

Our ref: RBY-PPC-00-XX-RP-G-0011_12090_Soakaway Report Letter/ZC

Alex Inglis
Masdar Arlington Energy
70 Jermyn Street
London
SW1 6NY

15 April 2024

Dear Alex,

**SOAKAWAY TESTING LETTER REPORT
ROYLE BARN ROAD, ROCHDALE**

Further to your recent instruction Patrick Parsons (PP) have undertaken soakaway testing compliant to BRE365 at the above site to determine infiltration rates and to assess the potential for the adoption of soakaway drainage.

Soakaway tests were undertaken at two locations on site (SA01, SA02) as shown on the enclosed soakaway location plan. Each test pit was excavated using a JCB 3CX Backhoe Excavator and extended to various target depths into the underlying glaciofluvial Superficial Deposits. The Engineer verified logs for the test pits are enclosed for reference.

Ground Conditions

Grass or rough vegetation over topsoil was recorded in all exploratory trial pit holes to a maximum depth of 0.30m below existing ground level (begl) (SA01), consisting of a soft dark brown sandy slightly gravelly to gravelly silty topsoil material.

Beneath the topsoil, the glaciofluvial Superficial Deposits were encountered in all exploratory locations to depths of between 0.10m begl and a maximum penetrated depth of 1.60m begl consisting of brown to orangish brown slightly gravelly occasionally slightly silty fine to coarse sand. The gravel content was fine to coarse subrounded to rounded mudstone, flint and sandstone.

Groundwater strikes and seepages were not encountered during the investigation, however locally damp soils were recorded in SA02.

Soakaway Testing

The soakaway testing was undertaken in gravel filled test pits accordance with BRE 365 guidance using a 10,000 litre water bowser towed into positioned by a tractor to rapidly fill the test pits with water. Once filled with a suitable head of water, the drop in water level was to be recorded until a minimum of 75% of the total water depth had infiltrated.

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The test locations SA01 and SA02 were placed in areas of proposed attenuation based on the preliminary drainage design.

SA01 and SA02 achieved sufficient infiltration rates over a 24-hour period to be considered a successful test. Three full test cycles were completed in SA01 and two in SA02 due to site limitations. However both test results are considered to be representative of the infiltration potential.

The soakaway results have returned the calculated infiltration rates tabulated below.

Soakaway Location	Test 01	Test 02	Test 03
SA01	4.85×10^{-5}	1.44×10^{-5}	8.92×10^{-6}
SA02	3.12×10^{-6}	1.34×10^{-6}	

Conclusion

The results of the soakaway testing indicate that while infiltration was observed in SA01 and SA02, the infiltration rate slowed with time and water level depth, this is likely to be indicative of some saturation of the soils and slow infiltration away from the test locations, and potentially some silting of the pore spaces during subsequent testing. As such the lower rate for each location should be used for design.

The slower infiltration rates recorded in SA02 are likely due to the soils being damp upon excavation.

The infiltration rates are sufficient that the site is considered to be potentially suitable for the adoption of a soakaway drainage as a method of surface water disposal subject to detailed design.

It is hoped that we have fully understood your requirements. Should you require any clarification of the any of the points raised please do not hesitate to contact us.

Yours sincerely



Zara Chand

Engineer

For and on behalf PPCP Limited t/a Patrick Parsons, 12405519

Enc. RBR-PPC-XX-DR-G-704 Exploratory Hole Location Plan
12090 - Trial Pit Logs
12090 - Soakaway Calculation Sheets

GENERAL NOTES
1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.
1.2. DO NOT SCALE FROM THIS DRAWING.

Soakaway Location

Rev. Amendments Date Drg Chk

Revisions



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Client

ADV 003 Ltd

Project
Royle Barn Road, Rochdale

Drawing
Exploratory Hole Location Plan

Scales NTS At original size A1

Date 15/04/2024 Drawn by ZC Checked by

Status Draft

Drawing No. XXXX-704 Rev.



