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DOCUMENT: **SURFACE WATER DRAINAGE REPORT**

DOCUMENT NO: **22029– RP– 01**

PROJECT REFERENCE:

- **Project No:** **22029**

- **Project Title:** **Development at 36 Kew Park Crescent, Lucan, Co. Dublin**

ARCHITECT: **Module Design LTD**

				APPROVALS		
Issue	Date	Pages	Issue Description	By	Check	Approve
P	03.05.22	All	Issued for A. I. Request	DTA	MFD	S.C.

1 INTRODUCTION:

1.1 We have been requested to provide a surface water drainage report to assist with an Additional Information request as part of a planning application for an extension to 36 Kew Park Crescent, Lucan, Co. Dublin.

1.2 The scheme for the proposed development has been prepared by the project architects Module Design LTD.

1.3 This report outlines the proposed surface water drainage scheme for the development, and details how the resultant increase in surface water run-off will be disposed off, as requested in items 3 & 4 of the Additional Information for Planning Application reference SD22B/0028

1.4 An existing site drainage layout, proposed drainage layout and details are outlined in drawings 22029_01 & 02

2 SURFACE WATER DRAINAGE

2.1 The proposed development has been assessed in relation to Sustainable Urban Drainage Systems(SuDS) in accordance with the guidelines of the GDSDS and the SuDS Manual CIRIA 753. The soakaway has been designed in accordance with BRE Digest 365.

2.2 The surface water from the existing development appears to be collected by gravity and discharged to an existing public surface water sewer to the front of the site.

2.3 Given the nature and density of the site, the following SuDS components are proposed for the disposal of the surface water from new extension.

a. Permeable surfaces are proposed for the new rear patio area

b. Surface water from an impermeable area greater than the area of the new roof of the extension will be directed by gravity to a new infiltration trench soakaway to be constructed in the rear garden of the property.

c. All necessary set-back distances from buildings and boundaries have been achieved with the proposed soakaway

d. Silt traps will be installed on all surface water drains prior to discharge to each of the above.

2.4 The proposed soakaway has been designed to cater for a 1 in 100 year storm event plus 20% for climate change, and has been designed using values from infiltration tests carried out on site by Stringray Environmental Engineering.

APPENDIX A
- Surface Water Soakaway Calculations

Soakaway Design

32 Kew Park Crescent

May-22

Soil Infiltration rate = 0.000049 m/sec — Average from site investigations

Area of ground infiltration = 7.5 m^2

Ground Infiltration flow = 0.0003675 m^3/sec
= **0.37** L/sec

Attenuation Design

Impermeable Area 80 m^2

Ground infiltration from above	0.37		
+ Allowable outfall to SW sewer	0.00		
Ground infiltration from above	0.37	L/s	0.37

30 year storm

Duration (Hrs) (Hrs)	M30 (mm)	Ground Infiltration (L/s)	Net Flow (L/s)	Flow to Storage (L/s)	Storage (m^3)
0.25	18.1	0.37	1.61	1.24	1.12
0.5	22.6	0.37	1.00	0.64	1.15
1	28.3	0.37	0.63	0.26	0.94
2	35.5	0.37	0.39	0.03	0.19
3	40.5	0.37	0.30	-0.07	-0.73
4	44.4	0.37	0.25	-0.12	-1.74
6	50.7	0.37	0.19	-0.18	-3.88
9	57.8	0.37	0.14	-0.22	-7.28
12	63.4	0.37	0.12	-0.25	-10.80
18	72.4	0.37	0.09	-0.28	-18.02
24	79.4	0.37	0.07	-0.29	-25.40
48	86.7	0.37	0.04	-0.33	-56.57

100 year storm

Duration (Hrs) (Hrs)	M100 (mm)	Permissible Outflow (L/s)	Net Flow (L/s)	Flow to Storage (L/s)	Storage (m^3)
0.25	25.6	0.37	2.28	1.91	1.72
0.5	31.6	0.37	1.40	1.04	1.87
1	39.1	0.37	0.87	0.50	1.81
2	48.4	0.37	0.54	0.17	1.23
3	54.7	0.37	0.41	0.04	0.41
4	59.8	0.37	0.33	-0.04	-0.51
6	67.7	0.37	0.25	-0.12	-2.52
9	76.6	0.37	0.19	-0.18	-5.78
12	83.7	0.37	0.16	-0.21	-9.18
18	94.7	0.37	0.12	-0.25	-16.24
24	103.5	0.37	0.10	-0.27	-23.47
48	120.5	0.37	0.06	-0.31	-53.86

Min Attenuation Volume Req'd for 100 year storm + 20% for climate change = 2.25 cub m

APPENDIX B
Infiltration Test by Stringray Environmental Engineering.

