



SHALLOW SOIL INFILTRATION TESTING

Client	Westbourne Homes Limited
Project Type	Soil Infiltration Testing
Site	Ladds Garden Centre, Bath Road, Hare Hatch, RG10 9SB

Project	Version	Date
24-304.03	1	17 March 2026

1.0 INTRODUCTION

At the instruction of the Westbourne Developments Limited [The Client], Aviron Associates Limited [Aviron] has undertaken soil infiltration testing in general accordance with Building Research Establishment [BRE] Digest D365 - 2016, 'Soakaway Design' at the above referenced site.

The purpose of the works is to assess the infiltration of underlying soils in order to inform surface water drainage design. In accordance with our instruction two days of infiltration testing were completed.

2.0 THE SITE AND ENVIRONS

Table 1 provides a brief summary of the site and the environment it sits within. The British Geological Survey (BGS) and a previously completed Preliminary Risk Assessment (PRA) and Site Investigation (SI) report (reference 24-304.01, version 2 and dated September 2025) have been consulted in regard of anticipated geology and ground conditions.

Table 1: The Project and Site Environs	
Site Location	The site is located on Bath Road (A4), in Hare Hatch, approximately 10 kilometres (km) to the north-east of Reading. Figure 1 is enclosed within Appendix I and is presented as the Site Location Plan.
Current Land Use	The site comprises the commercial premises of Ladds Garden Village. River Sand and Gravel Limited operates at the site, supplying sand, gravel and other aggregates along with Turf Supplies, supplied rolls of turf. Figure 2 is enclosed within Appendix I and is presented as the Existing Site Layout Plan, which also provides locations of exploratory holes.
Proposed Land Use	The proposed development comprises the demolition of the existing buildings and the construction of nineteen detached and semi-detached dwellings with private gardens, garages and parking as well as associated access drive and communal amenity space. Figure 3 is enclosed within Appendix I and is presented as the Proposed Development Plan, which also provides locations of exploratory holes..
Anticipated Geology	The British Geological Survey (BGS) website indicates the anticipated geology below the site as:  Solid Geology. Lambeth Group across the majority of the site.  Solid Geology. Seaford and Newhaven Chalk Formations sub-cropping the Lambeth Group and outcropping in the north of the site.
Known Ground Conditions	Ground Investigation previously completed by Aviron and reported within our aforementioned PRA and SI report recorded the following ground conditions:

Aviron Associates Limited Head Office

Badgemore House – Badgemore Park – Gravel Hill – Henley on Thames – RG9 4NR

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Company no. 06471253 - VAT no. 929 5083 96

	- Topsoil and Made Ground of up between 0.2m and 1.1m below ground level (bgl). - Soft, firm and stiff silty gravelly CLAY (Lambeth Group) extending to depths of between 2.2m bgl to >5m bgl. - Predominantly structureless CHALK of weathering Grade Dc above Weathering Grade C and B locally proven to 5m bgl - Groundwater was not encountered to 5m bgl on 9 May 2025, nor during return standing level monitoring within monitoring wells WS1, WS4 and WS9 on 2 and 9 June 2025. A low risk (majority of the site) and moderate risk (north of the site) risk of ground dissolution (section 2.5) was reported in the aforementioned PRA and SI report. The results of saturation moisture content (SMC) testing completed as part of the PRA and SI indicate that in accordance with CIRIA C574, Engineering in Chalk, 2002, the chalk tested at depths of between 3.0m and 4.0m bgl are classified as being of predominantly low density and locally medium density.
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3.0 BRE D365 INFILTRATION TESTING

Trial pits SP1, SP2 and SP3 were excavated using a JCB 3CX on 11 March 2026 to a depth of 0.6m bgl in order to complete infiltration tests and is shown within **Figures 2** and **3**. The rate of excavation rate was steady and sides of the trial pits were reasonably stable.

The **trial pit logs** and **photographs** are presented in **Appendix II**. Ground conditions are summarised in table 2.

