



GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin,
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

Ground Investigations Ireland
Grangebrook Avenue
Terry & O'Flanagan Ltd
Ground Investigation Report
January 2022





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Email: info@gii.ie
Web: www.gii.ie

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1.0 Preamble

On the instructions of Terry & O'Flanagan Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., in December 2021 at the site of the proposed housing development at Grangebrook Avenue, Rathfarnham.

2.0 Overview

2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. The site is located within the gardens of a residential property and is predominantly greenfield. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 4 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the

soakaway test and were backfilled with arising's upon completion. The soakaway test results are provided in Appendix 2 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were consistent across the site and are generally comprised;

- Topsoil
- Made Ground
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.2m BGL.

MADE GROUND: Made Ground deposits was encountered beneath the Topsoil at SA04 and was present to a depth 0.50m BGL. This deposit was described as *dark brown slightly sandy slightly gravelly CLAY with occasional fragments of plastic, tin, ceramic, and metal.*

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Topsoil and were described typically as *brown slightly sandy slightly gravelly CLAY*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix.

4.2. Groundwater

No groundwater was noted during the investigation however we would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the time of year, rainfall, nearby construction and other factors.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has

been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Soakaway Design

At all locations the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction.

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

APPENDIX 1 - Site Location Plan



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 Soakaway Pit

Client:



Project Code:

11264-11-21

Project Title:

Grangebrook Avenue

Drawing Title:

Figure 1 Site Location



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Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Drawn By:
JC

Date
17/01/2022

APPENDIX 2 – Soakaway Testing Records





Machine : 3.5 tonne tracked excavator
Method : Trial Pit

Dimensions
2.00m x 0.45m x 1.40m (L x W x D)

Ground Level (mOD)

Client

Job Number
11264-11-21

Location

Dates
14/12/2021

Engineer
Terry & O'Flanagan Ltd

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Firm brown slightly sandy slightly gravelly CLAY with occasional cobbles		
					(0.90)			
					1.10	Firm to stiff brown slightly sandy slightly gravelly CLAY with some cobbles and boulders		
					(0.30)			
					1.40	Complete at 1.40m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Complete at 1.40m BGL
Soakaway test carried out in trial pit according to BRE Digest 365
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	CMP	11264-11-21.SA01



Machine : 3.5 tonne tracked excavator Method : Trial Pit	Dimensions 1.50m x 0.45m x 1.20m (L x W x D)	Ground Level (mOD)	Client	Job Number 11264-11-21
	Location	Dates 14/12/2021	Engineer Terry & O'Flanagan Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Firm greyish brown slightly sandy slightly gravelly CLAY with occasional cobbles		
					(0.60)			
					0.80	Firm brown slightly sandy slightly gravelly CLAY with some cobbles		
					(0.40)			
					1.20	Complete at 1.20m		

Plan	Remarks						
	<p>No groundwater encountered Trial pit stable Complete at 1.20m BGL Soakaway test carried out in trial pit according to BRE Digest 365 Trial pit backfilled upon completion</p>						
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>CMP</td> <td>11264-11-21.SA02</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	CMP	11264-11-21.SA02
Scale (approx)	Logged By	Figure No.					
1:25	CMP	11264-11-21.SA02					



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Site
Grangebrook Avenue
Trial Pit Number
SA03

Machine : 3.5 tonne tracked excavator Method : Trial Pit	Dimensions 1.60m x 0.45m x 1.00m (L x W x D)	Ground Level (mOD)	Client	Job Number 11264-11-21
	Location	Dates 14/12/2021	Engineer Terry & O'Flanagan Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Firm brown slightly sandy slightly gravelly CLAY with occasional cobbles		
					(0.50)			
					0.70	Firm to stiff brown slightly sandy slightly gravelly CLAY with some cobbles and boulders		
					(0.30)			
					1.00	OBSTRUCTION: presumed boulder		
						Terminated at 1.00m		