Infiltration Test
BRE Digest 365

STINGRAY ENVIRONMENTAL ENGINEERING
Protect Our Water

Reference Number: SEE-S369
Project: 36 Kew Park Avenue, Lucan, Co. Dublin, K78P9P1, X301985, Y234940
Client: Sarah Duke & Philip Tomlinson

April 2022

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- Personal data will be collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes.
- Personal data will be adequate, relevant, and limited to what is necessary in relation to the purposes for which they are processed.
- Personal data will be accurate and where necessary kept up to date.
- Personal data will be kept in a from which permits identification of data subjects for no longer than is necessary for the purposes for which the personal date is processed.
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Introduction

This report is based on the findings of a soil infiltration tests examination as per BRE Digest 365, carried out by Stingray Environmental Engineering Ltd. on the 13th of April 2022.

As required by South Dublin County Council, this report provides calculations of soil infiltration rate in line with test requirements of *BRE365*.

1. Site Specific Information

Information supplied by client /architect

- Site Address: **36 Kew Park Avenue, Lucan, Co. Dublin, K78P9P1, X301985, Y234940**
- Client: **Sarah Duke & Philip Tomlinson**

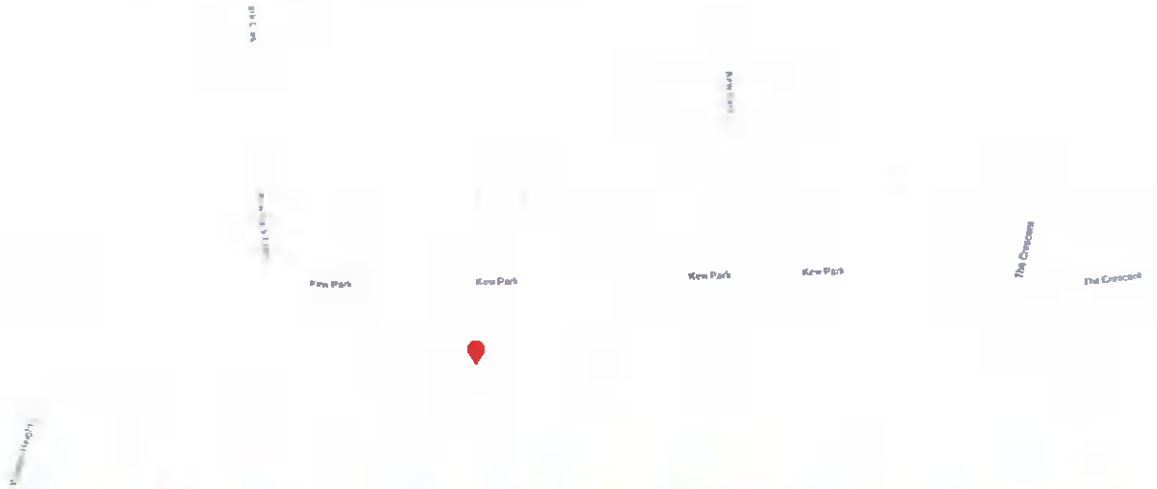

Fig 1. Site Location

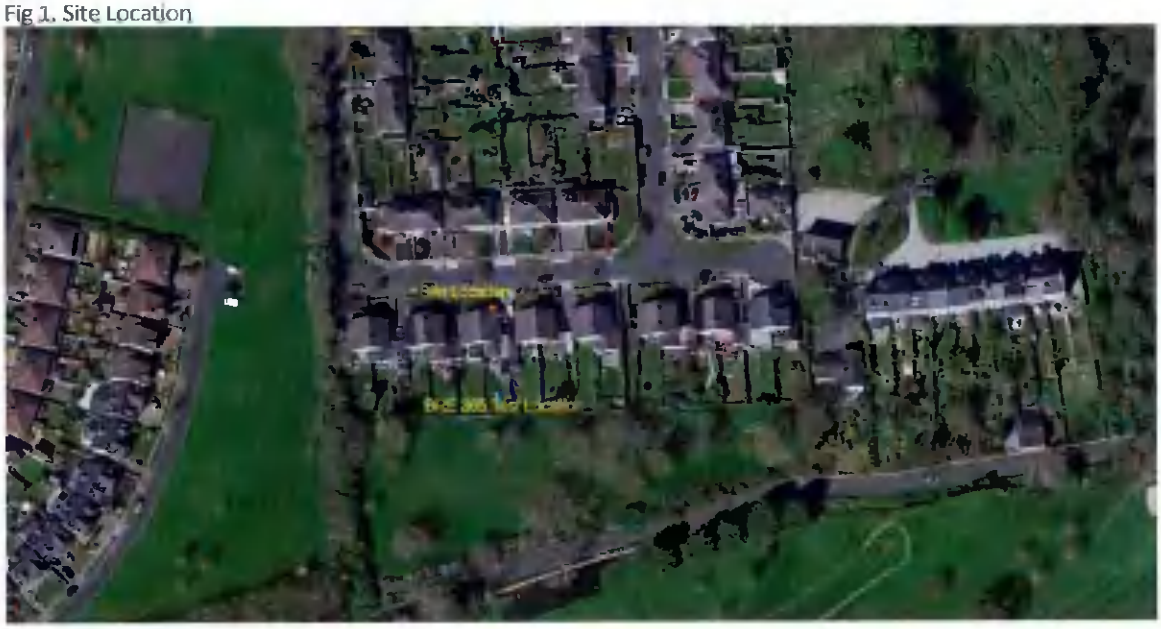

Fig 2. Infiltration test hole location

2. Infiltration Test BRE Digest 365

- Runoff coefficient as per BRE 365: **1**
- Dimensions of the infiltration test pit A: **L 1100mm x W 400mm x D 1000mm**
- Effective Depth adopted: **700mm BCL.**

