OBR1-SMART-00-XX-DOC-A-0050 Infiltration Test Report

Project Title	119 Old Bath Road
Client Name	███████████
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Introduction

This report presents the results of infiltration testing carried out in accordance with BRE Digest 365: Soakaway Design (2016).

The purpose of the test is to determine the infiltration rate of the soils on site to assess their suitability for a soakaway drainage system, to support a planning application for an outbuilding at 119 Old Bath Road, RG10 9QN.

Site Details and Methodology

Infiltration testing was undertaken in general accordance with the procedures set out in BRE Digest 365.

Trial Pit: Excavated to a depth of [1 m] below existing ground level, with plan dimensions approximately [1.2 m × 0.5 m].

Location: 6m from proposed building.

Preparation: The pit was filled rapidly with water on 19.09.2025 to a depth of 1.0 m and allowed to soak overnight.

Testing: The pit was refilled with clean water to a depth of 1.0 m, and the time taken for the water level to fall by 25%, 50% and 75% of the effective depth was recorded.

Test Date: 20th and 21st September 2025
Number of Tests: Three full tests.
Weather Conditions: Dry and Overcast

Depth	Description	Status
0 – 0.4m	Silt/Clay, Crumb Nature, Medium Density, Brown colour	
0.4 – 1m	Clay intermixed with stone, Medium density, Brown colour	

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Results

Test 1	
Filled at 10am 20.09.25	
Percentage drained	Duration
25%	40 Mins
50%	175Mins
75%	370Minutes

Test 2	
Filled at 3pm 20.09.25	
Percentage drained	Duration
25%	48 Mins
50%	215Mins
75%	490Mins

Test 3	
Filled at 9am 20.09.25	
Percentage drained	Duration
25%	79Mins
50%	247Mins
75%	550Mins

Soakaway Size Calculation

The site is located in Charvil, Berkshire, which typically experiences a design rainfall intensity of 50mm/hour for a 1 in-10-year storm event.

1. **Calculate Rainfall Volume**
   Impermeable area feeding soakaway: 46 m²
   Rainfall Depth Assuming a 1-hour storm at 50 mm/hour = 0.050 m
   Volume: (Impermeable Area × Rainfall Depth) 46 m² × 0.050 m = 2.3 m³

2. **Soakaway Void Ratio**
   Crate System (95% void): Required Volume = 2.3 m³ / 0.95 ≈ 2.4m³
   Suitable Soakaway Dimensions: 2.5 m (L) × 1m (W) × 1m (D)

Infiltration Rate Calculation

Test hole volume between 75% and 25% effective depth:
V(p75-25) = 1.2 x 0.5 x (0.75 – 0.25) = 0.3m3

The mean surface area through which outflow occurs, taken to be the hole sides at 50% effective depth, including the base of the pit:
A(p50) = 3(1.2 x 0.5) + 2(0.5 x0.5) = 2.3m2

The time taken for water to drain from 75% to 25% full:
t(p75-25) = 550 - 79 = 471 minutes

The soakaway design infiltration rate (f) is calculated as the lowest infiltration rate derived from the test results.

- **V(p75–25)** = 0.3 m³
- **A(p50)** = 2.3 m²
- **t(p75–25)** = 471 minutes = 471 × 60 = **28,260 seconds**

Step 1: Use the BRE365 infiltration rate formula:

$$f = \frac{V_{p75-25}}{A_{p50} \times t_{p75-25}}$$

$$f = \frac{0.3}{2.3 \times 28260} = \frac{0.3}{64998} \approx 0.000004616 \text{ m/s}$$

Step 2: Convert to mm/hr
1 m = 1000 mm
1 hour = 3600 seconds

$$0.000004616 \text{ m/s} = 0.004616 \text{ mm/s}$$
$$0.004616 \times 3600 = \boxed{16.6 \text{ mm/hr}}$$

Final Infiltration Rate: <u>16.6 mm/hr</u>

Conclusion:

The infiltration rate is **16.6 mm/hr**, which places the soil on site in **Class 3 - moderate permeability** on the BRE365 Soil Classification. Based on these results, the ground at 119 Old Bath Road is considered suitable for the use of adequately designed soakaways for surface water disposal.

