

BRE365 SOAKAGE TESTING AT GROVELANDS ROAD, READING, BERKSHIRE, RG7 1DP.

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Executive Summary

H2Ogeo Ltd was instructed to undertake infiltration (soakage) testing in accordance with *BRE Digest 365: Soakaway Design* at 19 Grovelands Road, Reading, Berkshire, RG7 1DP on 5 June 2026.

The purpose of the investigation was to calculate the infiltration rates in the near-surface soils to enable an infiltration-based Sustainable Drainage System.

One trial pit was excavated to 1.5mbgl and tested in accordance with BRE365.

One test was attempted in the test pit with water-level measurements recorded at defined time intervals to determine infiltration performance. Analysis was undertaken using the BRE365 infiltration formula based on the 75%–25% effective storage interval and the internal surface area at 50% storage depth.

Testing did not reach the 25% empty threshold and therefore failed the criteria of BRE365.

Data was projected to resolve the BRE365 equation and equated to 1.01×10^{-07} m/sec.

No groundwater was observed in the test pit during excavation.

Under the SuDS hierarchy subsequent drainage assessments should evaluate the feasibility of discharge to nearby watercourses or other suitable receiving systems, incorporating appropriate attenuation and flow control measures to ensure that post-development runoff rates do not increase flood risk either on-site or elsewhere within the catchment.

1 Introduction

H2Ogeo Ltd undertook infiltration (soakage) testing in accordance with *BRE Digest 365: Soakaway Design* at 19 Grovelands Road in Berkshire.

The purpose of the investigation was to assess the suitability of the near-surface soils for supporting infiltration-based Sustainable Drainage Systems (SuDS). The works were carried out in one excavated trial pit positioned to represent the location of the proposed soakage feature, enabling site-specific assessment of infiltration performance.

The testing was undertaken by H2Ogeo Ltd and its sub-contractors following the procedural requirements of BRE365, including controlled filling, measurement of water-level recession over defined time intervals and detailed observation of ground conditions encountered during excavation.

The data collected provide the basis for determining characteristic infiltration rates.

1.1 Project Details

Site Name: Grovelands Road

Site Address: 19 Grovelands Road, Reading, Berkshire, RG7 1DP

Client: Murray Linsdale

Test Date: 5 June 2026

Weather Conditions: Mix of cloudy, light rains and sunny intervals throughout the day, temperatures ranging from 15 to 17°C.

2 BRE365 Testing

2.1 Test Methodology

One test pit was excavated in the centre of the site in accordance with *BRE Digest 365: Soakaway Design*.

The soil conditions encountered in the test pit is described below:

Table 1 Test Pit Descriptions

TP ID	From (mbgl)	To (mbgl)	Description
SA1	0	0.2	Concrete ballast slab, 5mm rebar mesh at base.
	0.2	0.25	Dark grey fine to medium sands with frequent rounded to sub rounded coarse to fine gravel flints.
	0.25	0.3	Black coarse to fine slightly clayey sands with frequent coarse to medium angular to sub singular charcoal fragments.
	0.3	0.6	Stiff dark slightly sandy clay.
	0.6	1.5	Firm light blue mottled orange slightly sandy clay with occasional medium to fin sub singular to sub rounded Chalk and gravel flints.

The table below summarises the location and dimensions of the test pits:

Table 2 Test Pit Details

Test Pit ID	Easting	Northing	National Grid Reference	Length (m)	Width (m)	Test Depth (m)
SA1	471976	166845	SU 71976 66845	1.2	0.3	1.5

The location of the pit is presented in Figure 1 and photos in Figure 2.

Following excavation, TP1 was filled to 0.5 metres below ground level (mbgl) with clean water then levels recorded at defined time intervals to capture the rate of infiltration through the soils.

Recorded measurements represent the depth to water below ground level (bgl), increasing as the test pits drained, in accordance with BRE365 methodology.

Only one test took place that was abandoned following 4 hours of testing with a fall of only 0.03m during the testing duration. On completion the pit was backfilled.

3 Test Results

The records of the test are presented in Annex A and have been analysed using the following formulae:

$$\text{Soil Infiltration Rate } f = Vp(75-25) / (as50 \times tp(75-25))$$

Where:

- Vp_{75-25} effective storage volume of water in the soakage trial pit between 75% and 25% effective storage depth
- as_{50} internal surface area of the soakage trial pit up to 50% effective storage depth and including the base area
- tp_{75-25} time for water level to fall from 75% to 25% effective storage depth

The test results are shown in the table below.

The single test did not reach completion (25 to 75% effective storage) over a 4-hour period and therefore the 25 and 75% empty period has been projected.

Table 3 Analysis Results

TP ID	Test	m/sec	Average/TP m/sec
SA1	1 of 1	$1.01 \times 10^{-07} \text{m/sec}$	$1.01 \times 10^{-07} \text{m/sec}$

SA1 remained dry throughout the testing with no groundwater ingress.

4 Summary

Infiltration rates on site were tested using the BRE365 standard methodology.

The single test carried out on the 5 June 2026 failed BRE365. The test did not reach the 25% and 75% drain down thresholds and therefore the values have been projected graphically and the resultant infiltration value is $1.01 \times 10^{-07} \text{m/sec}$ or $3.63 \times 10^{-04} \text{m/day}$.

SA1 was dry during the excavation down to 1.5mbgl.

Surface water drainage features were noted on site and these are presented in the photo log with anticipated flow directions towards the front access and egress.

4.1 SuDS Hierarchy

The management of surface water runoff should follow the Sustainable Drainage Systems (SuDS) hierarchy, which prioritises disposal methods according to their environmental sustainability and effectiveness.

