mass of Sample Kg*	0.110					
Mass of dry Sample Kg*	0.093					
Stage 1	_					
Volume of Leachant L2*	0.917					
Volume of Eluate VE1*	0.86					

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

V.2.06

# *I* DETS

# 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.



Inappropriate

## Information in Support of the Analytical Results

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

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

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	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		

#### 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

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	$EH\_CU\_1D\_Total$
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report



Issued: 18-Dec-23

Certificate Number 23-28026 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

funood

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	
		.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
		(	Other ID	1	1	1	2	2	1	1
		Sami	ple Type	ES	ES	ES	ES	ES	ES	ES
		Sampl	ing Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s
		Sampli	ing Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	Method	LOD	Units	I	I					
Preparation										
Moisture Content	DETSC 1004	0.1	%	22	0.48	15	7.1	13	14	17
Metals				I	I	I		length of the second se		
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										
Inorganics pH	DETSC 2008#		pН	7.9	9.1	8.1	9.0	8.2	8.0	7.9
Inorganics pH Cyanide, Total	DETSC 2008# DETSC 2130#	0.1	pH mg/kg	7.9 0.2	<b>9.1</b> < 0.1	8.1 0.1	9.0 < 0.1	8.2 0.1	8.0 0.1	<b>7.9</b> < 0.1
Inorganics pH Cyanide, Total Total Organic Carbon	DETSC 2008# DETSC 2130# DETSC 2084#	0.1	pH mg/kg %	7.9 0.2 1.0	9.1 < 0.1 5.3	8.1 0.1 2.2	9.0 < 0.1 1.6	8.2 0.1 1.1	8.0 0.1 0.8	7.9 < 0.1 < 0.5
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024*	0.1 0.5 10	pH mg/kg % mg/kg	7.9 0.2 1.0 16	9.1 < 0.1 5.3 16	8.1 0.1 2.2 38	9.0 < 0.1 1.6 20	8.2 0.1 1.1 < 10	8.0 0.1 0.8 < 10	7.9 < 0.1 < 0.5 32
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free)	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049#	0.1 0.5 10 0.75	pH mg/kg % mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75	9.1 < 0.1 5.3 16 < 0.75	8.1 0.1 2.2 38 < 0.75	9.0 < 0.1 1.6 20 < 0.75	8.2 0.1 1.1 < 10 < 0.75	8.0 0.1 0.8 < 10 < 0.75	7.9 < 0.1 < 0.5 32 < 0.75
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 2321#	0.1 0.5 10 0.75 0.01	pH mg/kg % mg/kg %	7.9 0.2 1.0 16 < 0.75 0.08	9.1 < 0.1 5.3 16 < 0.75 0.09	8.1 0.1 2.2 38 < 0.75 0.07	9.0 < 0.1 1.6 20 < 0.75 0.04	8.2 0.1 1.1 < 10 < 0.75 0.07	8.0 0.1 0.8 < 10 < 0.75 0.02	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 2321#	0.1 0.5 10 0.75 0.01	pH mg/kg % mg/kg %	7.9 0.2 1.0 16 < 0.75 0.08	9.1 < 0.1 5.3 16 < 0.75 0.09	8.1 0.1 2.2 38 < 0.75 0.07	9.0 < 0.1 1.6 20 < 0.75 0.04	8.2 0.1 1.1 < 10 < 0.75 0.07	8.0 0.1 0.8 < 10 < 0.75 0.02	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons Aliphatic C5-C6: HS_1D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 2321#	0.1 0.5 10 0.75 0.01	pH mg/kg % mg/kg % mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons Aliphatic C5-C6: HS_1D_AL Aliphatic C6-C8: HS_1D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 2321# DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons Aliphatic C5-C6: HS_1D_AL Aliphatic C6-C8: HS_1D_AL Aliphatic C8-C10: HS_1D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01 < 0.01	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01 < 0.01	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01 < 0.01	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons Aliphatic C5-C6: HS_1D_AL Aliphatic C6-C8: HS_1D_AL Aliphatic C8-C10: HS_1D_AL Aliphatic >EC10-EC12: EH_2D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01 0.01 1.5	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 1.50	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01 < 0.01 < 1.50	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521#	0.1 0.5 10 0.75 0.01 0.01 0.01 0.01 1.5 1.2	