				Trial Pit Log			TrialPit No SA01 Sheet 1 of 1	
Project Name: Royle Barn Road, Rochdale				Project No. 12090		Co-ords: 388209.00 - 411211.00 Level:		Date 27/03/2024
Location: Rochdale				Dimensions (m):		1.80		Scale 1:25
Client: ADV 003 Ltd				Depth 1.60		0.60		Logged ZC
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Rough vegetation over soft dark brown silty sandy slightly gravelly TOPSOIL with frequent rootlets. Gravel is subrounded to rounded fine to coarse sandstone and mudstone.	
				1.00			Dark brown slightly gravelly slightly silty fine to medium SAND. Gravel is subrounded to rounded fine to coarse flint and mudstone. (GLACIOFLUVIAL DEPOSITS)	
							Light orangish brown slightly gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse mudstone. (GLACIOFLUVIAL DEPOSITS)	
				1.60			End of Pit at 1.60m	
							1 2 3 4 5	
Remarks: 1) Trial pit CAT scanned before excavating commenced. 2) No groundwater encountered during excavation. 3) Trial pit backfilled with gravel fill upon completion. 4) Infiltration test undertaken; see separate sheet for details								
Stability: Stable								

				Trial Pit Log			TrialPit No SA02 Sheet 1 of 1	
Project Name: Royle Barn Road, Rochdale				Project No. 12090		Co-ords: 388248.00 - 411193.00 Level:		Date 27/03/2024
Location: Rochdale				Dimensions (m):		1.30		Scale 1:25
Client: ADV 003 Ltd				Depth 1.50				Logged ZC
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.10			Grass over soft dark brown sandy gravelly silty TOPSOIL with frequent rootlets. Gravel is subrounded to rounded fine to coarse sandstone and mudstone. Brown slightly gravelly slightly silty fine to coarse SAND. Gravel is subrounded to rounded fine to coarse mudstone. (GLACIOFLUVIAL DEPOSITS) <i>Below 0.50m, mottled dark brown.</i>	
				1.00			Light orangish brown slightly gravelly fine to medium SAND. Gravel is subrounded to rounded fine to coarse sandstone. (GLACIOFLUVIAL DEPOSITS)	
				1.50			End of Pit at 1.50m	
								1
								2
								3
								4
								5
Remarks: 1) Trial pit CAT scanned before excavating commenced. 2) No groundwater encountered during excavation. 3) Trial pit backfilled with gravel fill upon completion. 4) Infiltration test undertaken; see separate sheet for details Stability: Stable.								

INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: Arlington Energy

Site: Royle Barn Road

Job No: 12090 Test No: SA01 Test 1

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	0.56
1	0.64
2	0.70
3	0.75
4	0.90
5	0.94
6	0.99
7	1.02
8	1.05
9	1.09
10	1.10
16	1.24
20	1.31
26	1.41
30	1.46
40	1.55

Gravel Filled

Depth at start of test (m bgl) =

Depth at end of test (m bgl) =

Depth of Loss in test (m)

75% level = 0.75

50% level = 1.03

25% level = 1.32

Base area of pit (m2)

ap₅₀, area of loss (m2)

Volume outflow 75 - 25% (m3)

Y/N

Y

0.46

1.60

1.14

Size of Soakaway		
Pit Dimensions		Depth of Water
Length (m) =	1.80	1.14
Width (m) =	0.70	
Depth (m) =	1.60	

