

Ref: CS/C1280

Peter Budd
G Budd Partnership
5 Rothermead
Petworth
GU28 0EW

7th February 2020

Re: 7 Hadley Close, Middleton-on-Sea – Soakaway Testing – Infiltration Test Result Summary

Dear Peter

The following investigation was carried out at the above site in accordance with our recent discussions.

1. Site Works

The purpose of the investigation was to supply soakaway test data in general accordance with BRE document 365 (Soakaway Design) for a new porous driveway.

The appended drawing illustrates the position of the test pit. The testing commenced at on 3rd February 2020 at 09:30 with a BRE365 test pit excavated to a depth of 0.5mbgl. This was to identify the suitability of utilising porous paving/tarmac.

In addition to the soakaway test, a deeper borehole was dug adjacent to the soakaway pit to a depth of 1.2m. The borehole remained dry throughout the testing and the next day when it was backfilled.

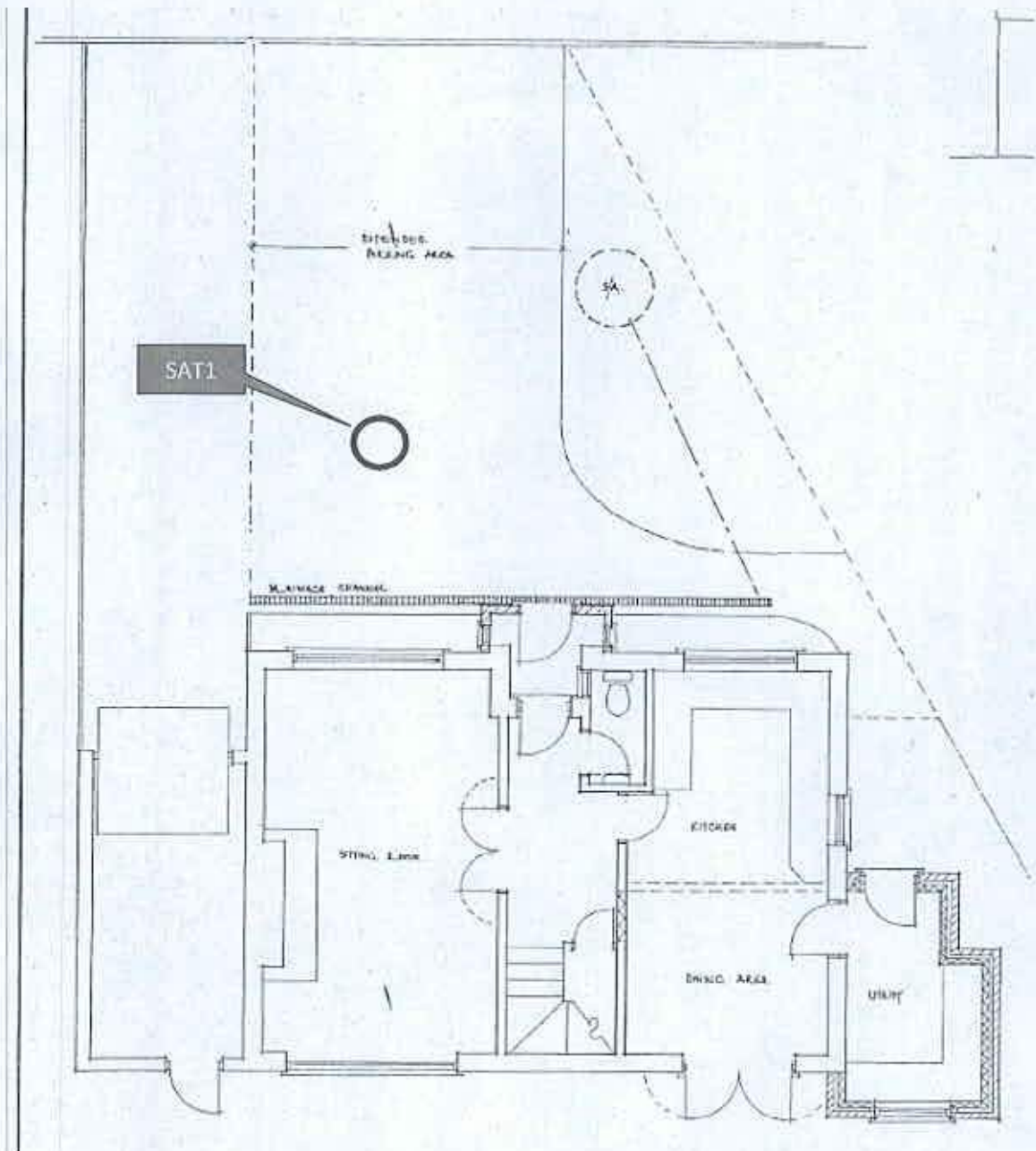
2. BRE 365 Soakaway Test Findings

Testing of the sub soils which was sandy clays produced a BRE 365 design infiltration rate of **1.14x10⁻⁵m/s** at a depth of 0.5m. This rate was the slowest taken from all the testing. This is considered a moderate rate and suitable for porous paving.

3. BRE 365 Soakaway Test Results

Test Pit No	Infiltration Rate (1-3 Tests)			Depth of Test	Soil Type
SAT1	2.17x10 ⁻⁵ m/s	1.26x10 ⁻⁵ m/s	1.14x10⁻⁵m/s	0.5m	Sandy Clays

Appendix A – Soakaway Test Location Plan



Appendix B – Site Photographs





Consulting Civil Engineers

Appendix C – Infiltration Calculator

Richard Cobden House, Lion Street, Chichester, West Sussex, PO19 1LW
Tel: 01243 933253 E: mail@cgscivils.co.uk W: www.cgscivils.co.uk
Registered in England No. 8546902 | VAT Registration No.169950851

Job: 7 Hadley Close - Test 1

Infiltration Calculator

$$f = \frac{Vp75-25}{ap50 \times tp75-25}$$

Vp 75-25 = Effective storage volume between 75% and 25% effective depth

ap50 = Internal surface area of the trial pit up to 50% effective depth and including the base area

