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Project:	**24-0213**
Site:	**Coolaghknock Glebe Soakaway Testing**
Report Date:	**20th February 2024**
Prepared by:	**Rachel White** B.A. (Mod.) Geoscience

Introduction

At the request of the Malone O'Regan Consulting Engineers, ground investigation works were carried out on the 19th and 20th February 2024 to facilitate the design and construction of a proposed residential development. The works consisted of four soakaway tests.

The exploratory hole location plan in Appendix A shows the locations of the soakaway pits excavated.

Soakaway tests

Four soakaway tests (SA01- SA04) were carried out in accordance with BRE Digest 365 - Soakaways (BRE, 2016). The pits were excavated using a 3t tracked excavator fitted with a 600mm wide bucket, to depths of 1.50m.

The stability of the trial pit walls was noted on completion.

The results are summarized in Table 1 below:

Table 1 Summary of soakaway tests

GI Ref	Depth (m)	Strata	Infiltration Rate (m/hr)	Comments
SA01	1.50	MADE GROUND: GRAVEL	0.36	
SA02	1.50	SILT	n/a	Water level did not drop sufficiently in 3 hours to derive a result
SA03	1.50	SAND	0.21	
SA04	1.50	SILT	0.11	

Appendix B presents the soakaway pit logs followed by the results and analysis of the infiltration test with photographs of the pits and arising provided in Appendix C.

REFERENCES

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

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

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

BS EN ISO 14688-1: 2002: Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.

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

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

Legend Key

Project No.	24-0213
Client	NDFA
Client's Rep	Malone O'Regan Consulting Engineers

Site Location Plan

Coolaghknock Glebe Soakaway Testing

CAUSEWAY GEOTECH

Last Revision	20/02/2024
Scale	1:10000

Legend Key

Locations By Type - TP

Project No.	24-0213
Client	NDFA
Client's Rep	Malone O'Regan Consulting Engineers

Exploratory Hole Location Plan

Coolaghknock Glebe Soakaway Testing

CAUSEWAY GEOTECH

Last Revision	20/02/2024
Scale	1:2000

CAUSEWAY GEOTECH

APPENDIX B

SOAKAWAY TEST LOGS AND RESULTS

CAUSEWAY GEOTECH

Project No. 24-0213	**Project Name:** Coolaghknock Glebe Soakaway Testing		**Trial Pit ID** SA01
Coordinates 674053.01 E 712984.41 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3t Tracked Excavator	**Elevation** 103.50 mOD	**Date:** 19/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
			103.30	0.20		MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	
			103.10	0.40		MADE GROUND: Greyish brown very sandy very clayey subangular fine to coarse GRAVEL with low cobble content and fragments of concrete, wires, red brick, rope, plastic, ceramics and timber. Sand is fine to coarse. Cobbles are subangular.	
			102.00	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.60
Length: 2.10

Remarks:
Concrete encountered at western edge of pit at 0.50mbgl.
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated at scheduled depth.	20/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0213
Site: Clloaghknock Glebe Soakaway Testing
Test Location: SA01
Test Date: 19 February 2024

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

	width (m)	length (m)
test pit top dimensions	0.60	2.10
test pit base dimensions	0.60	1.50
test pit depth (m)	1.50	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.72	0.78
1	0.76	0.74
2	0.80	0.70
3	0.86	0.64
4	0.89	0.61
5	0.92	0.58
6	0.93	0.57
8	0.97	0.53
10	1.01	0.49
15	1.09	0.41
20	1.15	0.35
25	1.19	0.31
30	1.30	0.20
45	1.50	0.00

RESULTS (FROM GRAPH BELOW)

Test start
75% head of water at 0.59 m
depth to water surface (target) 0.92 m
time to reach target depth 5.0 mins

Test end
25% head of water at 0.20 m
depth to water surface (target) 1.31 m
time to reach target depth 30.0 mins

test infiltration rate (q) = 0.36 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
5	0.92	0.59	25	0.39	2.61	5.9E-03	0.356
30	1.31	0.20					

