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Project:	**24-0215**
Site:	**Oldtown Mill Soakaway Testing**
Report Date:	**27th 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 26th February 2024 to facilitate the design and construction of a proposed residential development. The works consisted of three soakaway tests. One soakaway test (SA04) was cancelled due to being located within an area currently occupied by stockpiled material.

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

Soakaway tests

Three soakaway tests (SA01- SA03) were carried out in accordance with BRE Digest 365 - Soakaways (BRE, 2016). The pits were excavated using a 13t tracked excavator fitted with a 500mm 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	CLAY	n/a	Water level did not drop sufficiently in 1.5 hours to derive a result
SA02	1.50	CLAY	n/a	Water level did not drop sufficiently in 3 hours to derive a result
SA03	1.40	CLAY	n/a	Water level did not drop sufficiently in 3 hours to derive a result

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.	24-0215
Client	NDFA
Client's Rep	Malone O'Regan Consulting Engineers

Site Location Plan

Oldtown Mill Soakaway Testing

CAUSEWAY GEOTECH

Last Revision	27/02/2024
Scale	1:8000

Legend Key

Locations By Type - TP

Project No.	24-0215
Client	NDFA
Client's Rep	Malone O'Regan Consulting Engineers

Exploratory Hole Location Plan

Oldtown Mill Soakaway Testing

CAUSEWAY GEOTECH

Last Revision	27/02/2024
Scale	1:500

CAUSEWAY GEOTECH

APPENDIX B

SOAKAWAY TEST LOGS AND RESULTS

CAUSEWAY GEOTECH

Project No. 24-0215	**Project Name:** Oldtown Mill Soakaway Testing		**Trial Pit ID** SA01
Coordinates 696150.13 E 733957.66 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 70.30 mOD	**Date:** 26/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Soft greyish brown slightly sandy gravelly CLAY with low cobble content and fragments of plastic, wires and occasional rootlets. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
			69.80	0.50		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	
			68.80	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: 0.50
Length: 1.80

Remarks:
Spoil heap removed and pit dug from original ground level.
No groundwater encountered.

Stability: Moderately stable

Termination Reason: Terminated at scheduled depth.

Last Updated: 27/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0215
Site: Oldtown Mill Soakaway Testing
Test Location: SA01
Test Date: 26 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	0.50	1.80
test pit base dimensions	0.50	1.00
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	0.54	0.96
1	0.54	0.96
2	0.55	0.95
3	0.55	0.95
4	0.55	0.95
5	0.55	0.95
6	0.55	0.95
8	0.55	0.95
10	0.56	0.94
15	0.58	0.92
20	0.59	0.91
25	0.61	0.89
30	0.62	0.88
45	0.67	0.83
60	0.73	0.77
90	0.76	0.74

RESULTS (FROM GRAPH BELOW)

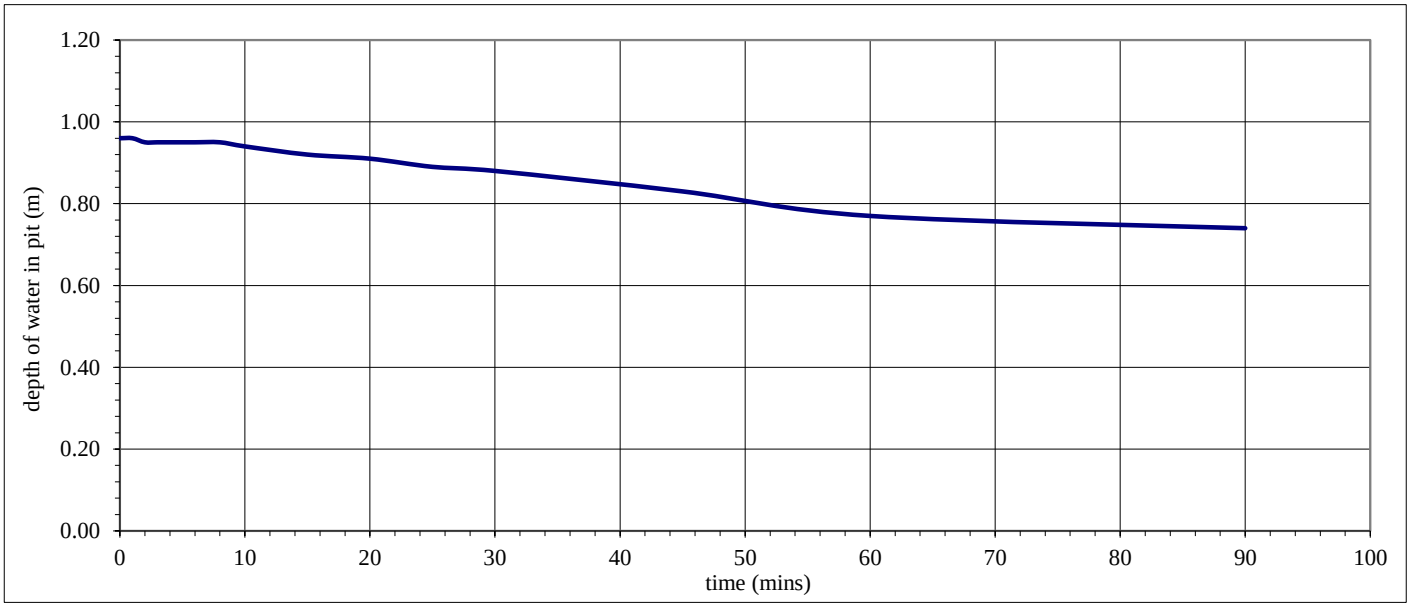
Test start
75% head of water at 0.72 m
depth to water surface (target) 0.78 m
time to reach target depth not reached