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC16-EC21: EH_2D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521#	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 1.50	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 1.50	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC16-EC21: EH_2D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521#	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40	8.1 0.1 2.2 38 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40	8.2 0.1 1.1 < 10 < 0.75 0.07 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40	8.0 0.1 0.8 < 10 < 0.75 0.02 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC12-EC35: EH_2D_AL Aliphatic >EC35-EC40: EH_2D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521#	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40	$\begin{array}{r} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.20 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ \hline \\ < 3.40 \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40	$\begin{array}{c} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.20 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ \hline \\ < 3.40 \\ \hline \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \hline \\ < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.20\\ < 1.50\\ < 3.40\\ < 3.40\\ \hline \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40	$\begin{array}{c} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ \hline \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40	$\begin{array}{r} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ \hline \end{array}$	$\begin{array}{r} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \hline \\ < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.20\\ < 1.50\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ \hline \\ < 3.40\\ \hline \\ < 3.40\\ \hline \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC21-EC35: EH_2D_AL Aliphatic >EC35-EC40: EH_2D_AL Aliphatic >EC40-EC44: EH_2D_AL Aliphatic >EC40-EC44: EH_2D_AL	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 3.4 10	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00	$\begin{array}{r} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.20 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 10.00 \\ \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40 < 10.00	$\begin{array}{r} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.20 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 10.00 \\ \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \end{array}$ $\begin{array}{c} < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.20\\ < 1.50\\ < 3.40\\ < 3.40\\ < 3.40\\ < 10.00\\ \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC21-EC35: EH_2D_AL Aliphatic >EC35-EC40: EH_2D_AL Aliphatic >EC40-EC44: EH_2D_AL Aliphatic C5-C44: EH_2D_AL Aliphatic C5-C7: HS_1D_AR	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 10 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00 < 0.01	$\begin{array}{c} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00 < 0.01	$\begin{array}{c} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ \hline \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \hline \\ < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.50\\ < 1.50\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ < 0.01\\ \hline \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40 < 3.40 < 3.40 < 10.00 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC10-EC21: EH_2D_AL Aliphatic >EC16-EC21: 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-C7: HS_1D_AR Aromatic C7-C8: HS_1D_AR	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 3.4 10 0.01 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01	$\begin{array}{c} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.20 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ \hline \\ < 0.01 \\ \hline \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40 < 10.00 < 0.01 < 0.01	$\begin{array}{c} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.20 