CAUSEWAY GEOTECH

Project No. 24-0213	**Project Name:** Coolaghknock Glebe Soakaway Testing		**Trial Pit ID** SA02
Coordinates 674140.23 E 712959.27 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3t Tracked Excavator	**Elevation** 101.97 mOD	**Date:** 19/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
			101.77	0.20		MADE GROUND: Brownish grey sandy silty subangular fine to coarse GRAVEL with low cobble content and fragments of brick, ceramics and timber. Sand is fine to coarse. Cobbles are subangular.	
			101.37	0.60		MADE GROUND: Reddish brown sandy very silty subrounded fine to coarse GRAVEL with fragments of red brick. Sand is fine to coarse.	
			101.27	0.70		Reddish brown sandy very silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.	
			100.97	1.00		Soft reddish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is rounded fine to coarse.	
			100.47	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.60
Length: 2.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0213
Site: Coolaghknock Glebe Soakaway Testing
Test Location: SA02
Test Date: 19 February 2024

	width (m)	length (m)
test pit top dimensions	0.60	2.00
test pit base dimensions	0.60	1.80
test pit depth (m)	1.50	

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

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.68	0.82
1	0.69	0.81
2	0.69	0.81
3	0.70	0.80
4	0.71	0.79
5	0.72	0.78
6	0.73	0.78
8	0.75	0.75
10	0.77	0.73
15	0.79	0.71
20	0.81	0.69
30	0.87	0.63
60	1.00	0.50
90	1.10	0.40
120	1.20	0.30
150	1.25	0.25
180	1.25	0.25

RESULTS (FROM GRAPH BELOW)

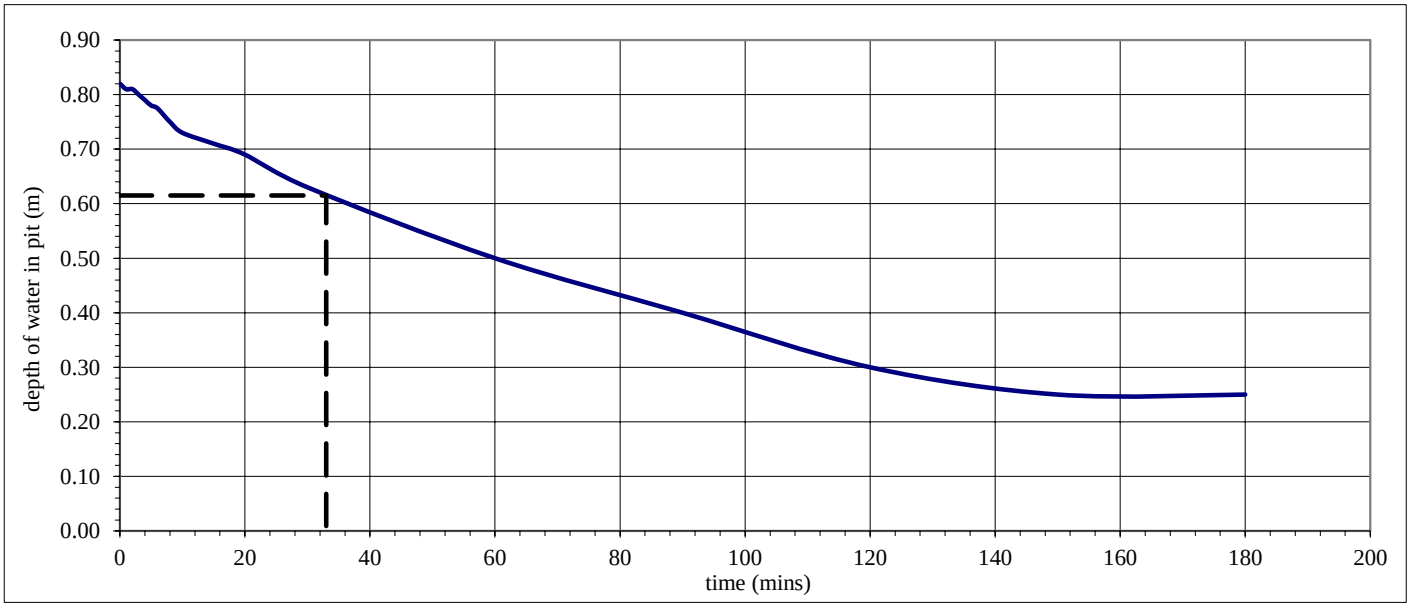
Test start
75% head of water at 0.62 m
depth to water surface (target) 0.89 m
time to reach target depth 33.0 mins