Test end
25% head of water at 0.24 m
depth to water surface (target) 1.26 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)
			N/A				



CAUSEWAY GEOTECH

Project No. 24-0215	**Project Name:** Oldtown Mill Soakaway Testing		**Trial Pit ID** SA02
Coordinates 696228.20 E 733984.69 N	**Client:** NDFA		
Method: Soakaway Testing	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 70.55 mOD	**Date:** 26/02/2024	**Logger:** RW	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			70.50	0.05		TOPSOIL MADE GROUND: Dark grey sandy clayey angular fine to coarse GRAVEL with fragments of plastic. Sand is fine to coarse.	
			70.25	0.30		Firm dark brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	
			69.05	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: 0.50
Length: 2.40

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at scheduled depth.

Last Updated
27/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0215
Site: Oldtown Mill Soakaway Testing
Test Location: SA02
Test Date: 26 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	0.50	2.40
test pit base dimensions	0.50	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	0.43	1.07
1	0.43	1.07
2	0.44	1.06
3	0.44	1.06
4	0.44	1.06
5	0.44	1.06
6	0.46	1.04
8	0.46	1.04
10	0.47	1.04
20	0.49	1.01
30	0.51	0.99
45	0.54	0.96
60	0.56	0.94
90	0.59	0.91
120	0.64	0.86
150	0.67	0.83
180	0.70	0.80
0		

RESULTS (FROM GRAPH BELOW)

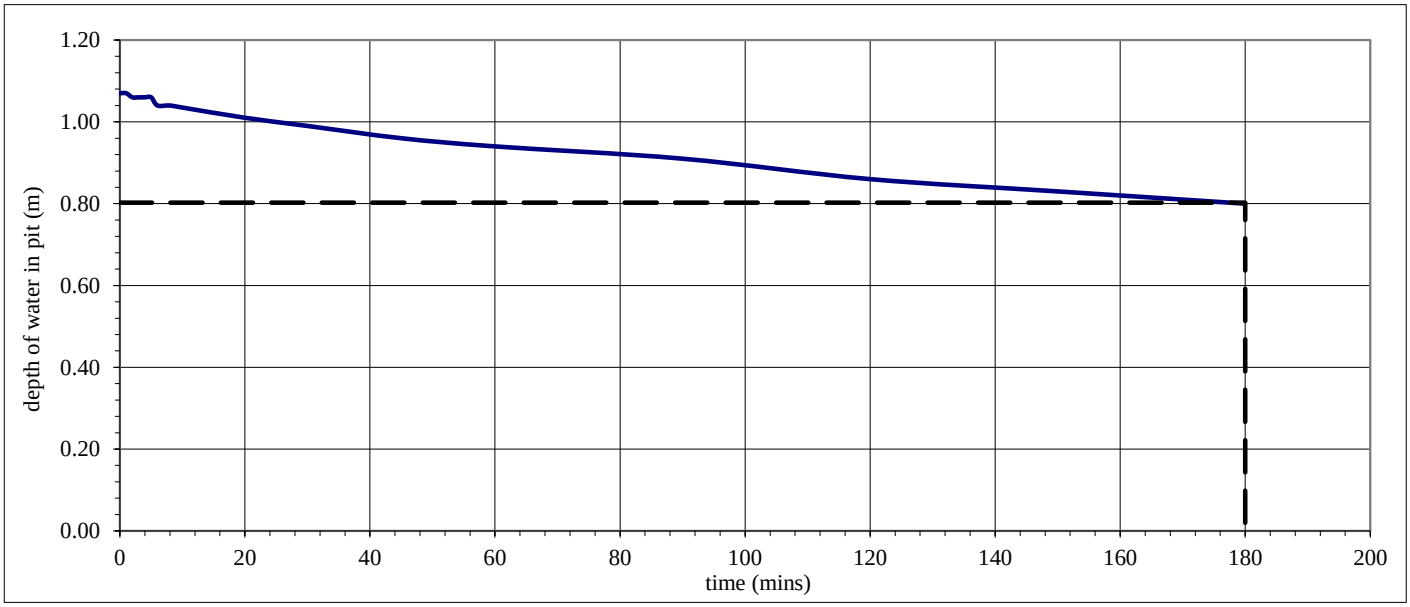
Test start
75% head of water at 0.80 m
depth to water surface (target) 0.70 m
time to reach target depth 180.0 mins