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ \hline \\ < 0.01 \\ \hline \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \hline \\ < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.20\\ < 1.50\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ < 0.01\\ < 0.01\\ < 0.01\\ \hline \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC10-EC21: EH_2D_AL Aliphatic >EC21-EC35: 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_AL Aliphatic C5-C7: HS_1D_AR Aromatic C7-C8: HS_1D_AR Aromatic C8-C10: HS_1D_AR	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3321* DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 3.4 10 0.01 0.01 0.01 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01	$\begin{array}{c} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ \hline \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01	$\begin{array}{c} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ \hline \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \hline \\ < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.20\\ < 1.50\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ < 0.01\\ < 0.01\\ < 0.01\\ < 0.01\\ \hline \\ < 0.01\\ < 0.01\\ \hline \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC16-EC21: EH_2D_AL Aliphatic >EC21-EC35: EH_2D_AL Aliphatic >EC35-EC40: EH_2D_AL Aliphatic >EC40-EC44: EH_2D_AL Aliphatic >EC40-EC44: EH_2D_AL Aliphatic C5-C7: HS_1D_AR Aromatic C7-C8: HS_1D_AR Aromatic C8-C10: HS_1D_AR Aromatic C8-C10: HS_1D_AR	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 3.4 10 0.01 0.01 0.01 0.01 0.01 0.01	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.90	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.90	$\begin{array}{c} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.90 \\ \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.90	$\begin{array}{c} 8.2 \\ 0.1 \\ 1.1 \\ < 10 \\ < 0.75 \\ 0.07 \\ \hline \\ 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.90 \\ \hline \end{array}$	$\begin{array}{c} 8.0\\ 0.1\\ 0.8\\ < 10\\ < 0.75\\ 0.02\\ \end{array}$ $\begin{array}{c} < 0.01\\ < 0.01\\ < 0.01\\ < 1.50\\ < 1.50\\ < 1.20\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ < 3.40\\ < 0.01\\ < 0.01\\ < 0.01\\ < 0.90\\ \end{array}$	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.90
Inorganics pH Cyanide, Total Total Organic Carbon Sulphide Sulphur (free) Sulphate as SO4, Total Petroleum Hydrocarbons 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 >EC10-EC12: 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_AL Aliphatic C5-C7: HS_1D_AR Aromatic C7-C8: HS_1D_AR Aromatic C8-C10: HS_1D_AR Aromatic >EC10-EC12: EH_2D_AR Aromatic >EC10-EC12: EH_2D_AR	DETSC 2008# DETSC 2130# DETSC 2084# DETSC 2024* DETSC 3049# DETSC 3321# DETSC 3321* DETSC 3321* DETSC 3521# DETSC 3521# DETSC 3521# DETSC 3521* DETSC 3521* DETSC 3521* DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321* DETSC 3321*	0.1 0.5 10 0.75 0.01 0.01 0.01 1.5 1.2 1.5 3.4 3.4 3.4 3.4 10 0.01 0.01 0.01 0.01 0.01 0.9 0.5	pH mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.9 0.2 1.0 16 < 0.75 0.08 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.00 < 0.05 < 0.01 < 0.01 < 0.01 < 0.00 < 0.01 < 0.00 < 0.00 	9.1 < 0.1 5.3 16 < 0.75 0.09 < 0.01 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.00 < 3.40 < 0.01 < 0.00 < 0.50 < 0.00 < 0.50 < 0.50	$\begin{array}{r} 8.1 \\ 0.1 \\ 2.2 \\ 38 \\ < 0.75 \\ 0.07 \\ \hline \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 1.50 \\ < 1.50 \\ < 1.50 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 3.40 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.90 \\ < 0.50 \\ \end{array}$	9.0 < 0.1 1.6 20 < 0.75 0.04 < 0.01 < 0.01 < 1.50 < 1.50 < 3.40 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.50	8.2         0.1         1.1         < 10	8.0         0.1         0.8         < 10	7.9 < 0.1 < 0.5 32 < 0.75 < 0.01 < 0.01 < 0.01 < 1.50 < 1.20 < 1.50 < 3.40 < 3.40 < 3.40 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.50