Plan								

Remarks

No groundwater encountered
 Trial pit stable
 Refusal at 1.00m BGL
 Soakaway test carried out in trial pit according to BRE Digest 365
 Trial pit backfilled upon completion

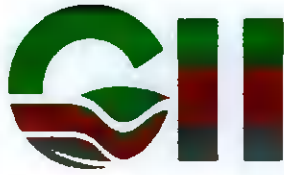
Scale (approx)	Logged By	Figure No.
1:25	CMP	11264-11-21.SA03



Machine : 3.5 tonne tracked excavator Method : Trial Pit	Dimensions 1.40m x 0.45m x 1.20m (L x W x D)	Ground Level (mOD)	Client	Job Number 11264-11-21
	Location	Dates 14/12/2021	Engineer Terry & O'Flanagan Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with a metal crowbar and occasional fragments of plastic wires, tin cans, ceramics and rootlets		
					(0.30)			
					0.50	Firm brown slightly sandy slightly gravelly CLAY		
					(0.70)			
					1.20	Complete at 1.20m		

Plan 	Remarks No groundwater encountered Trial pit stable Complete at 1.20m BGL Soakaway test carried out in trial pit according to BRE Digest 365 Trial pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>CMP</td> <td>11264-11-21 SA04</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	CMP
Scale (approx)	Logged By	Figure No.				
1:25	CMP	11264-11-21 SA04				



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SA01

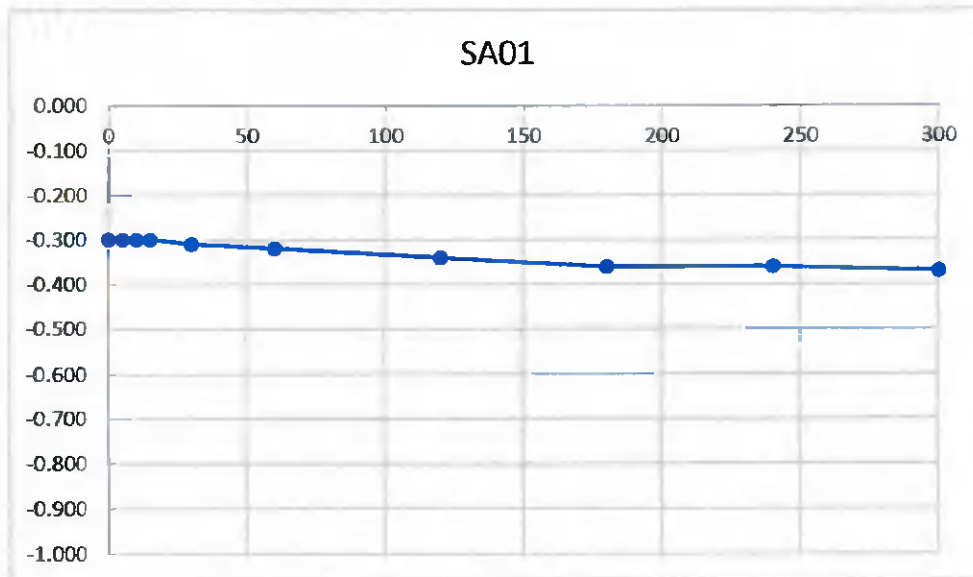
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 2.00m x 0.45m x 1.40m (L x W x D)

Date	Time	Water level (m bgl)
14/12/2021	0	-0.300
14/12/2021	5	-0.300
14/12/2021	10	-0.300
14/12/2021	15	-0.300
14/12/2021	30	-0.310
14/12/2021	60	-0.320
14/12/2021	120	-0.340
14/12/2021	180	-0.360
14/12/2021	240	-0.360
14/12/2021	300	-0.370

***Soakaway Failed - Pit Backfilled**

Start Depth	Depth of Pit	Difference	75% Full	25% Full
0.300	1.400	1.100	0.575	0.731