Soil Infiltration rate calculated as per BRE365 soakaway test:

INFILTRATION TEST PIT A:

- $f=V_{75-25}/(a_{50}*t_{75-25}) = 4.9217E-05=$**0.000049m/sec**

where:

- V_{75-25}=1100mm*400mm*350mm=0.154m3
- $A_{50\,base}$=(2*1100mm*350mm) +(2*400mm*350mm) +(1*1100mm*400mm) =1.49m2
- Fill 1 t_{75-25}=20min=1200sec
- Fill 2 t_{75-25}=28min=1680sec
- Fill 3 t_{75-25}=35min=2100sec

	Date	T_{75}=ED-175mm	T_{25}=ED-525mm	T_{75-25}[min]
Fill1	13/04/2022	11:30	11:50	20
Fill2	13/04/2022	11:55	12:23	28
Fill3	13/04/2022	12:25	13:00	35

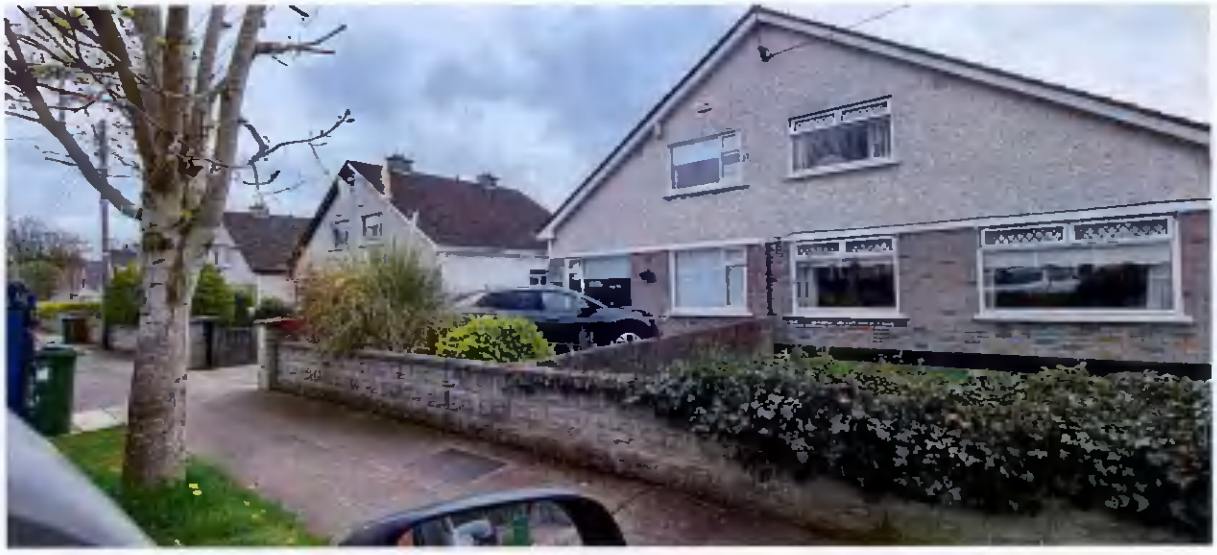

Fig 3. Site view front 13-04-2022

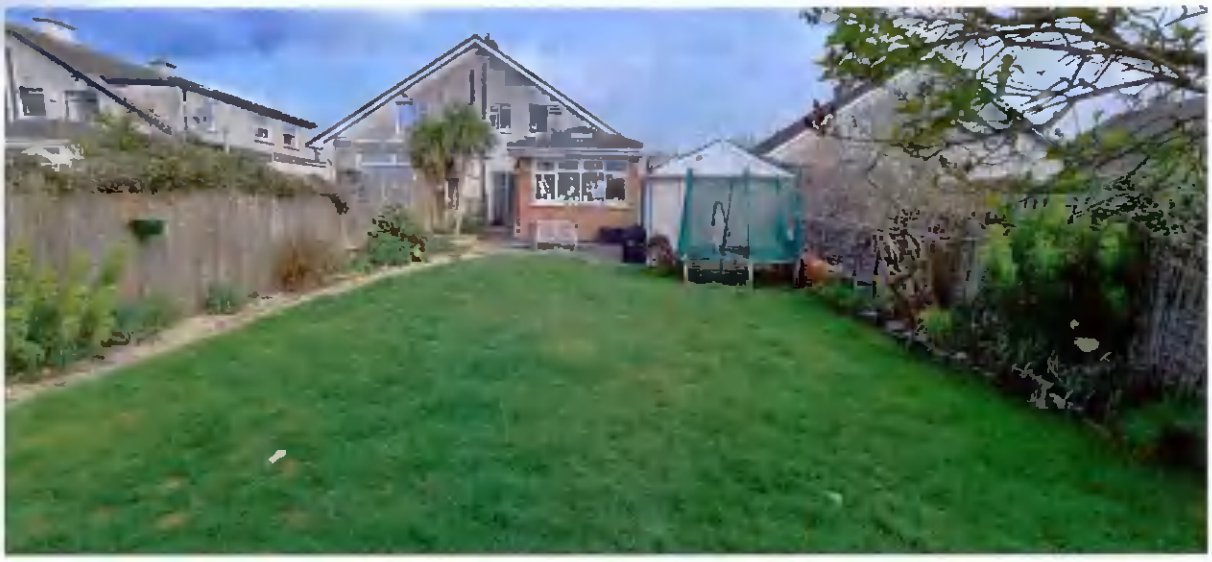

Fig 3. Site view 13-04-2022

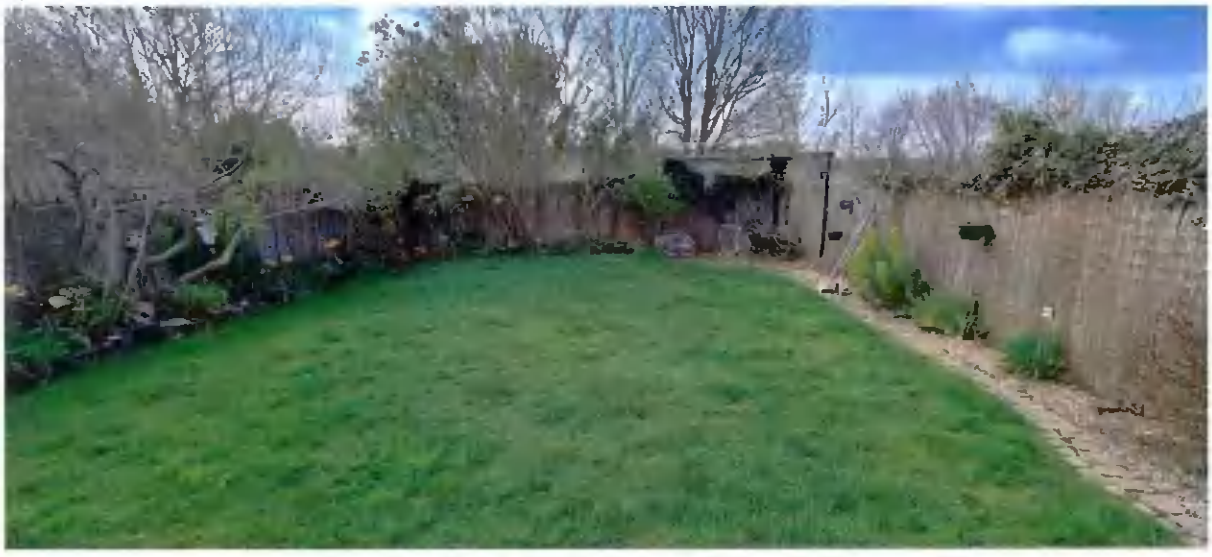

Fig 4. Site view South 13-04-2022

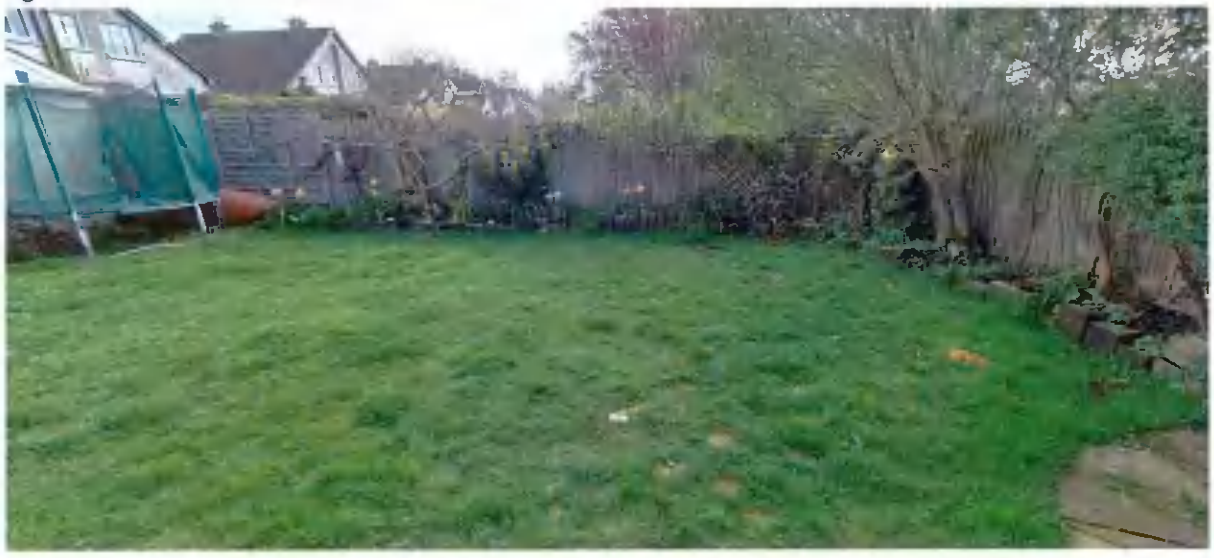

Fig 5. Site view East 13-04-2022