Table 2: Summary of Ground Conditions Encountered			
Unit	Description	From (bgl)	To (bgl)
Made Ground	SP1 Gravel on top of dark brown silty sandy gravelly CLAY. Gravel is fine rounded of flint.	GL	0.5m
Topsoil	SP2 and SP3 Grass covered dark brown sandy clayey reworked TOPSOIL	GL	0.3m
Lambeth Group	SP1, SP2 and SP3 Firm, brown, silty, sandy, gravelly CLAY. Gravel is fine to medium, subrounded of flint.	0.3m/0.5m	0.6m
Groundwater	Not encountered to 0.6m bgl		
Bgl = below ground level. GL = Ground Level.			

4.0 TEST RESULTS

Trial pits SP1, SP2 and SP3 were filled with drinking water standard water pumped from a tanker on 11 and 12 March 2026.

The subsequent fall in water level was recorded against time over the period specified within the **results** which are presented in **Appendix III**. The **calculation sheets** for are enclosed as **Appendix III** along with soil infiltration which are summarised within table 3.



Table 3: Soil Infiltration Rates				
Location (Test no.)	Testing Depths (bgl)	Strata Tested	Infiltration Rate (m/s)	Comments
SP1-F1	0.24m-0.6m	MADE GROUND-Gravelly CLAY	No rate	Following 24 hours of testing water levels failed to reach 50% or 25% full. It is not possible to determine an infiltration rate.
SP2-F1	0.3m-0.6m	Gravelly CLAY	1.88×10^{-6}	To determine the infiltration rate monitoring was completed over 2 days of testing with the 25% full level determined following a depth measurement taken on the 2 nd day.
SP2-F1	0.32m-0.6m	Gravelly CLAY	1.8×10^{-6} <i>Extrapolated</i>	Insufficient time remained during the shift on the 2 nd day of testing and therefore the infiltration rate has been determined by extrapolation of the graphical plot enclosed within Appendix III .
SP3-F1	0.37m-0.6m	Gravelly CLAY	1.6×10^{-6}	To determine the infiltration rate monitoring was completed over 2 days of testing with the 25% full level determined following a depth measurement taken on the 2 nd day.
SP3-F1	0.29m-0.6m	Gravelly CLAY	No rate	Insufficient time remained during the shift on the 2 nd day of testing. A line of best fit has been applied to the graphical plot of Appendix III and the x-axis extended to 1,400 minutes (24 hours). From 240 minutes to 360 minutes water levels remained at 0.32m bgl and thus the extrapolated line suggests the water level would fail to reach 50% and 25% full after 24 hours.

5.0 CONCLUSIONS

Whilst some 'early' infiltration occurs, shallow soakaway drained is unlikely to be viable beneath roads in the south of the site due to the clay-bound nature of the receiving strata.

The results should be presented to the project's drainage engineer for incorporation within their design.

We trust that you find the above to be satisfactory, however should you require any further information please do not hesitate to contact the undersigned.

Prepared by
James Burkitt BEng (Hons) CEnv MRICS Managing Director



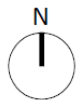
Appendix I

Figure 1 – Site Location Plan

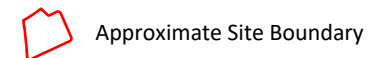
Figure 2 – Existing Site Layout and Exploratory Hole Location Plan