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SA02

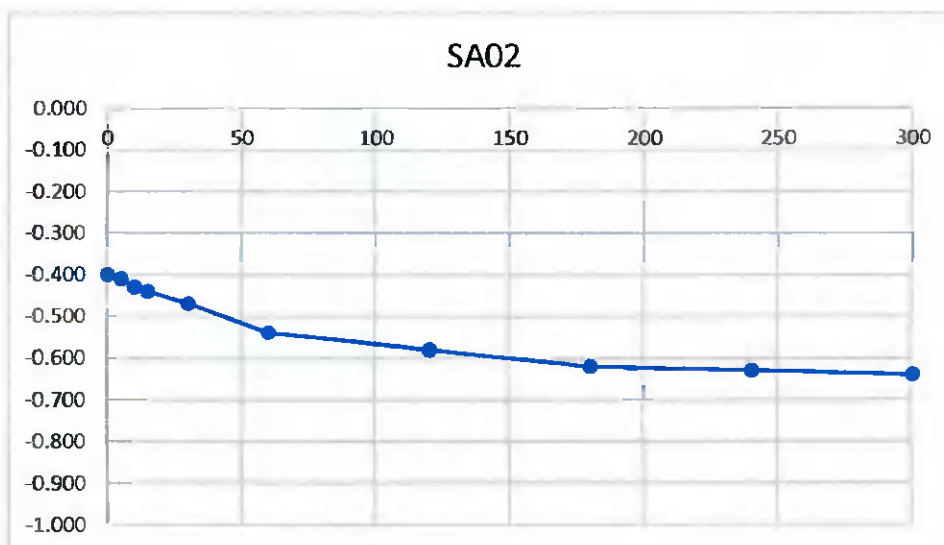
Soakaway Test to BRE Digest 365

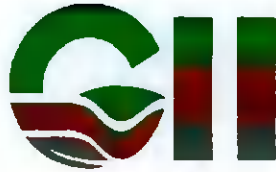
Trial Pit Dimensions: 1.50m x 0.45m x 1.20m (L x W x D)

Date	Time	Water level (m bgl)
14/12/2021	0	-0.400
14/12/2021	5	-0.410
14/12/2021	10	-0.430
14/12/2021	15	-0.440
14/12/2021	30	-0.470
14/12/2021	60	-0.540
14/12/2021	120	-0.580
14/12/2021	180	-0.620
14/12/2021	240	-0.630
14/12/2021	300	-0.640

***Soakaway Failed - Pit Backfilled**

Start Depth	Depth of Pit	Difference	75% Full	25% Full
0.400	1.200	0.800	0.600	0.850





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SA03

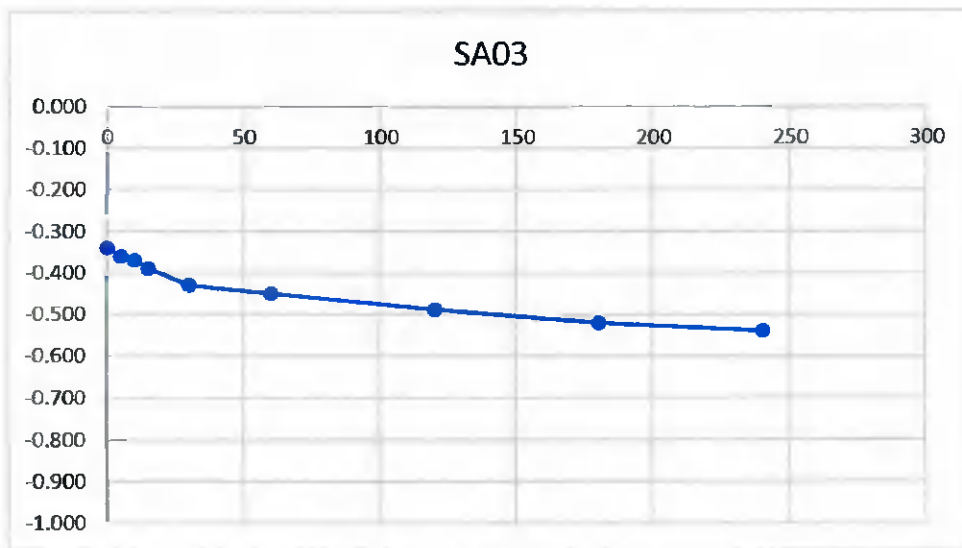
Soakaway Test to BRE Digest 365

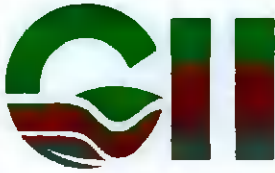
Trial Pit Dimensions: 1.60m x 0.45m x 1.00m (L x W x D)