Test end
25% head of water at 0.21 m
depth to water surface (target) 1.30 m
time to reach target depth not reached

infiltration rate (q) is very low

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
33	0.89	0.62	N/A				



CAUSEWAY GEOTECH

Project No. 24-0213	**Project Name:** Coolaghknock Glebe Soakaway Testing		**Trial Pit ID** SA03
Coordinates 674156.24 E 712882.92 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3t Tracked Excavator	**Elevation** 101.95 mOD	**Date:** 19/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			101.85	0.10		TOPSOIL	
						MADE GROUND: Brown very gravelly very clayey fine to coarse SAND. Gravel is subrounded fine to coarse.	
			101.05	0.90		Greyish brown very gravelly fine to coarse SAND. Gravel is rounded fine to coarse.	
			100.45	1.50		End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.60
Length: 2.10

Remarks:
No groundwater encountered.

Stability:
Moderately Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0213
Site: Coolaghknock Glebe Soakway Testing
Test Location: SA03
Test Date: 19 February 2024

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

	width (m)	length (m)
test pit top dimensions	0.60	2.10
test pit base dimensions	0.60	1.90
test pit depth (m)	1.50	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.69	0.81
1	0.70	0.80
2	0.72	0.78
3	0.74	0.76
4	0.76	0.74
5	0.78	0.72
6	0.80	0.70
8	0.82	0.68
10	0.84	0.66
15	0.88	0.62
20	0.92	0.58
30	1.00	0.50
60	1.30	0.20
90	1.46	0.04

RESULTS (FROM GRAPH BELOW)

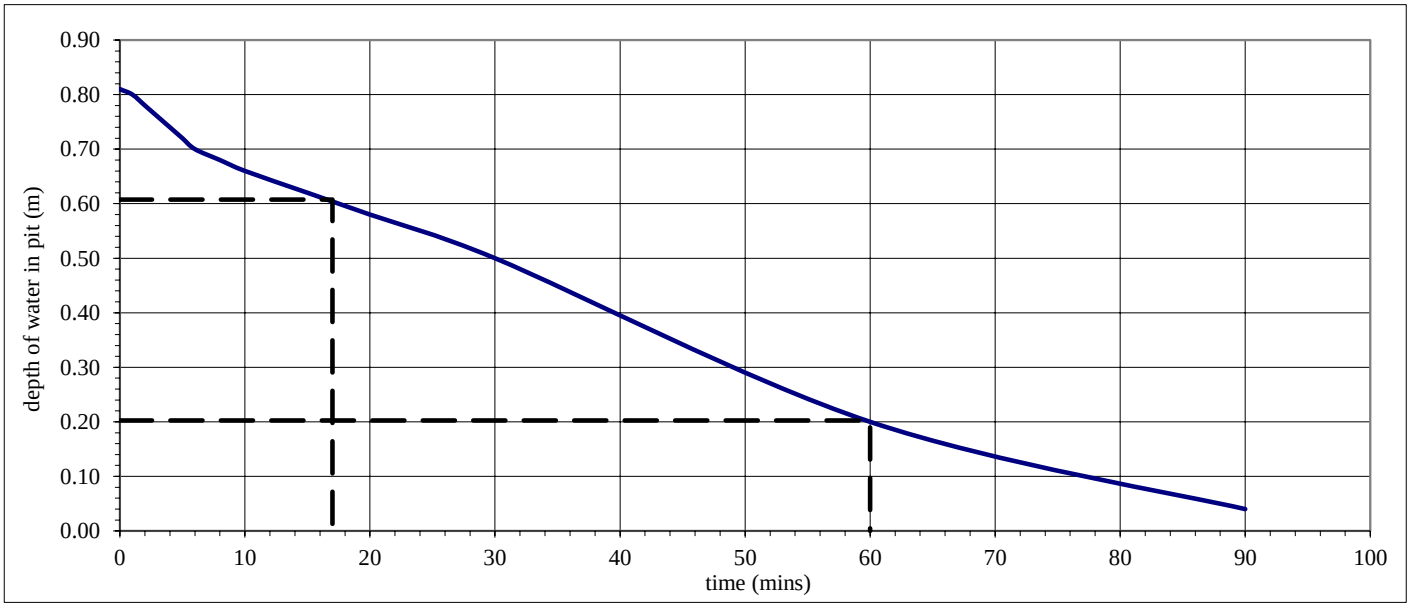
Test start
75% head of water at 0.61 m
depth to water surface (target) 0.89 m
time to reach target depth 17.0 mins

