



29 May 2025

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FAO Peter Harding

Ref: 24014

60 Hamble Lane, Hamble, Hants, SO31 4JP
Drainage Provision

Dear Sirs

3 cycles of BRE365 permeability testing were undertaken between 8th and 13th February 2024. The site soils encountered were top soil over a sandy, silty Gravel.

Test pit TP1 was located adjacent the proposed soakaway location shown on Solent Design proposed site layout plan SD-2011-101-C (copy attached). Permeabilities results of 1.60×10^{-5} , 1.20×10^{-5} , and 1.28×10^{-5} m/sec were determined. A design permeability of 1.20×10^{-5} m/sec has been adopted for the soakaway design. A copy of the test results is attached.

Test pit TP2 was located under the proposed car park location shown on Solent Design proposed site layout plan SD-2011-101-G. Permeabilities results of 3.43×10^{-6} , 3.39×10^{-6} , and 3.19×10^{-6} m/sec were determined. A design permeability of 3.19×10^{-6} m/sec has been adopted for the permeable pavement design. A copy of the test results is attached.

The design calculation for the soakaway is attached. The 10.0m x 4.0m x 1.2m deep geocellular soakaway has a required storage capacity of 44.5 m³ and meets this providing 45.8m³.

The design calculation for the permeable pavement is attached. The catchment is some 440m² draining into a permeable area of some 370m². A CGA foundation of 35% void content will provide 32.4m³ of storage to meet the 28.5m³ required.

The new development parcel is some 0.23 Ha in size (excluding land retained to the original frontage dwellings)

The surface water drainage provision provides a tier 1 (infiltration) discharge for 1%AEP + climate change +10% urban creep and accords with policy requirements.

Foul water drainage

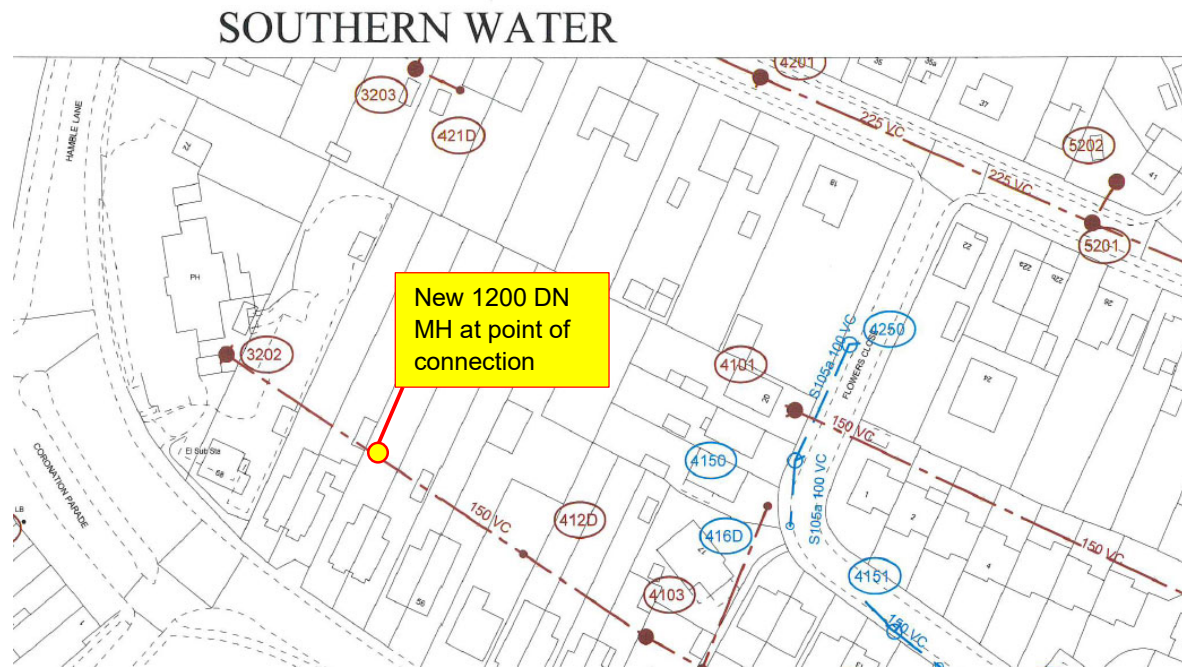
The site falls gradually to the south and the proposed dwellings are located at the south of the development parcel. There is an existing 150mm DN public foul sewer passing through the land under the applicant's control (MH3202-MH4103) and immediately south of the proposed dwellings.