Date	Time	Water level (m bgl)
14/12/2021	0	-0.340
14/12/2021	5	-0.360
14/12/2021	10	-0.370
14/12/2021	15	-0.390
14/12/2021	30	-0.430
14/12/2021	60	-0.450
14/12/2021	120	-0.490
14/12/2021	180	-0.520
14/12/2021	240	-0.540

***Soakaway Failed - Pit Backfilled**

Start Depth	Depth of Pit	Difference	75% Full	25% Full
0.340	1.000	0.660	0.505	0.719





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SA04

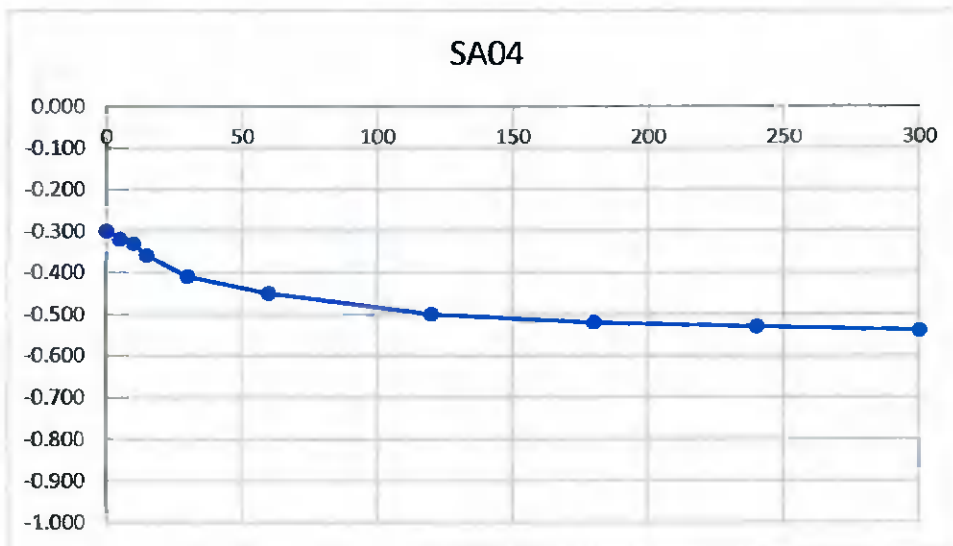
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.40m x 0.45m x 1.20m (L x W x D)

Date	Time	Water level (m bgl)
14/12/2021	0	-0.300
14/12/2021	5	-0.320
14/12/2021	10	-0.330
14/12/2021	15	-0.360
14/12/2021	30	-0.410
14/12/2021	60	-0.450
14/12/2021	120	-0.500
14/12/2021	180	-0.520
14/12/2021	240	-0.530
14/12/2021	300	-0.540

***Soakaway Failed - Pit Backfilled**

Start Depth	Depth of Pit	Difference	75% Full	25% Full
0.300	1.200	0.900	0.525	0.694



Grangebrook Avenue – Soakaway Photographs

SA01



SA01



Grangebrook Avenue – Soakaway Photographs

SA01



SA01



Grangebrook Avenue – Soakaway Photographs

SA02



SA02



Grangebrook Avenue – Soakaway Photographs

SA02



SA02



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SA03



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SA03



Grangebrook Avenue – Soakaway Photographs

SA04



SA04



Grangebrook Avenue – Soakaway Photographs

SA04



SA04