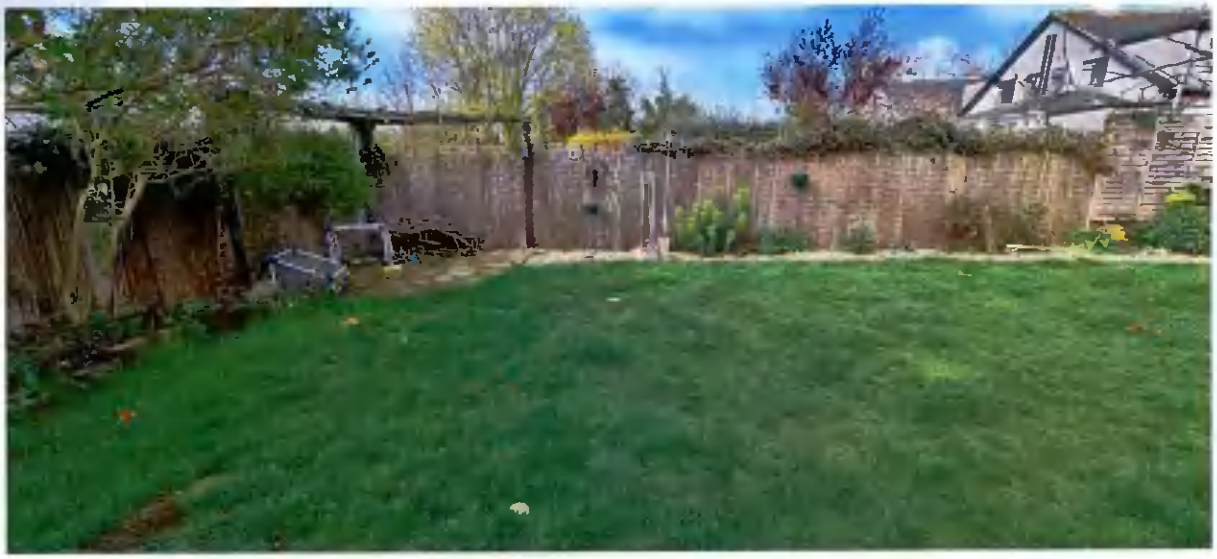

Fig 6. Site view West 13-04-2022

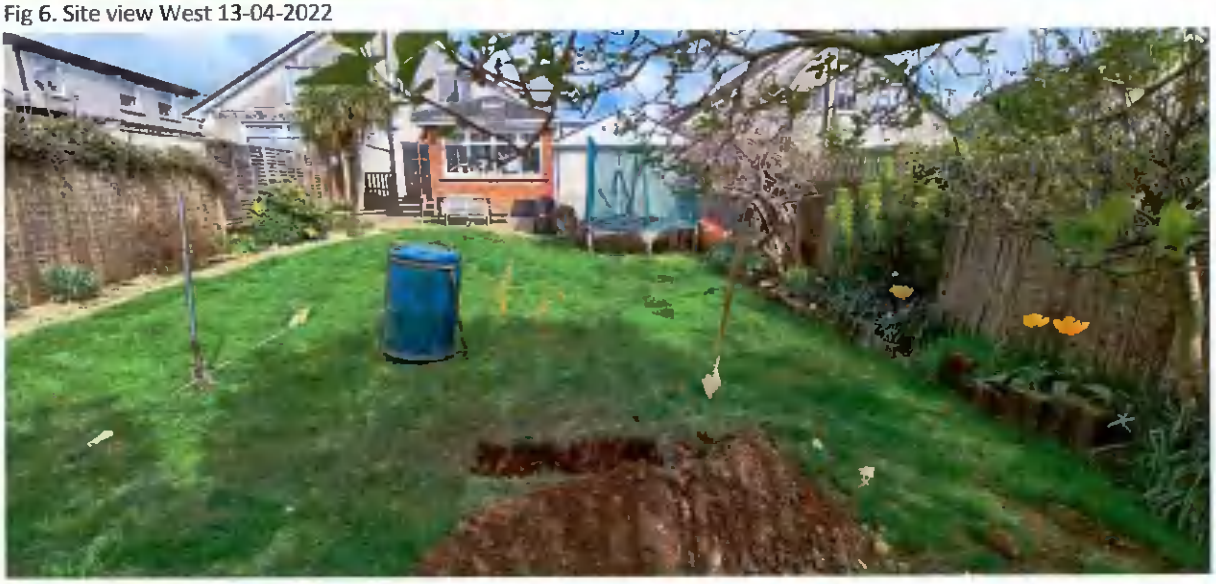

Fig 7. Site view North 13-04-2022

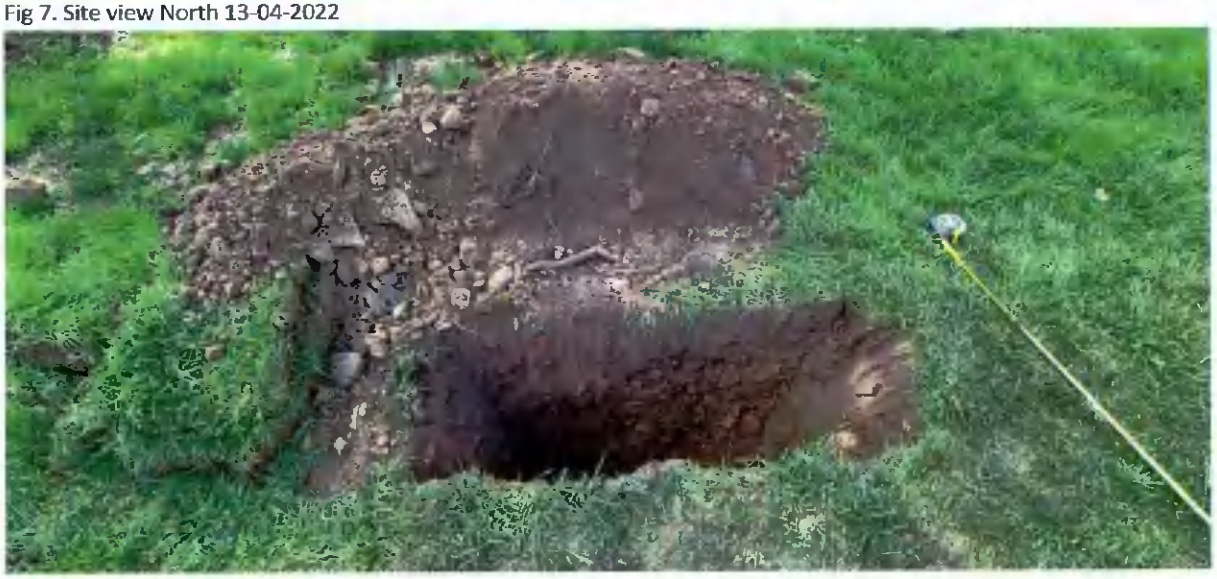

Fig 8. Infiltration test 13-04-2022

Fig 9. Infiltration test 13-04-2022

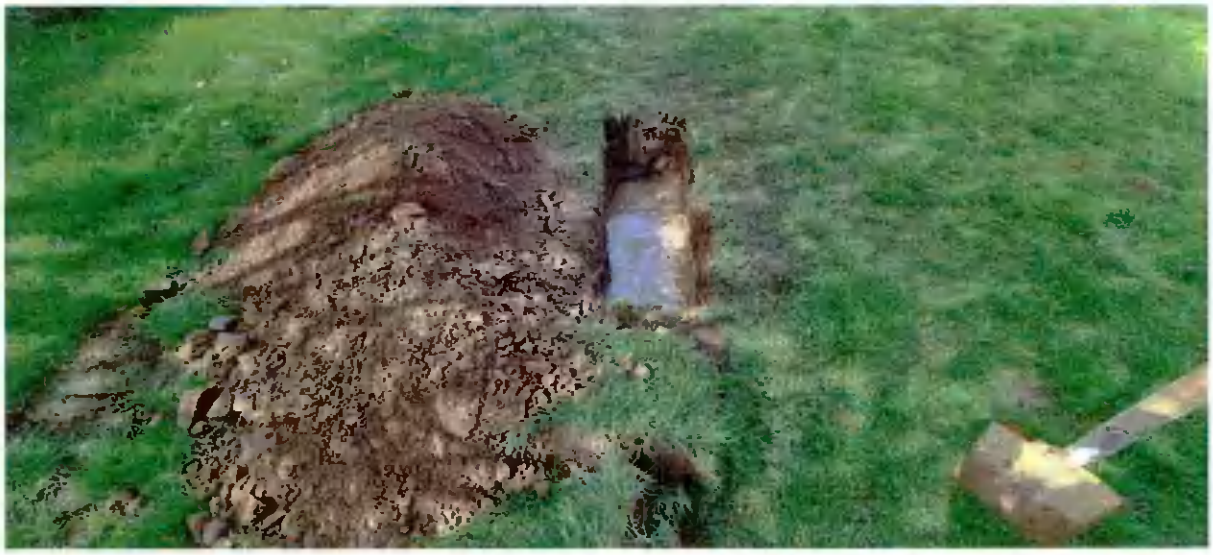

Fig 10. Infiltration test 13-04-2022

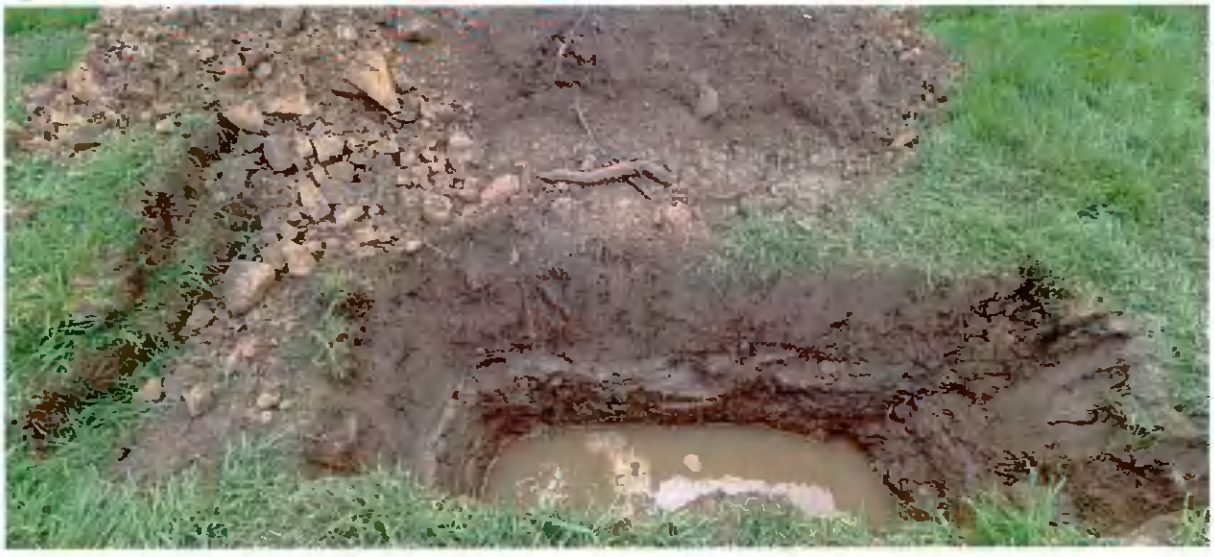

Fig 11. Infiltration test 13-04-2022