Figure 3 – Proposed Development and Exploratory Hole Location Plan





Legend



Notes

Figure 1

Drawing Title

Site Location Plan

Project Number 24-304.03

Project Title

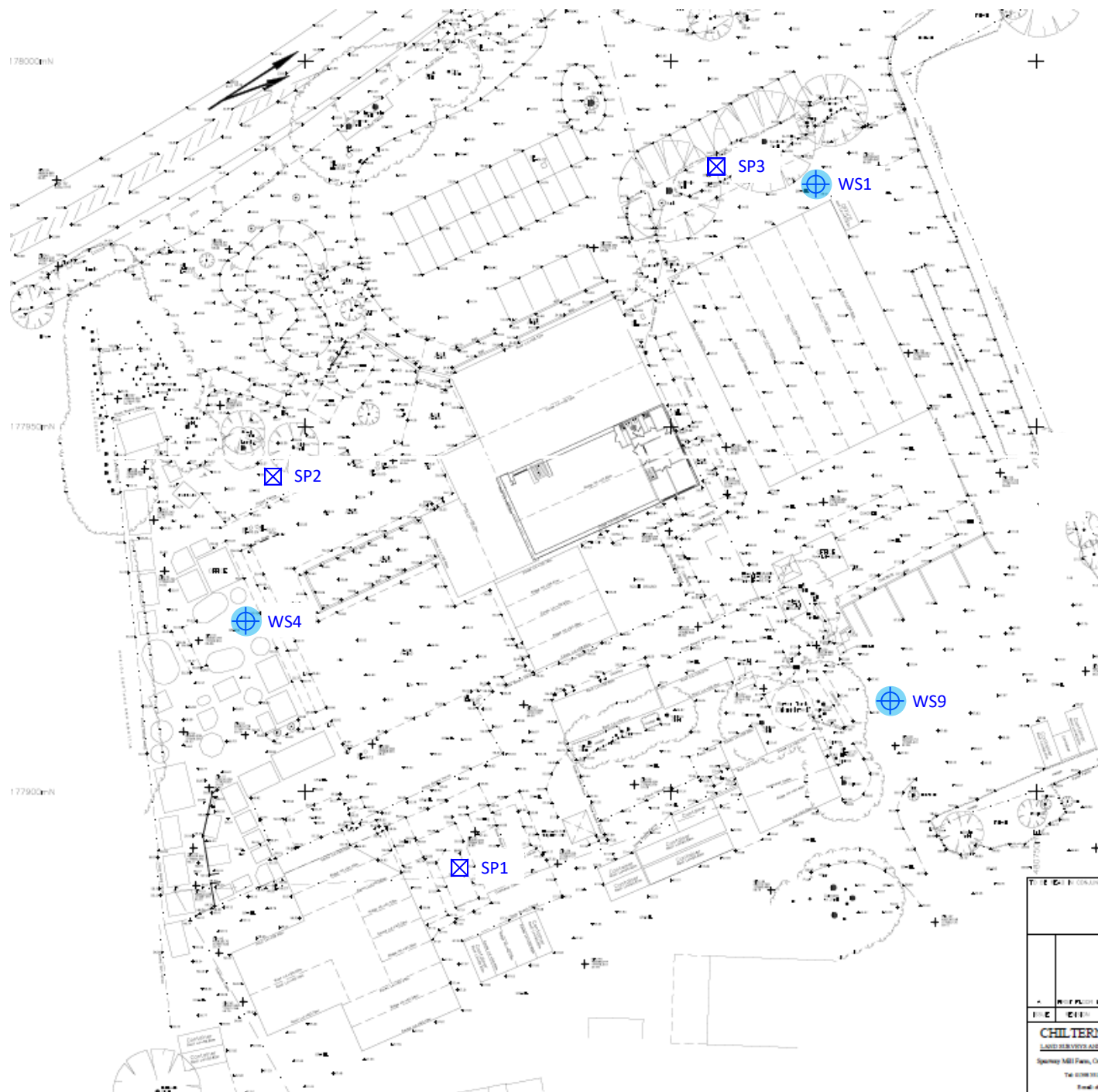
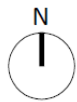
Ladds Garden Village, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

