



Below
Ground
Solutions
Ltd.

**DRAINAGE
WATER AND
UTILITIES
SERVICING AND
COMPLIANCE
REPORTING**





The off main drainage
and water experts

Below Ground Solutions Ltd, Unit 5 Drakes Business Centre, Taunton, Somerset TA3 5AD

BRE365 Storm water Percolation Test Report

CLIENT: George Fowler

ADDRESS: 18 Honey Garston, Calne, Wiltshire, SN11 8BL

Ref Percolation testing for Storm water @above site

Following on from our site visit to conduct percolation testing in accordance to BRE365 please find attached our report notes.

Notes

We used the provided plan on site to familiarize our self with the proposed site layout and plot the areas in which the testing was to be conducted. We set up our health and safety system and set out our area of works. 2 trial holes were excavated to check for ground water levels and consistency across site. A ground water search drill down was conducted to a depth of 1.5m and the soil changed to a more dense rock, no ground water was recorded, also local bore records also suggest ground water is not evident at this depth. Testing was conducted to see what capacity is required, first the pits were saturated pre-testing. Soil type was consistent in all trial pits

Ground conditions – consistent across the site

0.00mm – 0.300mm – surface dressing topsoil

0.300mm – 0.700mm – Brown sandy

0.700mm – 1.500 – Brash, rock with sandy soils/clay

Testing

To carry out testing to BRE 365 standards, we first saturate the trial pits and search for any known water tables, this was done with no water table identified. We induced water and conducted testing, the water drained at a slow but acceptable rate and timings were taken. The site is suitable to drain to ground in line with today's standards and the space is available to create a soakaway a suitable distance from structure. The trial pit test sizes, based on a 105m² collection area for each soak away can be found below.

SUMMARY OF CALCULATIONS

critical design rainfall duration t_{crit}	=	360	min
required storage volume V_{req}	=	7.35	m ³
provided storage volume V_{prov}	=	7.76	m ³
utilisation factor	=	0.95	.OK
required time to discharge 50% t_{50}	=	16.79	hours
utilisation factor	=	0.70	.OK



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Design

This soak away will need to be constructed using Aquacell storm crates to form a box shape and then wrapped in Geotex membrane to prevent infiltration of surrounding debris and Stone. Once this is placed into the excavated area, it should be surrounded in clean stone between 20 and 40 mm to fully surround the SA. Any pipework can then be connected to the SA and the excavation reinstated,

Aqua cells provide 0.2m³ capacity so 1m³ requires 5 cells, 2m³ 10 cells and so on.

SOAKAWAY DATA

soakaway width 'W' [m] = 2.80
soakaway length 'L' [m] = 2.80

total depth from ground level 'D_b' [m] = 1.50
depth to drain invert level 'D_d' [m] = 0.40
soakaway effective depth 'D_{eff}' [m] = 1.10
free volume in infill aggregate [%] = 90

Lee Woods

Director

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Useful Information

BGS are approved with trading standards for our system of works and processes. This can be verified [here](#)

[Click here for our full terms and conditions](#)

BGS are proud to be the most reviewed off mains specialist in the southwest

Reviews on BGS can be found on our Facebook and LinkedIn pages and our review platform based on Yell.com



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TP1

Revision

Job No:

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Page:

C/01

Prepared By:

LW

Date:

01/05/2026

Section:

TP1 18 Honey Garston, Calne, SN11 8BL**ALTERNATIVE SOAKAWAY SIZES**

	trench soakaways		
width of trench [mm]:	450	600	900
required trench length [m]:	14.41	11.29	7.99
	ring soakaways		
diameter of ring [mm]:	1050	1350	1500
required pit diameter [m]:	1.85	1.84	1.84

* Based on effective depth and number of pits as in Soakaway Data table

SUMMARY OF CALCULATIONS

critical design rainfall duration 't _{crit} ' =	600	min
required storage volume 'V _{req} ' =	7.67	m ³
provided storage volume 'V _{prov} ' =	7.76	m ³
utilisation factor =	0.99	.OK
required time to discharge 50% 't ₅₀ ' =	20.20	hours
utilisation factor =	0.84	.OK

GENERAL DATA

site location:	England and Wales
soakaway type:	geocellular units
impermeable area drained to soakaway 'A' [m ²] =	105
60 min rainfall depth of 5 year return period 'R' [mm] =	20
M5-60 to M5-2d rainfall ratio 'r' =	0.50
allowance for climate change:	40%

SOAKAWAY DATA

soakaway width 'W' [m] =	2.80
soakaway length 'L' [m] =	2.80
total depth from ground level 'D _b ' [m] =	1.50
depth to drain invert level 'D _d ' [m] =	0.40
soakaway effective depth 'D _{eff} ' [m] =	1.10
free volume in infill aggregate [%] =	90

SOIL INFILTRATION DATA

allowance for infiltration through soakaway base:	30%
available on-site infiltration test results:	☒ Yes ☐ No
use soakage trial pit table below	
internal surface area of trial pit 'a _{p50} ' [m ²] =	2.90
storage volume between 75-25% 'V _p ' [m ³] =	0.30
time for water to fall from 75-25% 't _p ' [min] =	275.00
soil infiltration rate 'f' [m/s] =	6.27E-06

SOAKAGE TRIAL PIT DATA

soakage trial pit width 'W _t ' [m] =	0.30
soakage trial pit length 'L _t ' [m] =	2.00
total depth from ground level 'D _{tb} ' [m] =	1.40
depth to pipe invert level 'D _{tp} ' [m] =	0.40
soakage trial pit effective depth 'D _{teff} ' [m] =	1.00
free volume in infill aggregate [%] =	100