# 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
		.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
		(	Other ID	1	1	1	2	2	1	1
		Sam	ple Type	ES	ES	ES	ES	ES	ES	ES
		Sampli	ing 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		[	1	[	
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/кg	< 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,n)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Generation Content of	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
	DEISC 3301	1.0	тів/кв	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	DETSC 2401#	0.01	ma/ka	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 32	DETSC 2401#	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	ma/ka	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenols	02130 3401#	0.01	<u>'''б/ ''б</u>	× 0.01	× 0.01	× 0.01	× 0.01	× 0.01	× 0.01	× 0.01
Phenol - Monobydric	DFTSC 2130#	03	mg/kg	1 1	< 0 २	1 1	0.7	1 1	<u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u>	2 8
		0.0	0'' \0		. 0.0	±.±	5.7	±.±		2.0



# 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
		.Sa	ample 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
		Sam	ple Type	ES						
		Sampl	ing Date	n/s						
		Sampl	ing Time	n/s						
Test	Method	LOD	Units							
Preparation										
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y
Inorganics										
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.02	< 0.02	< 0.02	0.03	0.04	< 0.02	0.03



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

Sample Numbers 2269028 2269035 Date Analysed 18/12/2023

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

			L	Limit values for LS10 Leach		J Leachate
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	1	nert		Hazardous
	10:1	LS10	v	/aste	SINKHW	Waste
DETSC 2306 Arsenic as As	1.1	0.011		0.5	2	25
DETSC 2306 Barium as Ba	2.9	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	0.7	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	1	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	0.93	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	1.5	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	1.8	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	24	0.24		4	50	200
DETSC 2055 Chloride as Cl	420	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	1700	< 100	1	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	21000	210	4	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2600	< 50		500	800	1000
Additional Information				TBE -	To Be Evalua	ated
DETSC 2008 pH	6.4		S	NRHW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	30.1				Hazardous V	Vaste
* Temperature*	17.0					
Mass of Sample Kg*	0.100	_				
Mass of dry Sample Kg*	0.100					
Stage 1						
Volume of Leachant L2*	0.995					
Volume of Eluate VE1*	0.945					

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

V.2.06



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

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

			Limit values for LS10			J Leachate
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	Ine	rt		Hazardous
	10:1	LS10	Was	te	SINULIAN	Waste
DETSC 2306 Arsenic as As	1	0.01	0.5	5	2	25
DETSC 2306 Barium as Ba	1.9	< 0.1	20	)	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.0	4	1	5
DETSC 2306 Chromium as Cr	0.29	< 0.1	0.5	5	10	70
DETSC 2306 Copper as Cu	0.43	< 0.02	2		50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.0	1	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	1	10	40
DETSC 2306 Lead as Pb	0.23	< 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	1.9	< 0.03	0.1	L	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4		50	200
DETSC 2055 Chloride as Cl	220	< 100	800	D	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	)	150	500
DETSC 2055 Sulphate as SO4	890	< 100	100	0	20,000	50,000
DETSC 2009* Total Dissolved Solids	15000	150	400	0	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1		n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	C	800	1000
Additional Information		_		TBE -	To Be Evalua	ated
DETSC 2008 pH	6.4	1	SNR	HW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	20.7				Hazardous V	Vaste
* Temperature*	17.0					
Mass of Sample Kg*	0.100					
Mass of dry Sample Kg*	0.100					
Stage 1						
Volume of Leachant L2*	0.995					
Volume of Eluate VE1*	0.945					

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

V.2.06



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

Sample Numbers 2269030 2269037 Date Analysed 15/12/2023

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

#### Test Results On Leachate

Test Results On Leachate	Test Results On Leachate			Limit values for LS10 Leachate			
	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert	611D1114	Hazardous		
Determinand and Method Reference	10:1	LS10	Waste	SNRHW	Waste		
DETSC 2306 Arsenic as As	1.3	0.013	0.5	2	25		
DETSC 2306 Barium as Ba	5.8	< 0.1	20	100	300		
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5		
DETSC 2306 Chromium as Cr	0.88	< 0.1	0.5	10	70		
DETSC 2306 Copper as Cu	0.9	< 0.02	2	50	100		
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2		
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30		
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40		
DETSC 2306 Lead as Pb	0.18	< 0.05	0.5	10	50		
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5		
DETSC 2306 Selenium as Se	2.3	< 0.03	0.1	0.5	7		
DETSC 2306 Zinc as Zn	2.5	0.025	4	50	200		
DETSC 2055 Chloride as Cl	630	< 100	800	15,000	25,000		
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500		
DETSC 2055 Sulphate as SO4	1200	< 100	1000	20,000	50,000		
DETSC 2009* Total Dissolved Solids	35000	350	4000	60,000	100,000		
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a		
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000		
Additional Information			TE	BE - To Be Evalu	ated		
DETSC 2008 pH	6.5	1	SNRH	N - Stable Non-	Reactive		
DETSC 2009 Conductivity uS/cm	50.4			Hazardous	Waste		
* Temperature*	17.0						
Mass of Sample Kg*	0.110						
Mass of dry Sample Kg*	0.094						
Stage 1							
Volume of Leachant L2*	0.923						
Volume of Eluate VE1*	0.87						

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.