Test end
25% head of water at 0.27 m
depth to water surface (target) 1.23 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)
180	0.70	0.80	N/A				



CAUSEWAY GEOTECH	**Project No.** 24-0215	**Project Name:** Oldtown Mill Soakaway Testing	**Trial Pit ID** SA03
	Coordinates 696175.60 E 733915.83 N	**Client:** NDFA	
Method: Soakaway Testing		**Client's Representative:** Malone O'Regan Consulting Engineers	Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 69.45 mOD	**Date:** 26/02/2024	**Logger:** RW — FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Stiff brown slightly sandy slightly gravelly CLAY with low cobble content and fragments of plastic. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular	
			68.95	0.50		Very stiff brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular of limestone (Possible bedrock)	
			68.05	1.40		End of trial pit at 1.40m	

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: 1.40
Width: 0.60
Length: 2.10

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated at refusal on possible bedrock.	27/02/2024

AGS

Soakaway Infiltration Test

Project No.: 24-0215
Site: Oldtown Mill Soakaway Testing
Test Location: SA03
Test Date: 26 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	0.50	1.50
test pit depth (m)	1.40	

depth to groundwater before adding water (m) = DRY

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.54	0.86
1	0.54	0.86
2	0.55	0.85
3	0.55	0.85
4	0.55	0.85
5	0.55	0.85
6	0.55	0.85
8	0.55	0.85
10	0.56	0.84
15	0.58	0.82
20	0.59	0.81
25	0.61	0.79
30	0.62	0.78
60	0.67	0.73
90	0.73	0.67
120	0.76	0.64
150	0.79	0.61
180	0.82	0.58

RESULTS (FROM GRAPH BELOW)

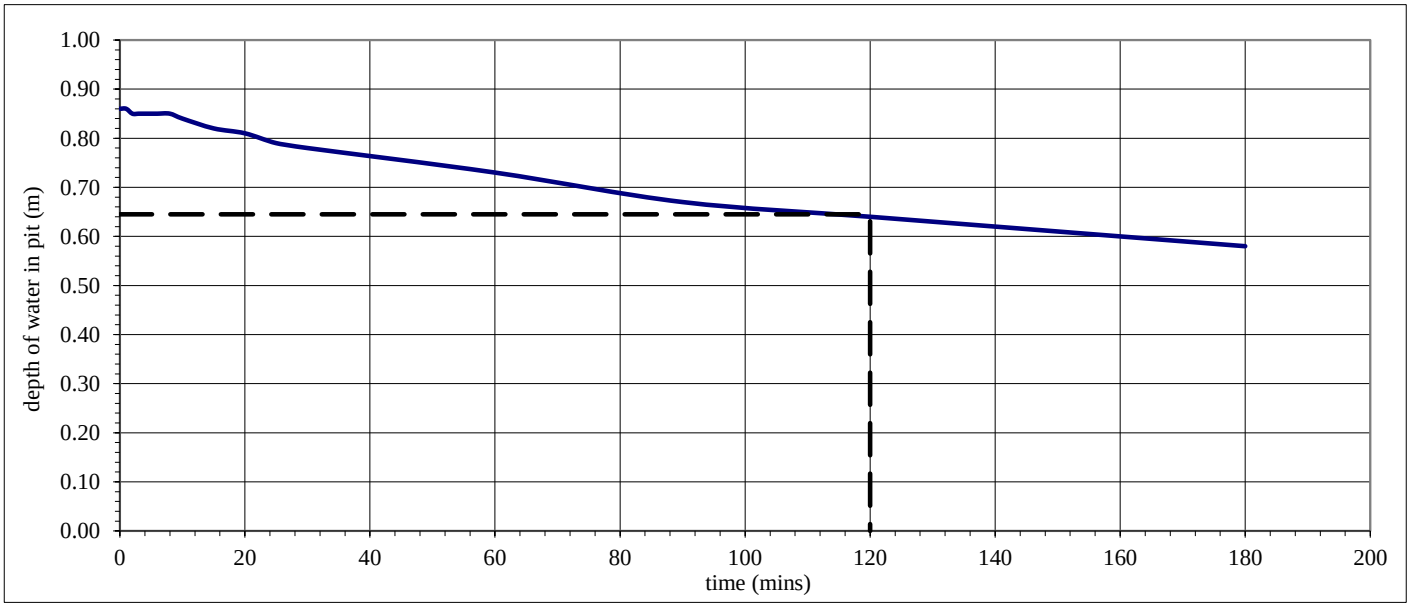
Test start
75% head of water at 0.65 m
depth to water surface (target) 0.76 m
time to reach target depth 120.0 mins

Test end
25% head of water at 0.22 m
depth to water surface (target) 1.19 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)
120	0.76	0.65	N/A				



CAUSEWAY GEOTECH

APPENDIX C

PIT PHOTOGRAPHS

SA01

SA01

SA01

SA01

SA01

SA02

SA02

SA02

SA02

SA02

SA02

SA03

SA03

SA03

SA03

SA03

SA03