It is proposed to develop 7 dwellings which will require a 100mm DN lateral connection into this existing 150mm DN sewer. The point of connection lies within the site and the public sewer is already of adequate size to serve the proposed development.

The standing wastewater Infrastructure Charge (IC), which came into force from 1st April 2018, will be paid. Should any downstream reinforcement be required Southern Water will deliver this from the development ICs they will collect, this is however considered unlikely.

The proposed point of connection is shown on Solent Design layout plan SD-2011-101-G.

The public sewer location and point of connection is indicated below:



Final details of the drainage provision can be secured by standard planning condition.

Yours Sincerely,

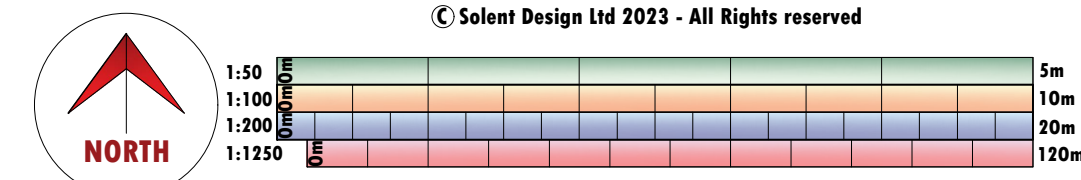
Aqua Callidus Consulting Ltd

Andy Traves

Enc. Solent Design site layout SD-2011-101-G
Permeability test results
Soakaway calculations
Permeable pavement calculations

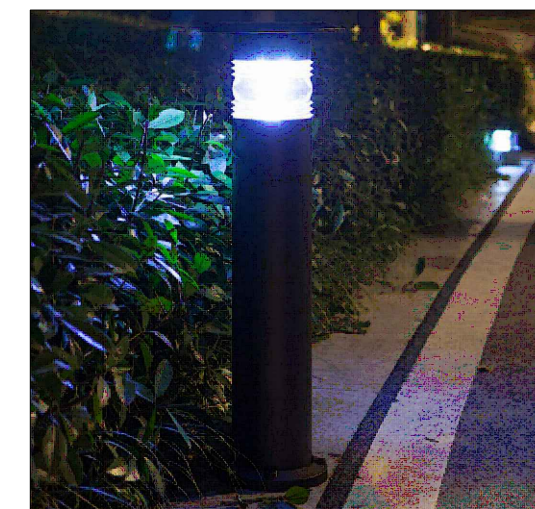
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A-E Accoustic fencing
F-L Accoustic Fence

- Laid to Lawn
- New Planting
- New Access Path (tarmac)



Bollard Lighting 3m spacing along length of access-way from Hamble Lane and Access paths to bungalows and car park.

Solent Design Ltd
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Spring Garden Lane
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PO12 1FQ
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PROJECT DESCRIPTION:
New Retirement Bungalows

DRAWING TITLE:
Site & Location Plan

ADDRESS:
56-64 Hamble Lane Mr Harding
Hamble
SO31 4JP
FIRST DRAWN:
May 2020

DRAWING No: SD-2011-101
REVISION: 1:200
1:1250
drawing status: Preliminary Not for Issue