Appendicies

- Appendix A – Site Location Plan
- Appendix B – Trial Pit Logs and Photographs

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Appendix A – Site Location Plan

Fig A. Proposed site plan with proposed soakaway location

PLEASE REFER TO DRAINAGE PLAN OBR-002

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Appendix B

Fig 1. Trial Pit Empty

Fig 2. Trial Pit Full - Starting to Drain

Fig 3. Trial Pit Draining

Fig 4. Trial Pit Draining

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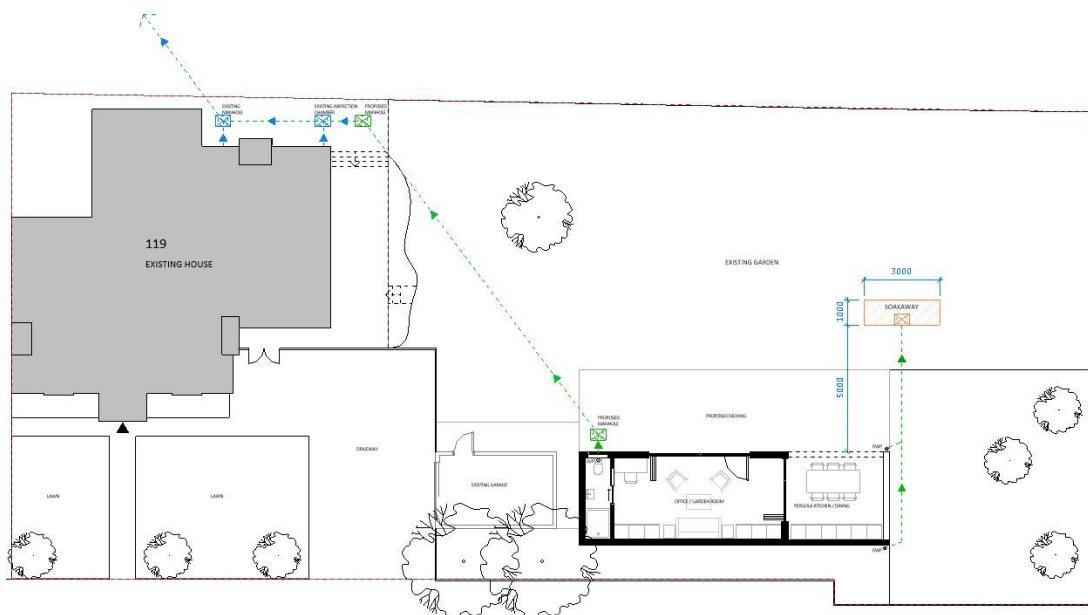W: www.smartdevelopmentsltd.co.uk

Fig 5. Soil Close Up 1

Fig 6. Soil Close Up 2

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smart. DEVELOPMENTS

INFILTRATION TEST DATA

Test 1	
Time Elapsed (Mins)	Total drop in water level (cm)
15	13
30	19
45	24
60	27
75	30
90	33
105	36
120	39
135	41
150	43
165	45
180	47
195	49
210	51
225	54
240	57
255	60
270	63
285	65
300	67
315	69
330	71
345	73
360	74
375	75

Test 2	
Time Elapsed (Mins)	Total drop in water level (cm)
15	14
30	19
45	23
60	27
75	30
90	32
105	34
120	36
135	38
150	40
165	42
180	44
195	46
210	48
225	51
240	53
255	55
270	57
285	59
300	61
315	63
330	64
345	65
360	66
375	67
390	68
405	69
420	70
435	71
450	72
465	73
480	74
495	75

Test 3	
Time Elapsed (Mins)	Total drop in water level (cm)
15	5
30	10
45	15
60	20
75	25
90	29
105	32
120	34
135	36
150	38
165	40
180	42
195	44
210	46
225	48
240	50
255	52
270	54
285	56
300	58
315	60
330	62
345	63
360	64
375	65
390	66
405	67
420	68
435	69
450	70
465	71
480	72
495	73
510	73
525	74
540	74
555	75