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M10-D			M50-D			M100-D			outflow from soakaway [m ³]	required storage [m ³]
			Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]		
5	0.39	7.80	1.21	13.18	1.38	1.61	17.59	1.85	1.86	20.28	2.13	0.02	2.11
10	0.54	10.80	1.22	18.49	1.94	1.66	25.07	2.63	1.92	29.07	3.05	0.03	3.02
15	0.65	13.00	1.23	22.42	2.35	1.68	30.58	3.21	1.96	35.64	3.74	0.05	3.69
30	0.82	16.40	1.24	28.47	2.99	1.71	39.22	4.12	2.00	45.95	4.82	0.10	4.73
60	1.00	20.00	1.24	34.72	3.65	1.73	48.44	5.09	2.03	56.84	5.97	0.19	5.78
120	1.19	23.80	1.24	41.32	4.34	1.72	57.39	6.03	2.01	67.13	7.05	0.38	6.66
240	1.38	27.60	1.23	47.51	4.99	1.71	66.06	6.94	1.99	76.86	8.07	0.77	7.30
360	1.51	30.20	1.22	51.56	5.41	1.70	71.83	7.54	1.97	83.22	8.74	1.15	7.59
600	1.68	33.60	1.21	56.88	5.97	1.68	78.95	8.29	1.94	91.31	9.59	1.92	7.67
1440	2.03	40.60	1.19	67.57	7.09	1.64	93.01	9.77	1.89	107.15	11.25	4.61	6.64

* Z2 is growth factor from M5 rainfalls

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS

water level measurement N°:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time [min] =	0	100	200	300	400	500	600	700											
	depth to water [m] =	0.00	0.20	0.40	0.60	0.80	1.00	1.20	1.40											
Soakage Trial 2	time [min] =	0	110	220	330	440	550	660	770											
	depth to water [m] =	0.00	0.20	0.40	0.60	0.80	1.00	1.20	1.40											
Soakage Trial 3	time [min] =																			
	depth to water [m] =																			

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TP2

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TP2 18 Honey Garston, Calne, SN11 8BL**ALTERNATIVE SOAKAWAY SIZES**

	trench soakaways		
width of trench [mm]:	450	600	900
required trench length [m]:	13.83	10.91	7.70
	ring soakaways		
diameter of ring [mm]:	1050	1350	1500
required pit diameter [m]:	1.81	1.81	1.81

* Based on effective depth and number of pits as in Soakaway Data table

SUMMARY OF CALCULATIONS

critical design rainfall duration 't _{crit} '	=	360	min
required storage volume 'V _{req} '	=	7.35	m ³
provided storage volume 'V _{prov} '	=	7.76	m ³
utilisation factor	=	0.95	.OK
required time to discharge 50% 't ₅₀ '	=	16.79	hours
utilisation factor	=	0.70	.OK

GENERAL DATA

site location:	England and Wales
soakaway type:	geocellular units
impermeable area drained to soakaway 'A' [m ²]	105
60 min rainfall depth of 5 year return period 'R' [mm]	20
M5-60 to M5-2d rainfall ratio 'r'	0.50
allowance for climate change:	40%

SOAKAWAY DATA

soakaway width 'W' [m]	=	2.80
soakaway length 'L' [m]	=	2.80
total depth from ground level 'D _b ' [m]	=	1.50
depth to drain invert level 'D _d ' [m]	=	0.40
soakaway effective depth 'D _{eff} ' [m]	=	1.10
free volume in infill aggregate [%]	=	90

SOIL INFILTRATION DATA

allowance for infiltration through soakaway base:	30%
available on-site infiltration test results:	☒ Yes ☐ No
use soakage trial pit table below	
internal surface area of trial pit 'a _{p50} ' [m ²]	2.21
storage volume between 75-25% 'V _p ' [m ³]	0.21
time for water to fall from 75-25% 't _p ' [min]	210.00
soil infiltration rate 'f' [m/s]	7.54E-06

SOAKAGE TRIAL PIT DATA

soakage trial pit width 'W _t ' [m]	=	0.30
soakage trial pit length 'L _t ' [m]	=	2.00
total depth from ground level 'D _{tb} ' [m]	=	1.10
depth to pipe invert level 'D _{tp} ' [m]	=	0.40
soakage trial pit effective depth 'D _{teff} ' [m]	=	0.70
free volume in infill aggregate [%]	=	100

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M10-D			M50-D			M100-D			outflow from soakaway [m ³]	required storage [m ³]
			Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]		
5	0.39	7.80	1.21	13.18	1.38	1.61	17.59	1.85	1.86	20.28	2.13	0.02	2.11
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30	0.82	16.40	1.24	28.47	2.99	1.71	39.22	4.12	2.00	45.95	4.82	0.12	4.71
60	1.00	20.00	1.24	34.72	3.65	1.73	48.44	5.09	2.03	56.84	5.97	0.23	5.74
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360	1.51	30.20	1.22	51.56	5.41	1.70	71.83	7.54	1.97	83.22	8.74	1.39	7.35
600	1.68	33.60	1.21	56.88	5.97	1.68	78.95	8.29	1.94	91.31	9.59	2.31	7.28
1440	2.03	40.60	1.19	67.57	7.09	1.64	93.01	9.77	1.89	107.15	11.25	5.55	5.70

* Z2 is growth factor from M5 rainfalls

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS

water level measurement N°:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time [min] =	0	80	160	240	320	400	480												
	depth to water [m] =	0.00	0.20	0.40	0.60	0.80	1.00	1.10												
Soakage Trial 2	time [min] =	0	120	240	360	480	600	720												
	depth to water [m] =	0.00	0.20	0.40	0.60	0.80	1.00	1.10												
Soakage Trial 3	time [min] =																			
	depth to water [m] =																			