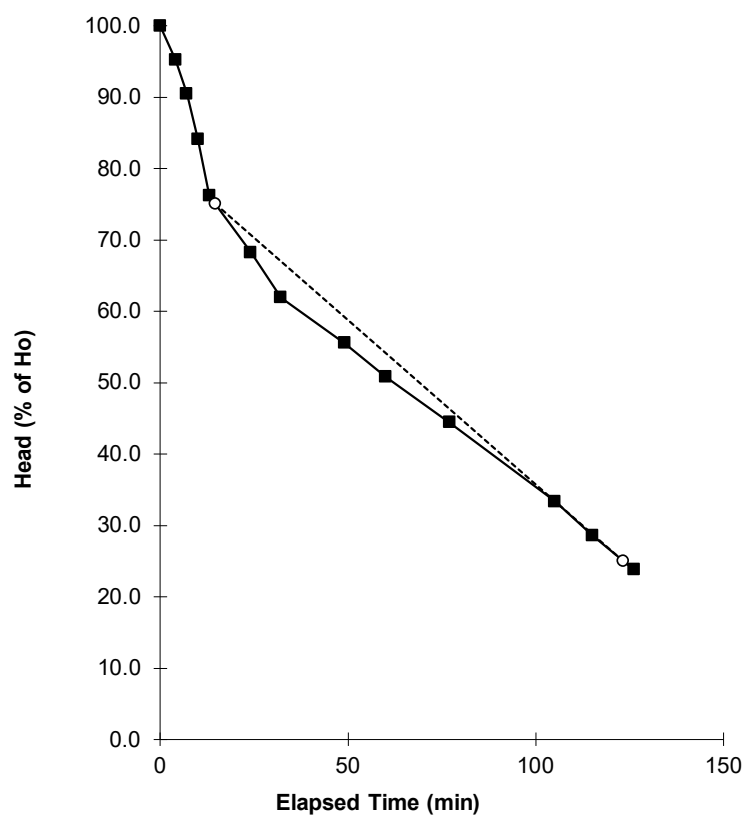


BRE365 Field Permeability Test

Site Ref	Hamble Lane	project	24014
Hole Reference	TP01		
Test Number	1		
Test Date	08 February 2024		

Depth of Pit	1.70	m			
Width of Pit	0.40	m	A_p	50	1.694 m ²
Length of Pit	1.40	m	V_p	75-25	0.176 m ³
Depth of Pit Soaked	0.63	m	water used		0.353 m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.070	0	100.0	0.630
1.100	4	95.2	0.600
1.130	7	90.5	0.570
1.170	10	84.1	0.530
1.220	13	76.2	0.480
1.270	24	68.3	0.430
1.310	32	61.9	0.390
1.350	49	55.6	0.350
1.380	60	50.8	0.320
1.420	77	44.4	0.280
1.490	105	33.3	0.210
1.520	115	28.6	0.180
1.550	126	23.8	0.150



T75	14.65	75.0 %		
T25	123.25	25.0 %		
T75-25	108.60	Derived from Best Fit	Infiltration rate (f)	1.60E-05 m/sec.

Comments

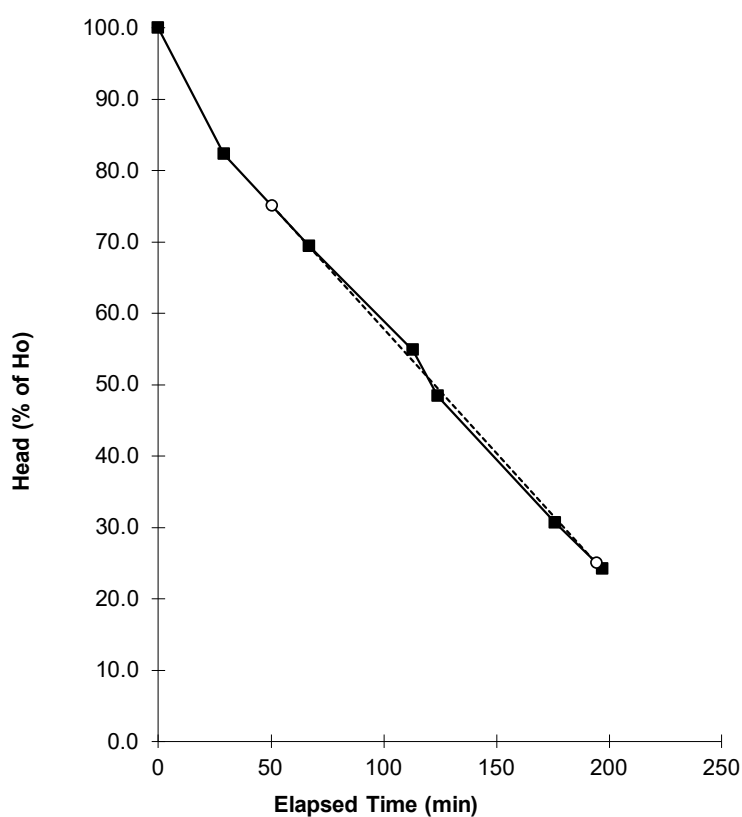
Hole profile: 0.0-0.3 topsoil 0.3-1.7 sandy Gravel