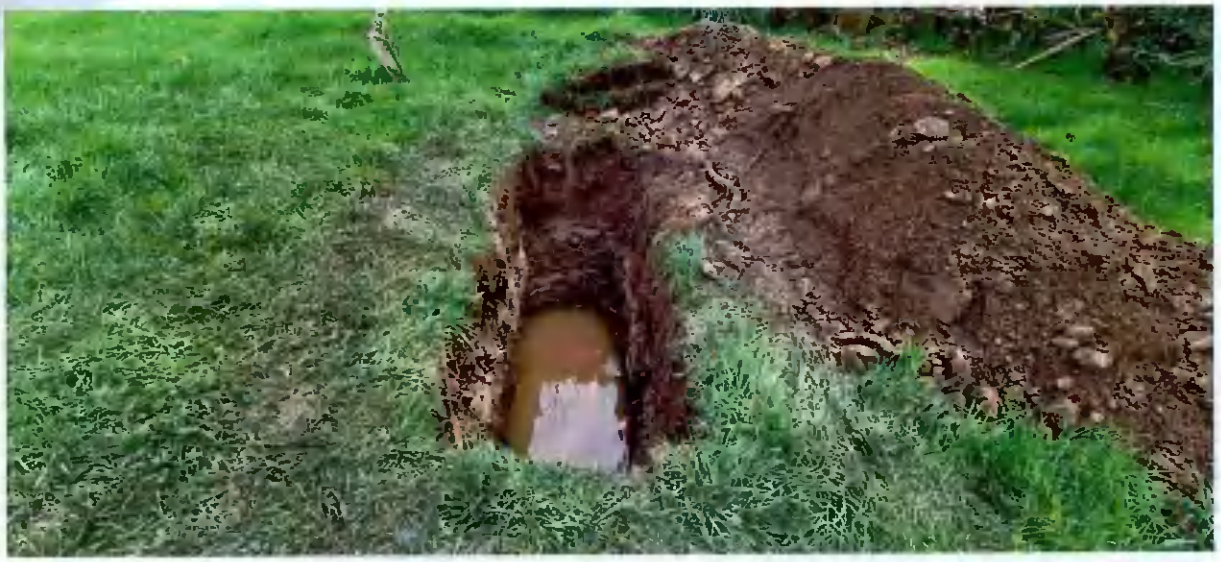

Fig 12. Infiltration test 13-04-2022

Fig 13. Infiltration test 13-04-2022

3. Trial Pit

- Dimensions of the Trial Pit: **L 1100mm x W 400mm x D 1000mm**

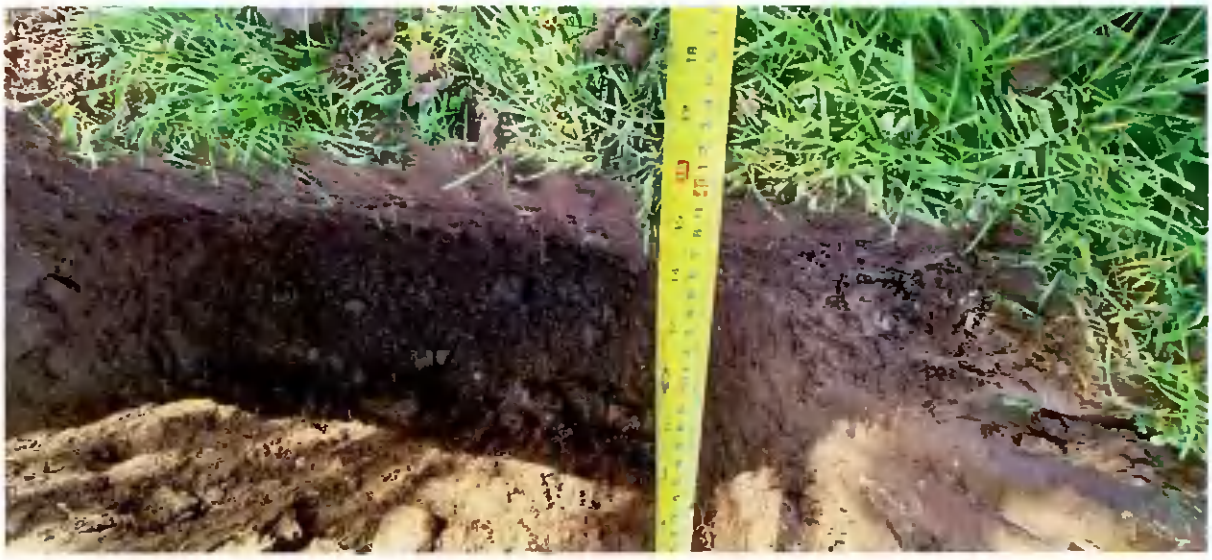

Fig 14. Trial Pit

The main findings of the trial pit examination were as follows:

- Groundwater was not encountered on-site at a depth of 1000mm below ground level.