Checked by JB

Scale NTS





Legend



Monitoring Well



Machine Excavated Trial Pit/
Infiltration Test

Notes

Figure 2

Drawing Title

Existing Site Layout and Exploratory Hole
Location Plan

Project Number 24-304.03

Project Title

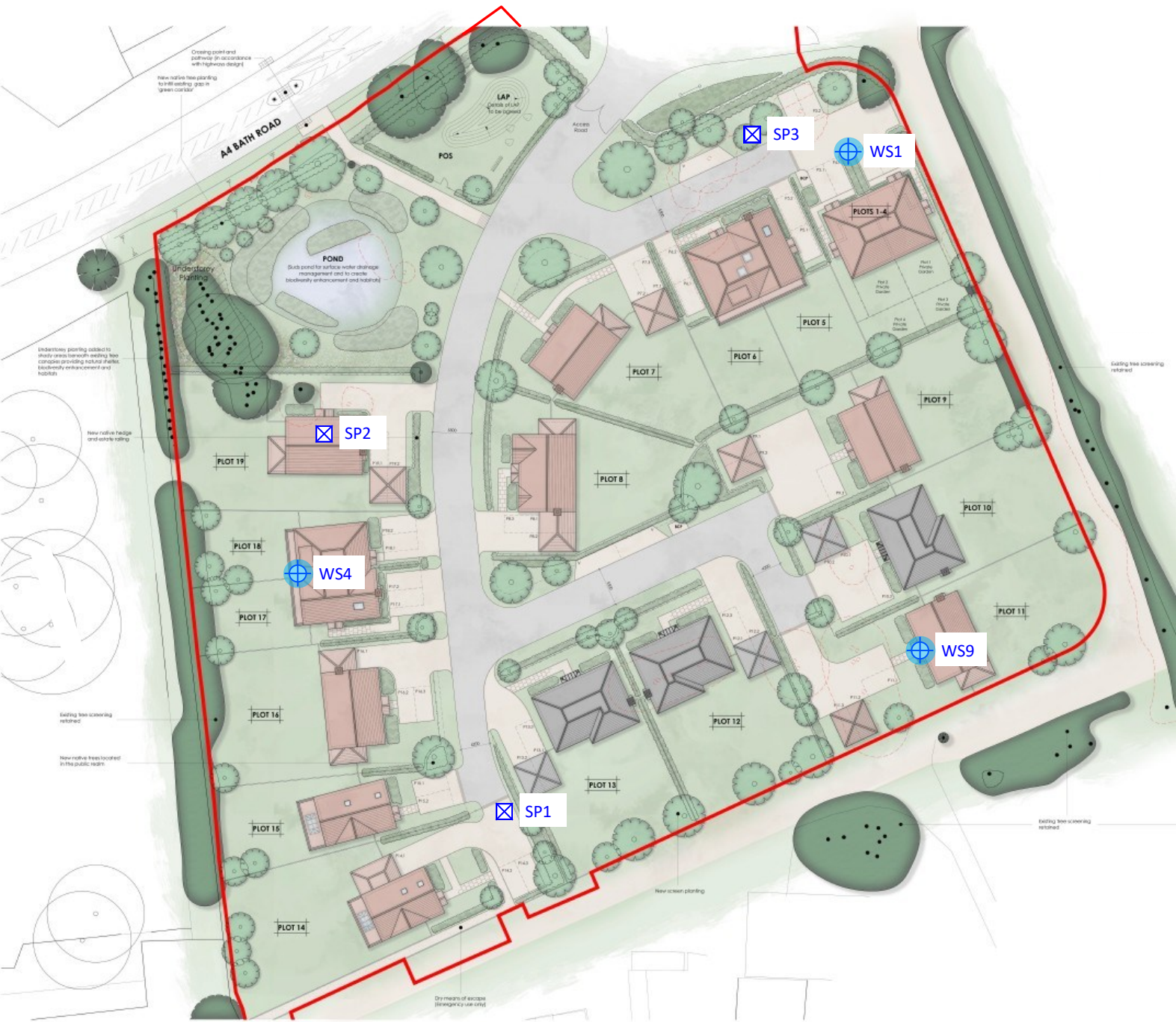
Ladds Garden Village, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

Checked by JB

Scale NTS





Legend

-  Monitoring Well
-  Machine Excavated Trial Pit/Infiltration Test

Notes

Figure 3

Drawing Title	
Proposed Development and Exploratory Hole Location Plan	
Project Number	24-304.03
Project Title	
Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB	
Drawn by	OB
Checked by	JB
Scale	NTS



Appendix II
Trial Pit Logs and Photographs





Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.00	0.45	0.60	11/03/2026	Dry	-	-	-	
						By		
					Logged	OC		
					Checked	OB		Scale 01:25

[illegible]

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.10	0.45	0.60	11/03/2026	Dry	-	-	-	
						By		
					Logged	OC		
					Checked	OB		
								Scale 01:25