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

Sample Numbers 2269031 2269038 Date Analysed 15/12/2023

Tast Posults On Wasta	W	WAC Limit Values					
Test Results Off 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 (pH4)	mol/kg	< 1.0	n/a	TBE	TBE		
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE		
Test Results On Leachate				WAC Limit Values			

		L	nic vai			
Determinend and Method Deference	Conc in Eluate ug/l	Amount Leached* mg/kg	Ine	Inert		Hazardous
Determinand and Method Reference	10:1	LS10	Wa	ste	SINKITIV	Waste
DETSC 2306 Arsenic as As	1.3	0.013	0.	.5	2	25
DETSC 2306 Barium as Ba	1.9	< 0.1	2	0	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	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.	01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.	.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.	.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 0.05	0.	.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.	06	0.7	5
DETSC 2306 Selenium as Se	2.3	< 0.03	0.	.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	1	50	200
DETSC 2055 Chloride as Cl	360	< 100	80	00	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	1	0	150	500
DETSC 2055 Sulphate as SO4	1300	< 100	10	00	20,000	50,000
DETSC 2009* Total Dissolved Solids	26000	260	40	00	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	L	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	50	)0	800	1000
Additional Information		_		TBE -	To Be Evalua	ated
DETSC 2008 pH	6.6	1	SNE	۲HW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	36.6				Hazardous V	Vaste
* Temperature*	17.0					
Mass of Sample Kg*	0.100					
Mass of dry Sample Kg*	0.093					
Stage 1						
Volume of Leachant L2*	0.922					
Volume of Eluate VE1*	0.87					

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

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

Sample Numbers 2269032 2269039 Date Analysed 15/12/2023

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

			LITTIL VALUES TOT LOTU LEACHA		JLeachale	
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	5	Inert		Hazardous
	10:1	LS10		Waste	SINKIIV	Waste
DETSC 2306 Arsenic as As	1.3	0.013	1	0.5	2	25
DETSC 2306 Barium as Ba	2.2	< 0.1		20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02		0.04	1	5
DETSC 2306 Chromium as Cr	0.45	< 0.1		0.5	10	70
DETSC 2306 Copper as Cu	0.82	< 0.02		2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002		0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1		0.5	10	30
DETSC 2306 Nickel as Ni	1.2	< 0.1		0.4	10	40
DETSC 2306 Lead as Pb	0.092	< 0.05		0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05		0.06	0.7	5
DETSC 2306 Selenium as Se	2.2	< 0.03		0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01		4	50	200
DETSC 2055 Chloride as Cl	780	< 100		800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1		10	150	500
DETSC 2055 Sulphate as SO4	840	< 100		1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	35000	350		4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1		1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50		500	800	1000
Additional Information			-	TBE -	To Be Evalua	ated
DETSC 2008 pH	6.5			SNRHW -	Stable Non-I	Reactive
DETSC 2009 Conductivity uS/cm	49.7				Hazardous V	Vaste
* Temperature*	17.0		-			
Mass of Sample Kg*	0.110					
Mass of dry Sample Kg*	0.096					
Stage 1	_					
Volume of Leachant L2*	0.949					
Volume of Eluate VE1*	0.9					

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

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

Sample Numbers 2269033 2269040 Date Analysed 15/12/2023

ast Results On Waste				WAC Limit Values				
Test Results Off Waste			ΙΓ	Inert		Hazardous		
Determinand and Method Reference	Units	Result	11	Waste	SINKITIV	Waste		
DETSC 2084# Total Organic Carbon	%	0.8	1 [	3	5	6		
DETSC 2003# Loss On Ignition	%	2.6		n/a	n/a	10		
DETSC 3321# BTEX	mg/kg	< 0.04		6	n/a	n/a		
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01		1	n/a	n/a		
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10		500	n/a	n/a		
DETSC 3301 PAHs	mg/kg	< 1.6		100	n/a	n/a		
DETSC 2008# pH	pH Units	8.0		n/a	>6	n/a		
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0		n/a	TBE	TBE		
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0		n/a	TBE	TBE		
					WAC Limit Values			