tp75-25 = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.5
Trial pit length	=	1

ap50 = 0.8 m/squared

tp75-25 = 4320 seconds

Vp 75-25 = 0.075 m/cubed

F = 2.17E-05

Job: 7 Hadley Close - Test 2

Infiltration Calculator

$$f = \frac{Vp75-25}{ap50 \times tp75-25}$$

Vp 75-25 = Effective storage volume between 75% and 25% effective depth

ap50 = Internal surface area of the trial pit up to 50% effective depth and including the base area

tp75-25 = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.5
Trial pit length	=	0.3

ap50 = 0.345 m/squared

tp75-25 = 5160 seconds

Vp 75-25 = 0.0225 m/cubed

F = 1.26E-05

Job: 7 Hadley Close - Test 3

Infiltration Calculator

$$f = \frac{Vp75-25}{ap50 \times tp75-25}$$

Vp 75-25 = Effective storage volume between 75% and 25% effective depth

ap50 = Internal surface area of the trial pit up to 50% effective depth and including the base area

tp75-25 = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.5
Trial pit length	=	0.3

ap50 = 0.345 m/squared

tp75-25 = 5700 seconds

Vp 75-25 = 0.0225 m/cubed

F = 1.14E-05

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
PPA	0.005	3.900	100	100.000	100.000	0.400

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
100	40	0	0

Node PPA Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.04100	Invert Level (m)	3.500	Slope (1:X)	45.0
Side Inf Coefficient (m/hr)	0.04100	Time to half empty (mins)	43	Depth (m)	
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	9.000		

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	PPA	47	3.621	0.121	0.6	0.5361	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
60 minute winter	PPA	Infiltration	0.2

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PPA	88	3.638	0.138	0.5	0.6906	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PPA	Infiltration	0.2

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	PPA	53	3.700	0.200	1.4	1.4129	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
60 minute winter	PPA	Infiltration	0.3