[illegible]

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.00	0.45	0.60	11/03/2026	Dry	-	-	-	
						By		
					Logged	OC		
					Checked	OB		Scale 01:25



SP1 Hole Photo



SP2 Hole Photo



SP3 Hole Photo



SP1 Arisings



SP2 Arisings



SP3 Arisings

Appendix III
BRE D365 Infiltration Test Results



Soil Infiltration Test

24-304.03: Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB



Test Pit SP1-1

Date: 11/03/2206

Readings Recorded By: OC

Pit Dimensions: 1m(l) x 0.45m(w) x 0.6m(d)
Start Water Level: 0.24m

Actual Storage Volume: 0.27 m³
Effective Depth: 0.36 m

Time (mins)	Depth BGL (m)
0	0.240
1	0.240
2	0.240
3	0.240
4	0.240
5	0.240
10	0.250
20	0.260
30	0.270
40	0.280
50	0.280
60	0.290
90	0.300
120	0.310
180	0.330
1188	0.360
1470	0.370

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

Effective Storage Volume, V : 1m x 0.45m x 0.36m
 V : 0.162 m³

V_{p75-25} : 0.081 m³

Effective Internal Surface Area, a_{p50} : 0.36m² + 0.162m² + 0.45m²
 a_{p50} : 0.972 m²

Time of water level fall, t_{p75-25} : - mins
 t_{p75-25} : 0 mins
 t_{p75-25} : 0 secs

Soil infiltration rate, f : 0.081/(0.972 x 0)
 f : #DIV/0! ms⁻¹



Soil Infiltration Test

24-304.03: Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB



Test Pit SP2-1

Date: 11/03/2206

Readings Recorded By: OC

Pit Dimensions: 1.1m(l) x 0.45m(w) x 0.6m(d)
Start Water Level: 0.3m

Actual Storage Volume: 0.30 m³
Effective Depth: 0.30 m

Time (mins)	Depth BGL (m)
0	0.300
1	0.300
2	0.300
3	0.300
4	0.300
5	0.310
10	0.320
20	0.330
30	0.340
40	0.350
50	0.360
60	0.370
90	0.390
120	0.410
180	0.430
1200	0.600

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

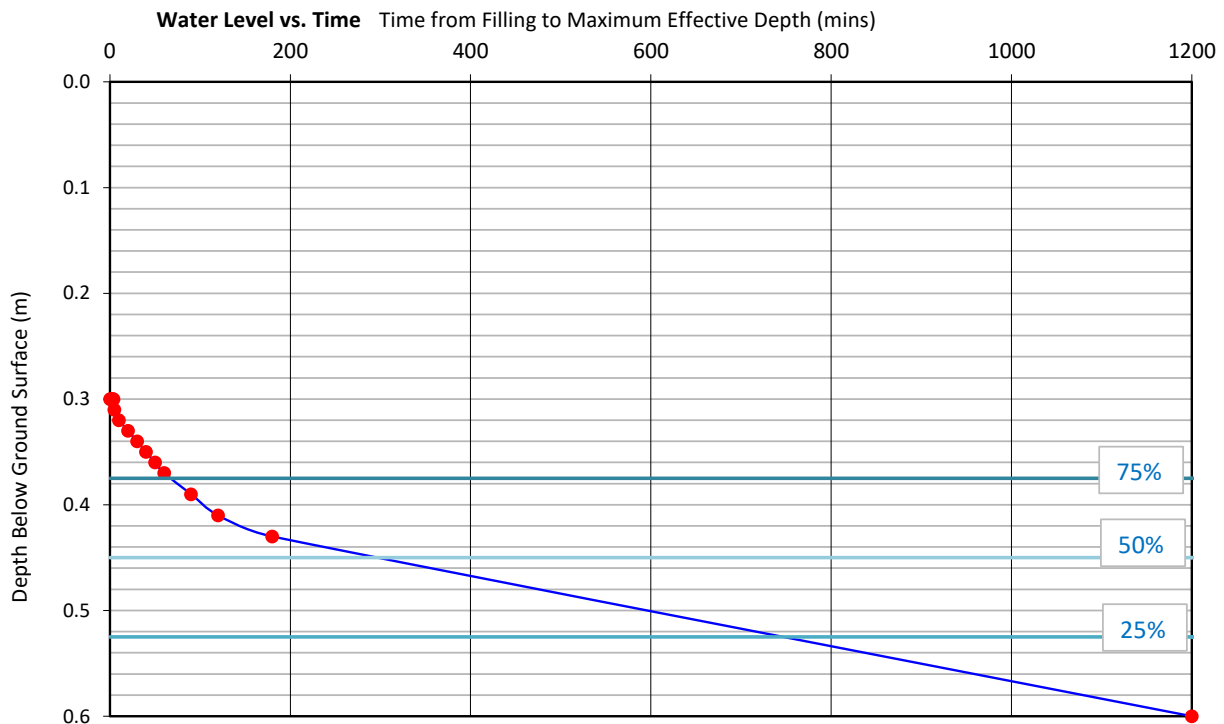
Effective Storage Volume, V : 1.1m x 0.45m x 0.3m
 V : 0.1485 m³