#### Test Results On Leachate

Test Results On Leachate		Limit	Limit values for LS10 Leachate		
	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert	611D1114	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	0.099	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.4	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	470	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	540	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000
Additional Information			TB	E - To Be Evalu	ated
DETSC 2008 pH	6.6	1	SNRH\	V - Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	52.9			Hazardous	Waste
* Temperature*	17.0				
Mass of Sample Kg*	0.110				
Mass of dry Sample Kg*	0.095				
Stage 1					
Volume of Leachant L2*	0.933				
Volume of Eluate VE1*	0.885				

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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

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

#### Test Results On Leachate

Test Results On Leachate		WAC Limit Values			
			Limit va	Limit values for LS10 Leachate	
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached* mg/kg	Inert	SNRHW	Hazardous
Determinant and Method Reference	10:1	LS10	Waste		Waste
DETSC 2306 Arsenic as As	5.3	0.053	0.5	2	25
DETSC 2306 Barium as Ba	8.5	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	2.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	4	0.04	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.85	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	3	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	480	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	41000	410	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2700	< 50	500	800	1000
Additional Information			TBE -	To Be Evalu	ated
DETSC 2008 pH	6.7		SNRHW -	Stable Non-	Reactive
DETSC 2009 Conductivity uS/cm	58.4			Hazardous \	Waste
* Temperature*	17.0				
Mass of Sample Kg*	0.120				
Mass of dry Sample Kg*	0.100				
Stage 1					
Volume of Leachant L2*	0.975				
Volume of Eluate VE1*	0.921				

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# *I* DETS

# 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.



Inappropriate

# Information in Support of the Analytical Results

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

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

		Date			container for
Lab No	Sample ID	Sampled	<b>Containers Received</b>	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)	



Inappropriate

# Information in Support of the Analytical Results

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

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



## Information in Support of the Analytical Results

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

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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	
220025			days), EPH/TPH (14 days)	
2269035	BH06 0.50 LEACHATE	GJ 250MI, GJ 60MI, PT 1L X2	Sample date not supplied	
2269036	BH02 0.50 LEACHATE	GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269037	BH07 0.50 LEACHATE	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied	
2269038	BH03 1.00 LEACHATE	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Sample date not supplied	
2269039	BH10 1.00 LEACHATE	GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269040	BH11 0.50 LEACHATE	GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	
2269041	BH09 0.50 LEACHATE	GJ 250ml, GJ 60ml, PT 1L x2	Sample date not supplied	

Key: G-Glass P-Plastic J-Jar T-Tub

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

#### **Soil Analysis Notes**

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425μm sieve, in accordance with BS1377. Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis. The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

#### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



# Information in Support of the Analytical Results

#### List of HWOL Acronyms and Operators

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

Acronym

#### Det

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
ТРН (С10-С40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	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	SPT Hammer Ref:	0895.
Unit 11	Test Date:	18/02/2023
Charlwoods Road	Report Date:	20/02/2023
West Sussex	File Name:	0895spt
RH19 2HU	Test Operator:	RWS

#### **Instrumented Rod Data**

Diameter d <sub>r</sub> (mm):	54
Wall Thickness t <sub>r</sub> (mm):	6.7
Assumed Modulus E <sub>a</sub> (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 Leng	gth L (m):	10.0

#### **Comments / Location**

CAUSEWAY

0

-1

-2

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#### Calculations

Area of Rod A (mm2):		996	
Theoretical Energy E <sub>theor</sub>	(J):	473	
Measured Energy E <sub>meas</sub>	(J):	309	
			_

Energy Ratio E <sub>r</sub> (%):

The recommended calibration interval is 12 months

65







Signed: Bob Stewart Title: Technician

# **SPT Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005

Southern Testing		
Unit 11		
<b>Charlwoods Road</b>		
East Grinstead		
West Sussex		
RH19 2HU		

#### **Instrumented Rod Data**

Diameter d <sub>r</sub> (mm):	54
Wall Thickness t <sub>r</sub> (mm):	6.6
Assumed Modulus E <sub>a</sub> (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

Test Date:	13/09/2023
Report Date:	20/09/2023
File Name:	1353.spt
Test Operator:	ΤJ

SPT Hammer Ref: 1353

#### **SPT Hammer Information**

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

#### **Comments / Location**

Midleton



The recommended calibration interval is 12 months





Signed: Tom Title: Technician