BRE365 Field Permeability Test

Site Ref	Hamble Lane	project	24014
Hole Reference	TP01		
Test Number	2		
Test Date	08 February 2024		

Depth of Pit	1.70	m			
Width of Pit	0.40	m	A_p	50	1.676 m ²
Length of Pit	1.40	m	V_p	75-25	0.174 m ³
Depth of Pit Soaked	0.62	m	water used		0.347 m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.080	0	100.0	0.620
1.190	29	82.3	0.510
1.270	67	69.4	0.430
1.360	113	54.8	0.340
1.400	124	48.4	0.300
1.510	176	30.6	0.190
1.550	197	24.2	0.150



T75	50.38	75.0	%
T25	194.38	25.0	%
T75-25	144.00	Derived from Best Fit	
Infiltration rate (f)			1.20E-05 m/sec.

Comments

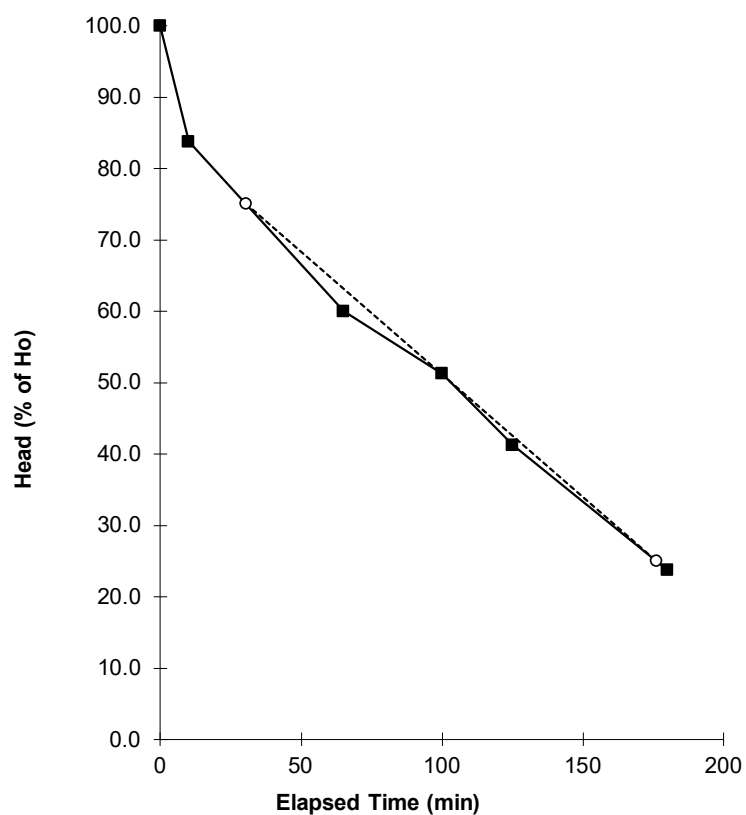
Hole profile: 0.0-0.3 topsoil 0.3-1.7 sandy Gravel

BRE365 Field Permeability Test

Site Ref	Hamble Lane	project	24014
Hole Reference	TP01		
Test Number	3		
Test Date	08 February 2024		

Depth of Pit	1.70	m			
Width of Pit	0.40	m	A_p	50	2.000 m ²
Length of Pit	1.40	m	V_p	75-25	0.224 m ³
Depth of Pit Soaked	0.80	m	water used		0.448 m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.900	0	100.0	0.800
1.030	10	83.8	0.670
1.220	65	60.0	0.480
1.290	100	51.3	0.410
1.370	125	41.3	0.330
1.510	180	23.8	0.190



T75	30.26	75.0	%
T25	176.07	25.0	%
T75-25	145.81	Derived from Best Fit	
Infiltration rate (f)			1.28E-05 m/sec.