V_{p75-25} : 0.074 m³

Effective Internal Surface Area, a_{p50} : 0.33m² + 0.135m² + 0.495m²
 a_{p50} : 0.960 m²

Time of water level fall, t_{p75-25} : 750 - 65 mins
 t_{p75-25} : 685 mins
 t_{p75-25} : 41100 secs

Soil infiltration rate, f : 0.07425/(0.96 x 41100)
 f : 1.88E-06 ms⁻¹



Soil Infiltration Test

24-304.03: Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB



Test Pit SP2-2

Date: 12/03/2206

Readings Recorded By: OC

Pit Dimensions: 1.1m(l) x 0.45m(w) x 0.6m(d)
Start Water Level: 0.32m

Actual Storage Volume: 0.30 m³
Effective Depth: 0.28 m

Time (mins)	Depth BGL (m)
0	0.320
1	0.320
2	0.320
3	0.320
4	0.320
5	0.320
10	0.320
20	0.320
30	0.330
40	0.330
50	0.330
60	0.340
90	0.340
120	0.350
180	0.360
240	0.370
300	0.380
360	0.390

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

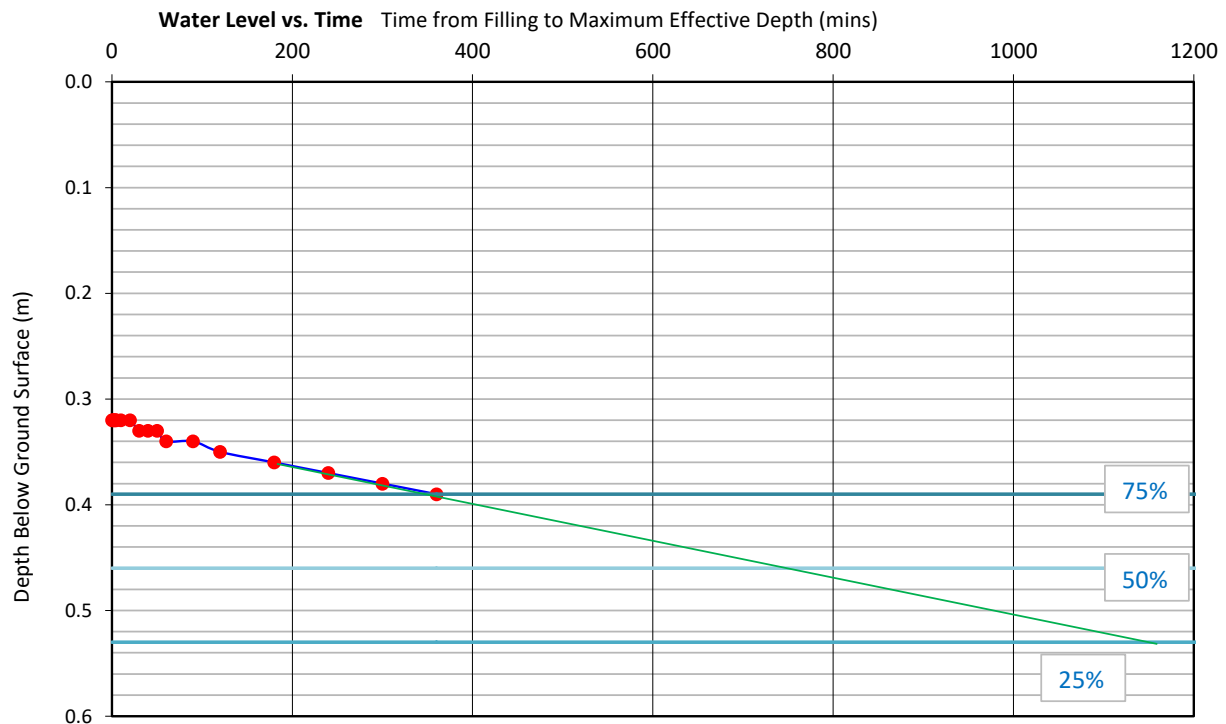
Effective Storage Volume, V : 1.1m x 0.45m x 0.28m
 V : 0.1386 m³