From the graph:	
tp 75 (min) =	3
tp 25 (min) =	21

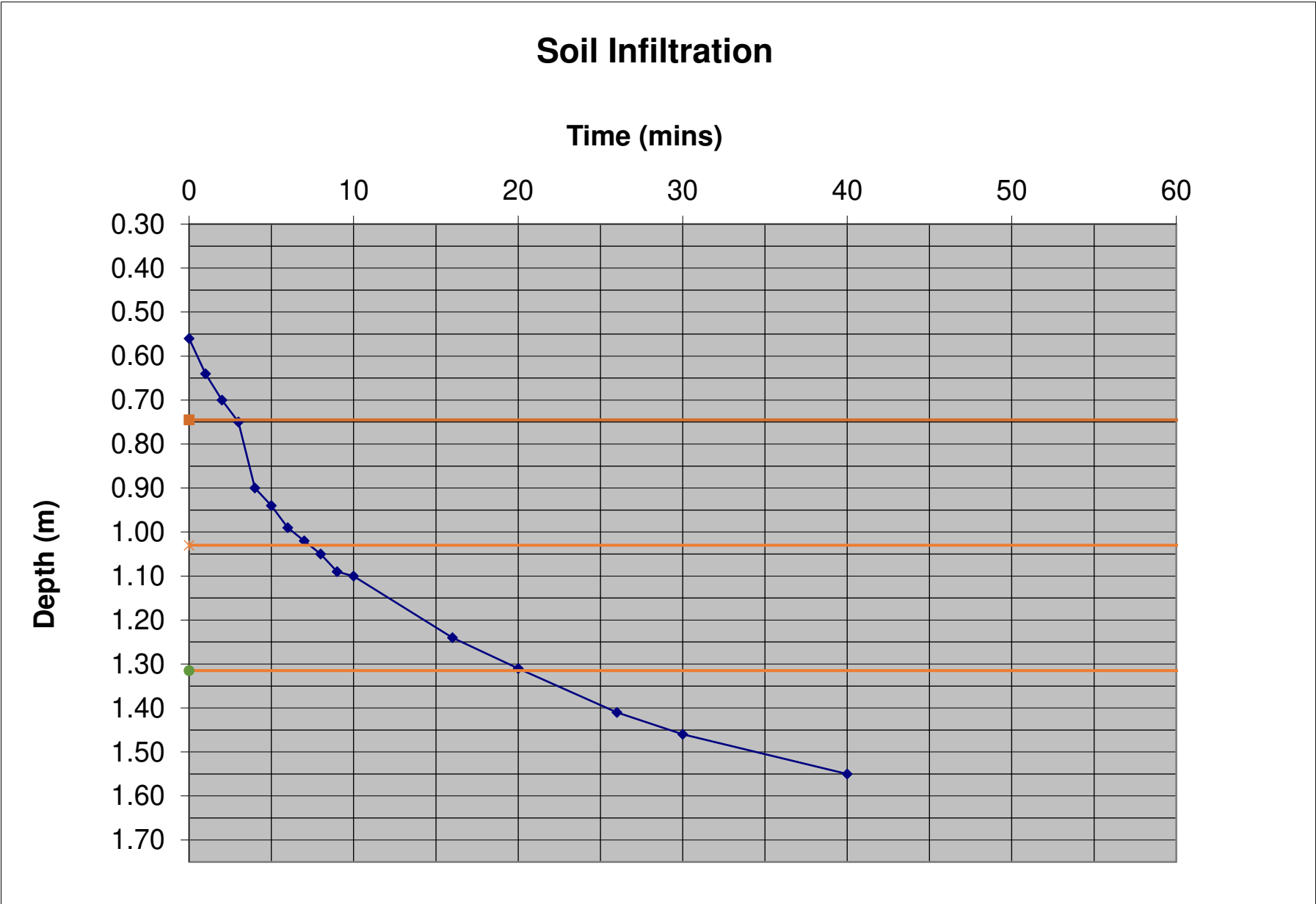
Soil infiltration rate, f, (m/s) =

Test Type
4.85E-05

Input: HA

Checked: HA

Date: 02.04.2024



INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: Arlington Energy

Site: Royle Barn Road

Job No: 12090 Test No: SA01 Test 2

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	0.50
1	0.55
2	0.59
3	0.61
4	0.63
5	0.66
6	0.68
7	0.70
9	0.74
12	0.78
20	0.89
25	0.96
32	1.03
55	1.22
68	1.30
75	1.33
88	1.40