Comments

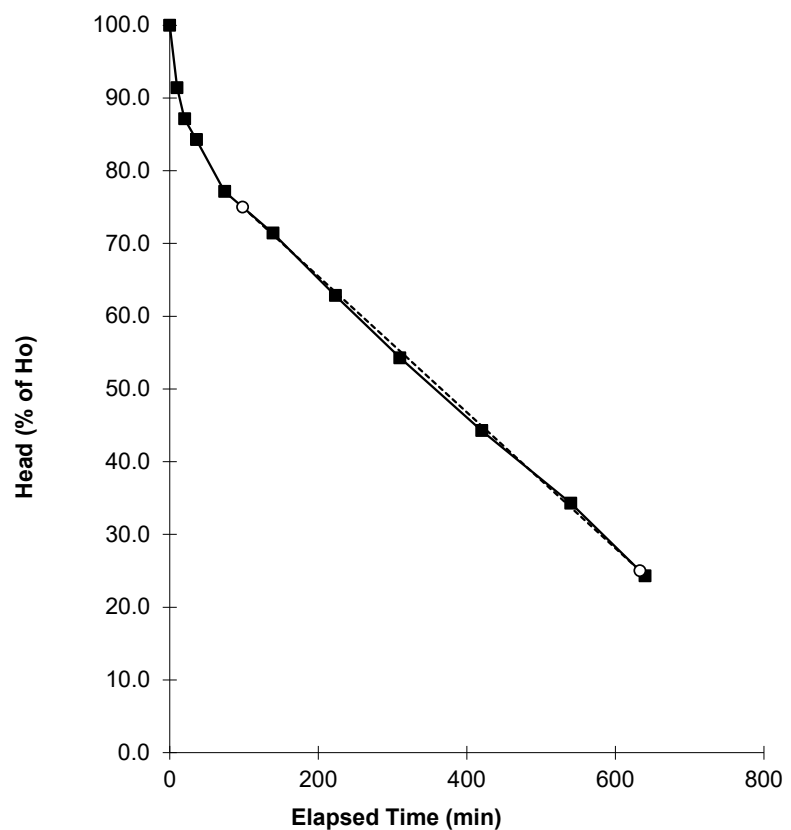
Hole profile: 0.0-0.3 topsoil 0.3-1.7 sandy Gravel

BRE365 Field Permeability Test

<u>Site Ref</u>	Hamble Lane	<u>project</u>	24014
<u>Hole Reference</u>	TP02		
<u>Test Number</u>	1		
<u>Test Date</u>	08 February 2024		

Depth of Pit	1.35	m			
Width of Pit	0.40	m	A_p50	1.910	m ²
Length of Pit	1.40	m	V_p75-25	0.210	m ³
Depth of Pit Soaked	0.75	m	water used	0.420	m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.650	0	100.0	0.700
0.710	10	91.4	0.640
0.740	20	87.1	0.610
0.760	36	84.3	0.590
0.810	74	77.1	0.540
0.850	139	71.4	0.500
0.910	223	62.9	0.440
0.970	310	54.3	0.380
1.040	420	44.3	0.310
1.110	540	34.3	0.240
1.180	640	24.3	0.170



T75	98.38	75.0	%		
T25	632.86	25.0	%		
T75-25	534.48	Derived from Best Fit		Infiltration rate (f)	3.43E-06 m/sec.