Test end
25% head of water at 0.20 m
depth to water surface (target) 1.30 m
time to reach target depth 60.0 mins

test infiltration rate (q) = 0.21 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
17	0.89	0.61	43	0.47	3.19	3.5E-03	0.208
60	1.30	0.20					



CAUSEWAY GEOTECH

Project No. 24-0213	**Project Name:** Coolaghknock Glebe Soakaway Testing		**Trial Pit ID** SA04
Coordinates 674252.24 E 712770.34 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3t Tracked Excavator	**Elevation** 97.43 mOD	**Date:** 20/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			97.23	0.20		TOPSOIL	
			96.93	0.50		MADE GROUND: Soft brown slightly sandy gravelly CLAY with low cobble and boulder content and fragments of concrete, red brick and cloth. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular. Boulders are subangular up to 1200mm.	
			96.53	0.90		Brown sandy very clayey subrounded fine to coarse GRAVEL. Sand is fine to coarse.	
			95.93	1.50		Soft brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subrounded fine to medium.	
						End of trial pit at 1.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.50
Width: 0.60
Length: 2.10

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated at scheduled depth.

Last Updated
20/02/2024

AGS

Soakaway Infiltration Test

Project No.: 23-0213
Site: Coolaghknock Glebe Soakaway Testing
Test Location: SA04
Test Date: 20 February 2024

	width (m)	length (m)
test pit top dimensions	0.60	2.10
test pit base dimensions	0.60	1.90
test pit depth (m)	1.50	

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

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.66	0.84
1	0.69	0.81
2	0.70	0.80
3	0.72	0.78
4	0.73	0.77
5	0.74	0.76
6	0.76	0.74
8	0.78	0.72
10	0.80	0.70
15	0.85	0.65
20	0.89	0.61
25	0.93	0.57
45	1.05	0.45
60	1.10	0.40
90	1.21	0.29
120	1.40	0.10
150	1.45	0.05

RESULTS (FROM GRAPH BELOW)