The preferred option is infiltration to ground, where runoff is discharged directly into the underlying soils and strata, thereby replicating natural drainage processes, promoting groundwater recharge and reducing downstream flood risk. Where infiltration is not feasible, as in on this site, the hierarchy requires consideration of discharge to a surface water body, followed by discharge to a surface water sewer and, only as a last resort, discharge to a combined sewer.

Infiltration testing undertaken at the site in accordance with BRE Digest 365 demonstrated that the underlying soils do not provide sufficient infiltration capacity to support soakaways or other infiltration-based drainage systems. As a result, the preferred drainage option within the SuDS hierarchy has been discounted and alternative means of surface water disposal must now be considered.

Subsequent drainage assessments should evaluate the feasibility of discharge to nearby watercourses or other suitable receiving systems, incorporating appropriate attenuation and flow control measures to ensure that post-development runoff rates do not increase flood risk either on-site or elsewhere within the catchment.

5 Figures

Figure 1 – Trial Pit Location

Figure 2 - Site Photos

Figure 1 – Trial Pit Location

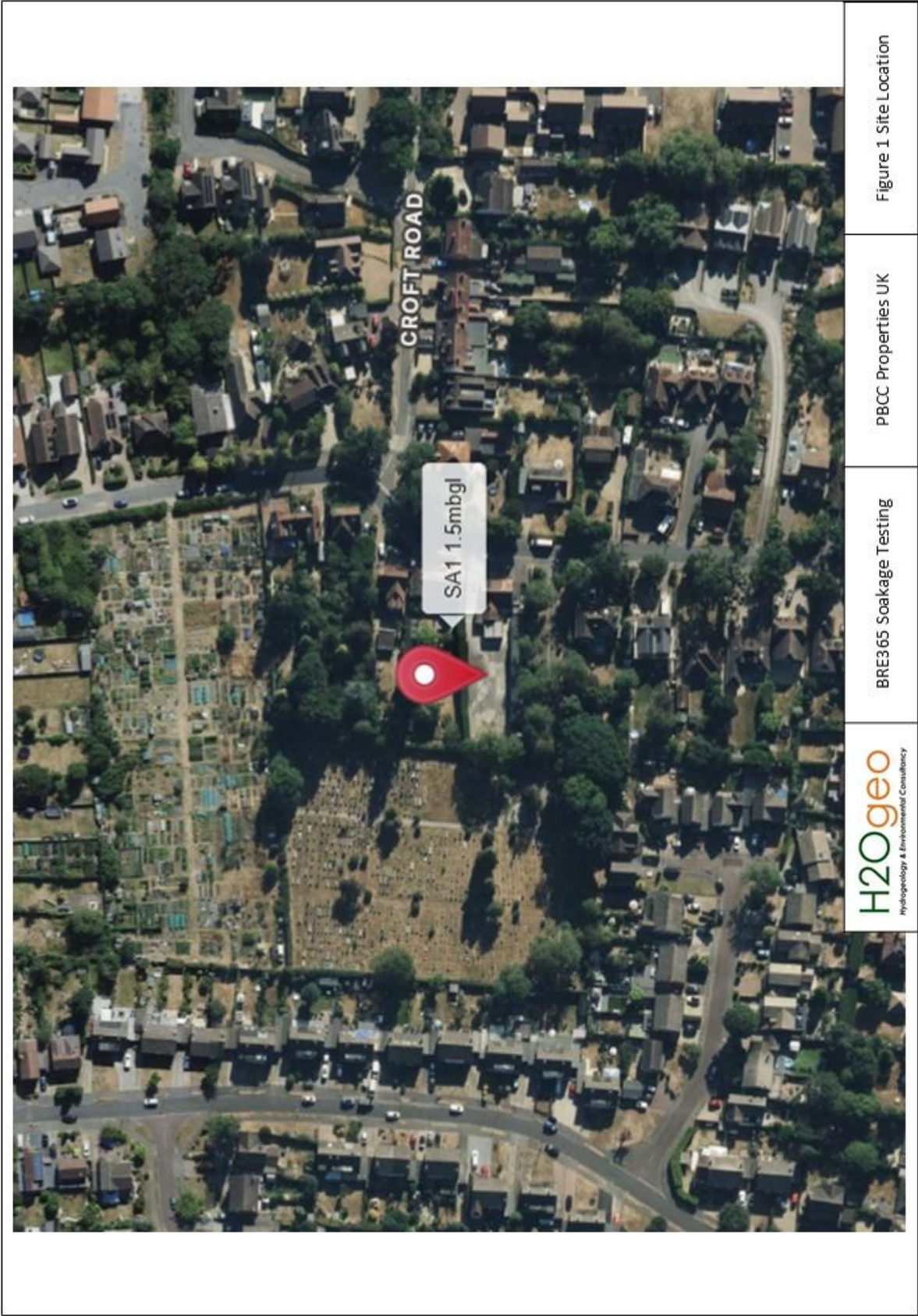


Figure 2 - Site Photos

	Looking East		SA1 Test Pit		Excavated Clay material		Surface water drainage features		Anticipated conveyance
					Surface water drainage feature				
					BRE365 Soakage Testing	PBCC Properties UK	Figure 2 Photos		

6 Appendices

Appendix A – Results

Test Pit	SA1
Test Number	1 of 1
Width (m)	0.3
Length (m)	1.2
Depth (m)	1.5
Time (Minutes)	Water Level (mbgl)
0	0.5
1	0.5
2	0.5
3	0.5
5	0.5
10	0.5
20	0.5
30	0.5
60	0.51
90	0.51
120	0.52
180	0.53
240	0.53
Notes	

SA1 - Calculations