Comments

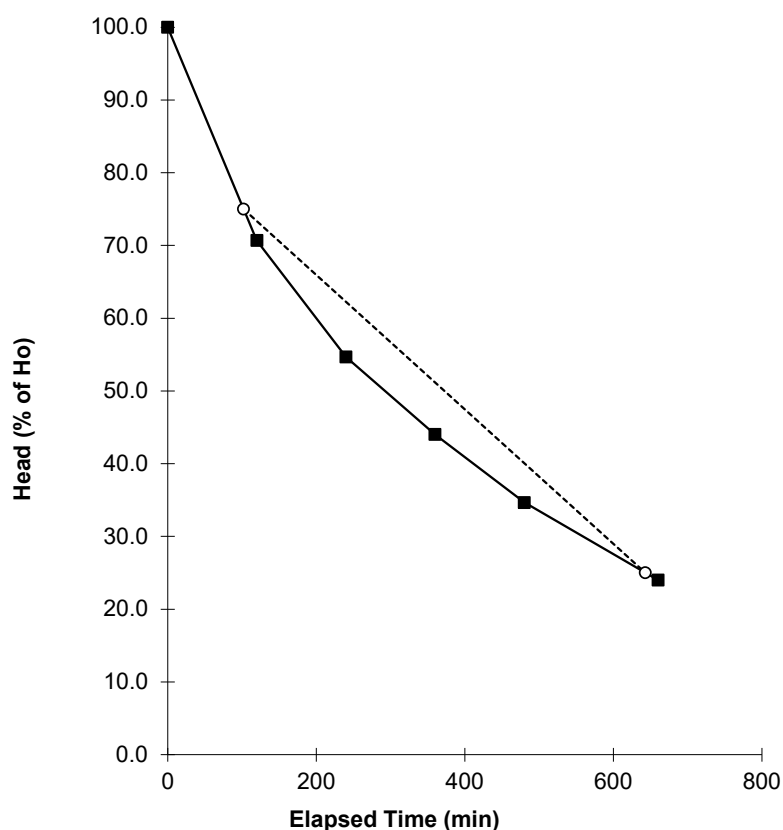
Hole profile: 0.0-0.3 topsoil 0.3-1.35 sandy silty gravel

BRE365 Field Permeability Test

<u>Site Ref</u>	Hamble Lane	<u>project</u>	24014
<u>Hole Reference</u>	TP02		
<u>Test Number</u>	2		
<u>Test Date</u>	12 February 2024		

Depth of Pit	1.35	m			
Width of Pit	0.40	m	A_{p50}	1.910	m ²
Length of Pit	1.40	m	V_{p75-25}	0.210	m ³
Depth of Pit Soaked	0.75	m	water used	0.420	m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.600	0	100.0	0.750
0.820	120	70.7	0.530
0.940	240	54.7	0.410
1.020	360	44.0	0.330
1.090	480	34.7	0.260
1.170	660	24.0	0.180



T75	102.27	75.0	%
T25	643.13	25.0	%
T75-25	540.85	Derived from Best Fit	
Infiltration rate (f)			
			3.39E-06 m/sec.

Comments

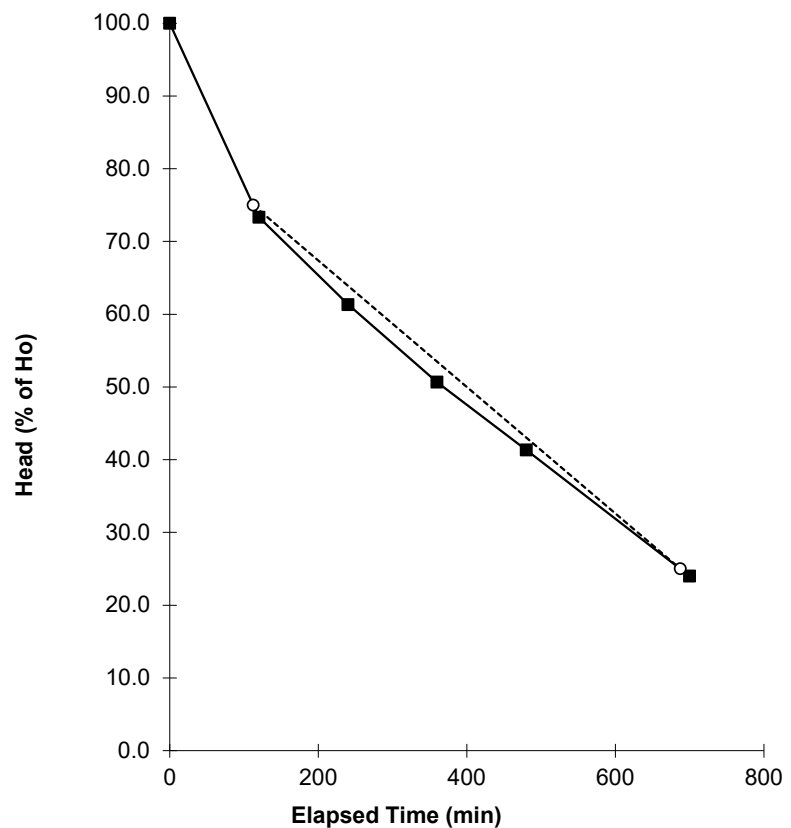
Hole profile: 0.0-0.3 topsoil 0.3-1.35 sandy silty gravel