- Rock was not encountered on-site at a depth of 1000mm below ground level.
- Vulnerability Rating Extreme which would normally indicate bedrock in the area <=2m BCL.

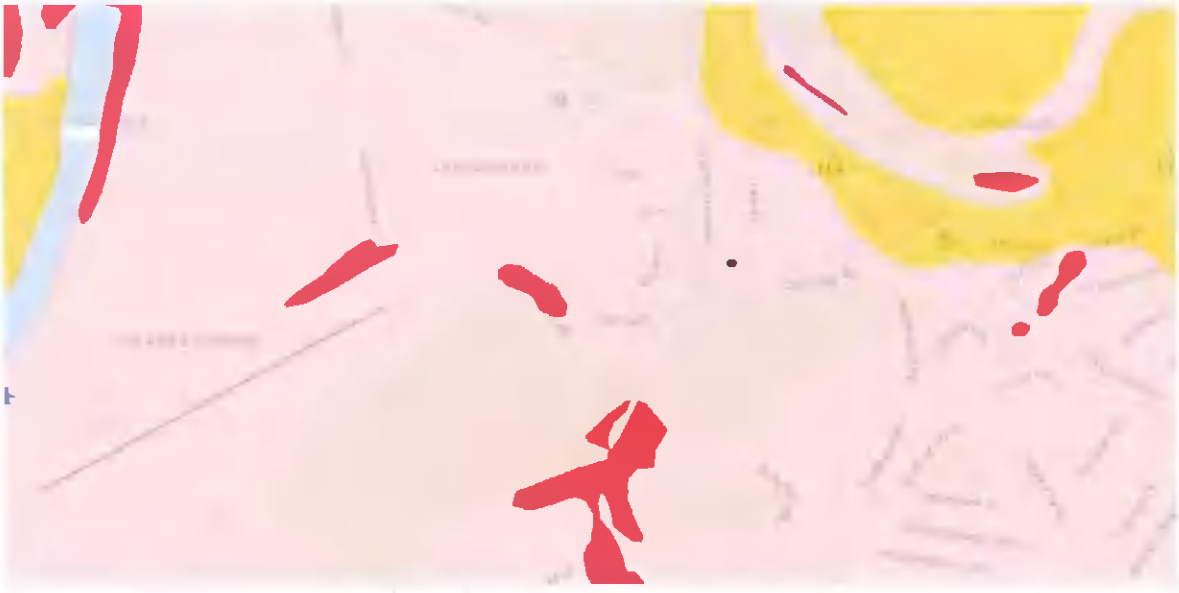

Fig 15. E Vul: Till overlain by well-drained soil

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Important Note

This report is only valid on the time of site inspection. The author cannot be responsible for any changes that could occur as result of construction, remediation, adjustment works completed afterwards. Additional ground investigation works may still be needed if further required by local authorities or any other governing bodies.

Signed: *Waldemar Debowski* Date: 14 April 2022

Qualifications: B.Eng. P.Grad.Dips. FETAC Cert MIEI MIAH

Appendix A. BRE Met Eireann Return Period Rainfall Depths, Lucan, K78P9P1