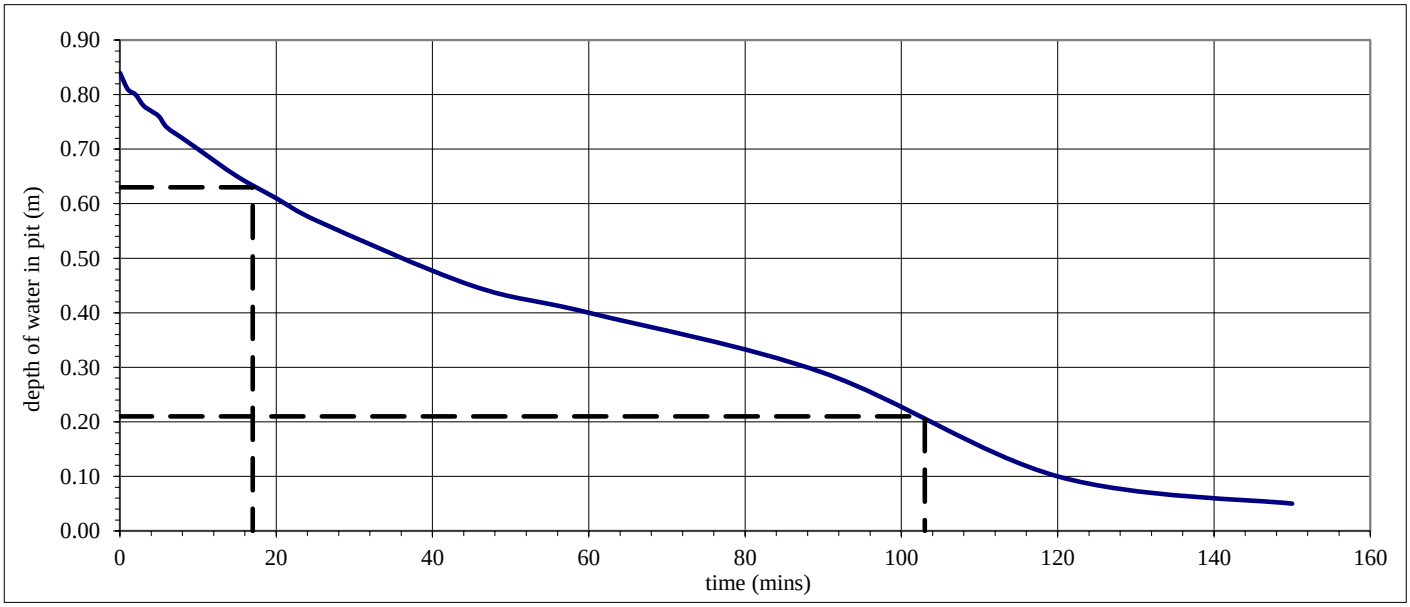
Test start
75% head of water at 0.63 m
depth to water surface (target) 0.87 m
time to reach target depth 17.0 mins

Test end
25% head of water at 0.21 m
depth to water surface (target) 1.29 m
time to reach target depth 103.0 mins

test infiltration rate (q) = 0.11 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
17	0.87	0.63	86	0.49	3.27	1.8E-03	0.105
103	1.29	0.21					



CAUSEWAY GEOTECH

APPENDIX C

PIT PHOTOGRAPHS


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA01
(m) 0.1 0.2 0.3 0.4 0.5

SA01


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Date
19.02.24
EH Number
SA01
(m)
0.1
0.2
0.3
0.4

SA01

SA01

SA01

SA01


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
Pit Number
SA01
(m)
0.1
0.2
0.3
0.4
0.5

SA01

SA01


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA02
(m) 0.1 0.2 0.3 0.4 0.5

SA02


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA02
(m)
0.1
0.2
0.3
0.4
0.5

SA02

SA02

SA02

SA02


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA02
(m)
0.1
0.2
0.3
0.4
0.5

SA02

SA02


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA03
(m) 0.1 0.2 0.3 0.4 0.5

SA03


U36-4
CAUSEWAY GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
Pit Number
SA03
(m)
0.1
0.2
0.3
0.4
0.5

SA03

SA03

SA03

SA03


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA03
(m)
0.1
0.2
0.3
0.4
0.5

SA03

SA03


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA04
(m) 0.1 0.2 0.3 0.4 0.5

SA04

SA04

SA04

SA04

SA04

SA04


CAUSEWAY
GEOTECH
Project Name
Coolaghknock Glebe
Project Number
24-0213
Date
19.02.24
EH Number
SA04
(m) 0.1 0.2 0.3 0.4 0.5

SA04

SA04