BRE365 Field Permeability Test

<u>Site Ref</u>	Hamble Lane	<u>project</u>	24014
<u>Hole Reference</u>	TP02		
<u>Test Number</u>	3		
<u>Test Date</u>	13 February 2024		

Depth of Pit	1.35	m			
Width of Pit	0.40	m	A_p 50	1.910	m ²
Length of Pit	1.40	m	V_p 75-25	0.210	m ³
Depth of Pit Soaked	0.75	m	water used	0.420	m ³

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.600	0	100.0	0.750
0.800	120	73.3	0.550
0.890	240	61.3	0.460
0.970	360	50.7	0.380
1.040	480	41.3	0.310
1.170	700	24.0	0.180



T75	112.50	75.0	%
T25	687.31	25.0	%
T75-25	574.81	Derived from Best Fit	
Infiltration rate (f)			
3.19E-06 m/sec.			

Comments

Hole profile: 0.0-0.3 topsoil 0.3-1.35 sandy silty gravel

Date: 29/05/2025

Project No.: 24014
Project Title: 60 Hamble Lane

Stone Filled or Geocellular Soakaway Assessment to BRE Digest 365 (2016)

Site Location: Hamble
 $r = 0.36$ (range 0.12 to 0.45)
 Drained Area = 440 m²
 Design storm 1 in = 100 year
 Runoff volume uplift = 45 % for climate change & urban creep

Catchment ID: SA1
 Urban Creep: 10 %

Site Considerations

Where determined, what is the depth to highest seasonal groundwater level (GWL) from surface 5.00 m
 How far is or will it be to the closest building to the proposed soakaway edge? 10.00 m
 Is the soakaway far enough from drainage mounds/fields or other soakaways etc to avoid impact? Yes
 What Source Protection Zone (SPZ) is the proposed soakaway located in? None
 What is known and proposed about potential contaminated ground on the site? EA/LPA accept infiltration
 What usage forms the soakaway catchment? Roof water only

Technical Assessment

Pit Length $L_x = 10.00$ m
 Pit Length $L_y = 4.00$ m
 Depth surface GL to pipe IL = 0.70 m
 Depth pipe IL to base = 1.20 m
 (min 30%) % Void in fill = 95 %

TOTAL STORAGE AVAILABLE 45.79 m³
 Effective soakage area $a_{50} = 16.80$ m²
 Time to drain full to half full = 20.4 hours