V_{p75-25} : 0.069 m³

Effective Internal Surface Area, a_{p50} : 0.308m² + 0.126m² + 0.495m²
 a_{p50} : 0.929 m²

Time of water level fall, t_{p75-25} : 1050 - 360 mins
 t_{p75-25} : 690 mins
 t_{p75-25} : 41400 secs

Soil infiltration rate, f : 0.0693/(0.929 x 41400)
 f : 1.80E-06 ms⁻¹



Soil Infiltration Test

24-304.03: Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB



Test Pit SP3-1

Date: 11/03/2206

Readings Recorded By: OC

Pit Dimensions: 1m(l) x 0.45m(w) x 0.6m(d)
Start Water Level: 0.37m

Actual Storage Volume: 0.27 m³
Effective Depth: 0.23 m

Time (mins)	Depth BGL (m)
0	0.370
1	0.370
2	0.370
3	0.370
4	0.370
5	0.370
10	0.380
20	0.380
30	0.380
40	0.380
50	0.390
60	0.390
90	0.400
120	0.400
180	0.410
240	0.420
1247	0.590

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

Effective Storage Volume, V : 1m x 0.45m x 0.23m
 V : 0.1035 m³

V_{p75-25} : 0.052 m³

Effective Internal Surface Area, a_{p50} : 0.23m² + 0.1035m² + 0.45m²
 a_{p50} : 0.784 m²

Time of water level fall, t_{p75-25} : 950 - 260 mins
 t_{p75-25} : 690 mins
 t_{p75-25} : 41400 secs

Soil infiltration rate, f : 0.05175/(0.7835 x 41400)
 f : 1.60E-06 ms⁻¹



Soil Infiltration Test

24-304.03: Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB



Test Pit SP3-2

Date: 12/03/2206

Readings Recorded By: OC

Pit Dimensions: 1m(l) x 0.45m(w) x 0.6m(d)
Start Water Level: 0.29m

Actual Storage Volume: 0.27 m³
Effective Depth: 0.31 m

Time (mins)	Depth BGL (m)
0	0.290
1	0.290
2	0.290
3	0.290
4	0.290
5	0.290
10	0.290
20	0.290
30	0.290
40	0.290
50	0.290
60	0.300
90	0.300
120	0.300
180	0.310
240	0.320
300	0.320
360	0.320

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

Effective Storage Volume, V : 1m x 0.45m x 0.31m
 V : 0.1395 m³

V_{p75-25} : 0.070 m³

Effective Internal Surface Area, a_{p50} : 0.31m² + 0.1395m² + 0.45m²
 a_{p50} : 0.900 m²

Time of water level fall, t_{p75-25} : 900 - 260 mins
 t_{p75-25} : 640 mins
 t_{p75-25} : 38400 secs

Soil infiltration rate, f : 0.06975/(0.8995 x 38400)
 f : 2.02E-06 ms⁻¹