Gravel Filled

Depth at start of test (m bgl) =

Depth at end of test (m bgl) =

Depth of Loss in test (m)

75% level = 0.78

50% level = 1.05

25% level = 1.33

Base area of pit (m2)

ap₅₀, area of loss (m2)

Volume outflow 75 - 25% (m3)

= 1.260

= 4.010

= 0.693

From the graph:

tp 75 (min) = 10

tp 25 (min) = 70

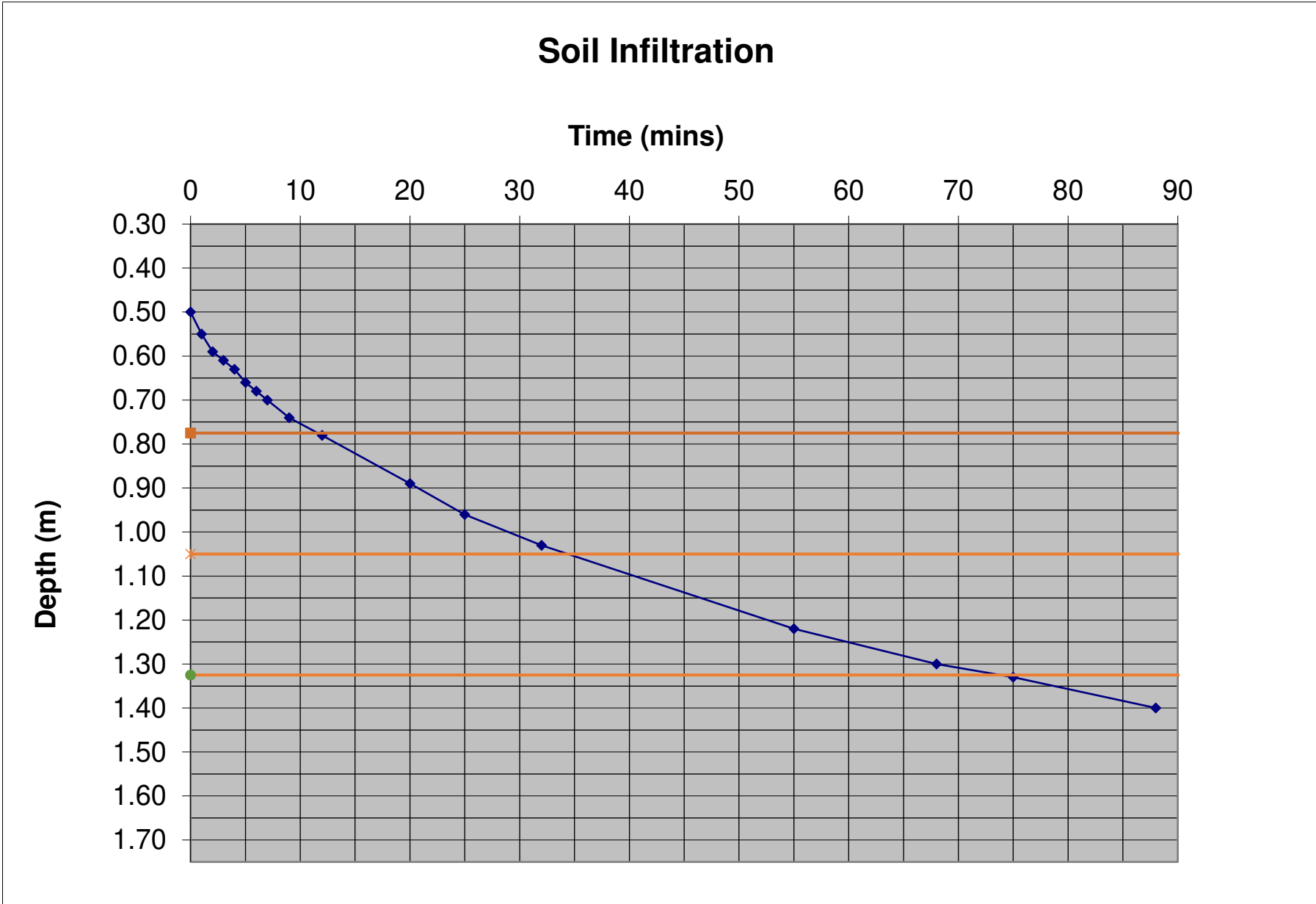
Soil infiltration rate, f, (m/s) =

1.44E-05

Input: HA

Checked: HA

Date: 02.04.2024



INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: Arlington Energy

Site: Royle Barn Road

Job No: 12090 Test No: SA01 Test 3

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	0.51
1	0.53
2	0.56
3	0.57
4	0.60
5	0.62
6	0.63
7	0.64
8	0.66
10	0.68
15	0.76
20	0.81
30	0.91
40	0.98
50	1.05
60	1.10
95	1.25
130	1.39

Gravel Filled

Depth at start of test (m bgl) =

Depth at end of test (m bgl) =

Depth of Loss in test (m)

75% level = 0.75

50% level = 1.03

25% level = 1.32

Base area of pit (m2)

ap₅₀, area of loss (m2)

Volume outflow 75 - 25% (m3)

Y/N

Y

0.46

1.60

1.14

Size of Soakaway		
Pit Dimensions		Depth of Water
Length (m) =	1.80	1.14
Width (m) =	0.70	
Depth (m) =	1.60	

= 1.260

= 4.110

= 0.718

From the graph:

tp 75 (min) =	14
tp 25 (min) =	112

Soil infiltration rate, f, (m/s) =

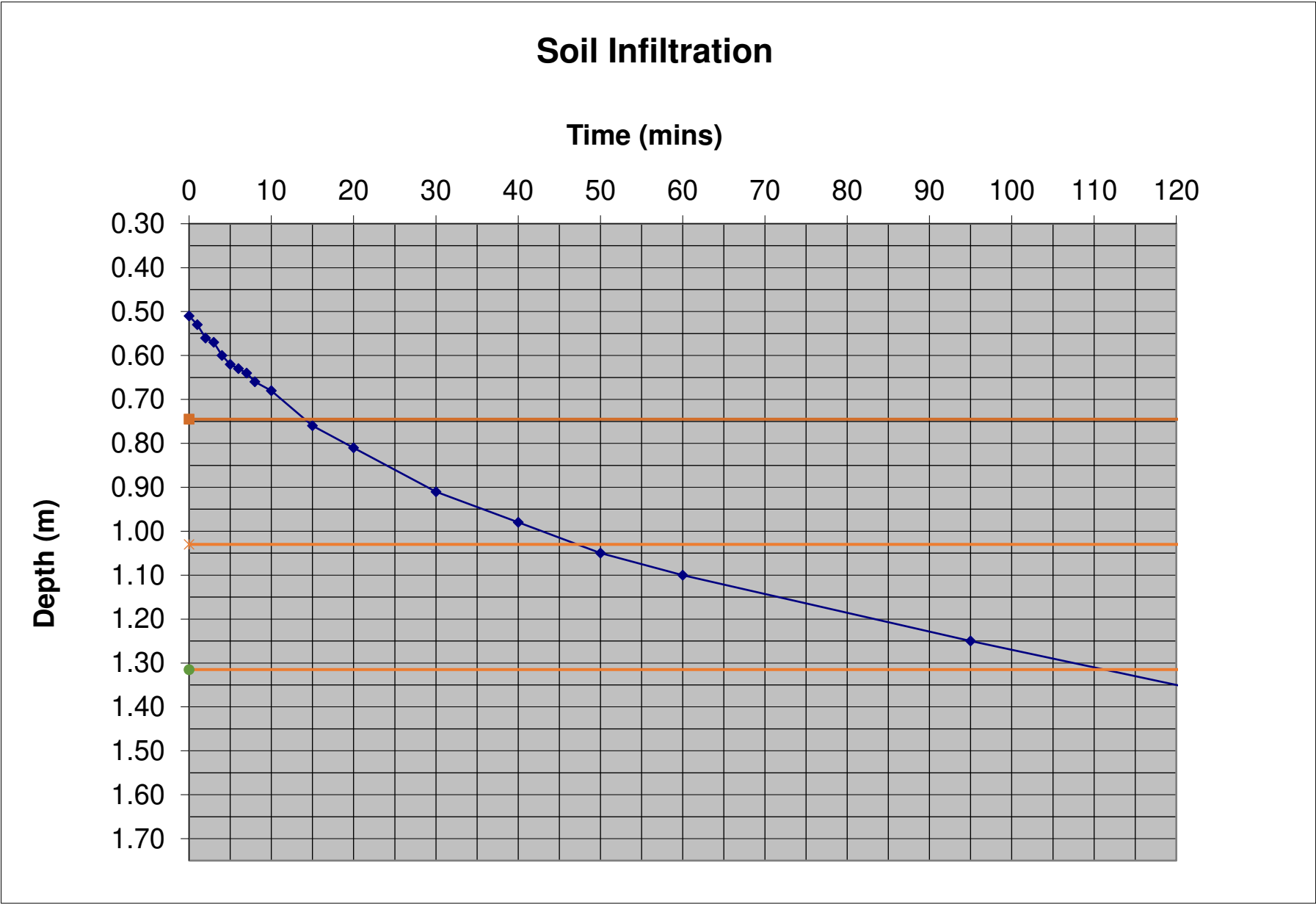
Test Type

8.92E-06

Input: HA

Checked: HA

Date: 02.04.2024



INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: Arlington Energy

Site: Royle Barn Road

Job No: 12090 Test No: SA02 Test 1

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	0
1	0.02
2	0.02
3	0.02
4	0.04
5	0.04
10	0.07
30	0.16
80	0.32
97	0.37
140	0.49
180	0.58
240	0.71
300	0.82
360	0.90
550	1.13
1252	1.42

Gravel Filled

Depth at start of test (m bgl) =

Depth at end of test (m bgl) =

Depth of Loss in test (m)

75% level = 0.38

50% level = 0.75

25% level = 1.13

Base area of pit (m2)

ap₅₀, area of loss (m2)

Volume outflow 75 - 25% (m3)

= 0.910

= 3.910

= 0.683

From the graph:

tp 75 (min) = 270

tp 25 (min) = 550

Soil infiltration rate, f, (m/s) =

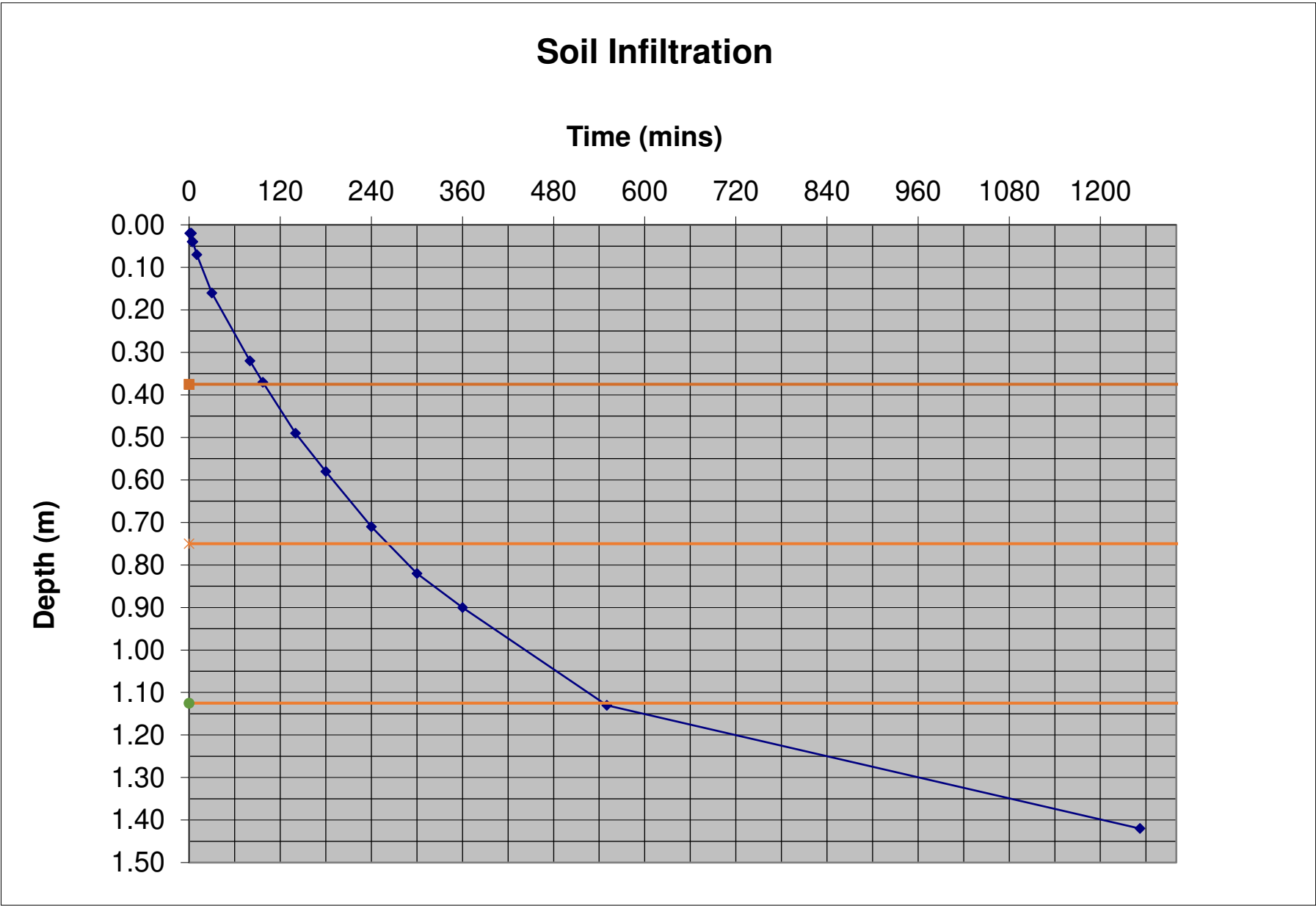
3.12E-06

Test Type

Input: HA

Checked: HA

Date: 02.04.2024



INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: Arlington Energy

Site: Royle Barn Road

Job No: 12090 Test No: SA02 Test 2

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	0.34
1	0.35
2	0.35
3	0.35
4	0.35
5	0.35
10	0.37
60	0.46
97	0.53
180	0.66
240	0.74
324	0.83
369	0.88
770	1.21

Gravel Filled

Depth at start of test (m bgl) =

Depth at end of test (m bgl) =

Depth of Loss in test (m)

75% level =	0.63
50% level =	0.92
25% level =	1.21

Base area of pit (m2)	=	0.910
ap ₅₀ , area of loss (m2)	=	3.230
Volume outflow 75 - 25% (m3)	=	0.528

From the graph:	
tp 75 (min) =	160
tp 25 (min) =	770

Soil infiltration rate, f, (m/s) =

Size of Soakaway	
Pit Dimensions	Depth of Water
Length (m) =	1.30
Width (m) =	0.70
Depth (m) =	1.50

1.16

Y/N	Y
	0.34
	1.21
	0.87

Test Type

1.34E-06

Input: ZC

Checked: HA

Date: 28/03/2024