Soil Filtration Rate = 1.20E-05 m/s M5-60 Rainfall = 20 mm

Storm Duration	5 min	10 min	15 min	30 min	1 hr	2 hr	4 hr	6 hr	10 hr	24 hr
(secs)	300	600	900	1800	3600	7200	14400	21600	36000	86400
$r = 0.36$ Value Z1	0.36	0.51	0.62	0.79	1.00	1.22	1.48	1.67	1.90	2.42
Rainfall M5 (mm)	7.2	10.2	12.4	15.8	20.0	24.4	29.6	33.4	38.0	48.4
M100/M5 gf Value Z2	1.84	1.91	1.95	2.00	2.03	2.01	1.97	1.94	1.91	1.82
Rainfall M100 (mm)	13.3	19.5	24.2	31.5	40.6	49.1	58.4	64.9	72.4	88.2
with climate uplift (mm)	19.2	28.3	35.0	45.7	58.9	71.2	84.7	94.1	105.0	127.9
RUNOFF (m ³)	9.31	13.70	16.96	22.14	28.49	34.46	40.99	45.54	50.83	61.92
No soakage depth (m)	0.24	0.36	0.44	0.58	0.75	0.90	1.07	1.19	1.20	1.20
SOAKAGE (m ³)	0.01	0.04	0.07	0.18	0.45	1.09	2.60	4.33	7.26	17.42
Req'd STORAGE (m ³)	9.30	13.66	16.89	21.96	28.04	33.37	38.39	41.21	43.57	44.50
	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass

Overall Assessment

Soakaway base elevation above seasonal high GWL 3.10 m pass
 Will the soakaway drain from full to half full in 24 hours or less? Yes pass
 Does the soakaway provide sufficient storage? Yes pass

Project No.: 24014
Project Title: 60 Hamble Lane

Drainage blanket/CGA pavement or 2D planar infiltration (R156)

Site Location: Hamble Catchment ID: access and car park
r = 0.36 (range 0.12 to 0.45)
Drained Area = 440 m² Infiltration Area = 370 m²
Design storm 1 in = 100 year
Runoff volume uplift = 45 % for climate change
Urban Creep allowance = 10 % uplift to Drained Area

Site Considerations

Where determined, what is the depth to highest seasonal groundwater level (GWL) from surface: 5.00 m
Is the infiltration far enough from drainage mounds/fields or other soakaways etc to avoid impact? Yes
What Source Protection Zone (SPZ) is the proposed soakaway located in? None
What is known and proposed about potential contaminated ground on the site? EA/LPA accept infiltration

Technical Assessment

Consequence of failure = 1-No inconvenience
Measured Soil Filtration Rate = 3.19E-06 m/s
Design Soil Filtration Rate = 2.13E-06 m/s
Storage media thickness = 0.250 m
Effective net porosity = 35 %
Depth of cover over media = 0.15 m

Storm Duration	5 min	10 min	15 min	30 min	1 hr	2 hr	4 hr	6 hr	10 hr	24 hr
(secs)	300	600	900	1800	3600	7200	14400	21600	36000	86400
r= 0.36 Value Z1	0.36	0.51	0.62	0.79	1.00	1.22	1.48	1.67	1.90	2.42
Rainfall M5 (mm)	7.2	10.2	12.4	15.8	20.0	24.4	29.6	33.4	38.0	48.4
M100/M5 gf Value Z2	1.84	1.91	1.95	2.00	2.03	2.01	1.97	1.94	1.91	1.82
Rainfall M100 (mm)	13.3	19.5	24.2	31.5	40.6	49.1	58.4	64.9	72.4	88.2
With CC & UC uplift (mm)	20.6	30.2	37.4	48.9	62.9	76.1	90.5	100.6	112.3	136.7
RUNOFF (m ³)	9.05	13.31	16.48	21.51	27.69	33.49	39.83	44.25	49.40	60.17
Infilt capacity (m ³)	0.24	0.47	0.71	1.42	2.83	5.67	11.33	17.00	28.33	67.99
INFILTRATED (m ³)	0.24	0.47	0.71	1.42	2.83	5.67	11.33	17.00	28.33	60.17
Req'd STORAGE (m ³)	8.81	12.84	15.77	20.10	24.86	27.82	28.50	27.26	21.07	0.00
	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass

TOTAL STORAGE AVAILABLE 32.38 m³
Time to drain full to half full = 5.0 hours

Overall Assessment

Media base elevation above seasonal high GWL 4.60 m meets GP3
Will the soakaway drain from full to half full in 24 hours or less? Yes pass
Does the soakaway provide sufficient storage? Yes pass