

Ref: CS/C1305

Clive Fish
Cenarth
17 Nimbus Close
Beaumont Park
Littlehampton
West Sussex
BN17 6RX

10th February 2020

Re: 28 Downview Road, Yapton – Soakaway Testing – Infiltration Test Result Summary

Dear Clive

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 surface water soakaway.

The appended drawing illustrates the position of the test pit. The testing commenced at on 31st January 2020 at 09:30 with a BRE365 test pit excavated to a depth of 0.9mbgl. This was to identify the suitability of a new soakaway to drain a new extension to the front of the house.

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 **1.03x10⁻⁵m/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 most infiltration devices.

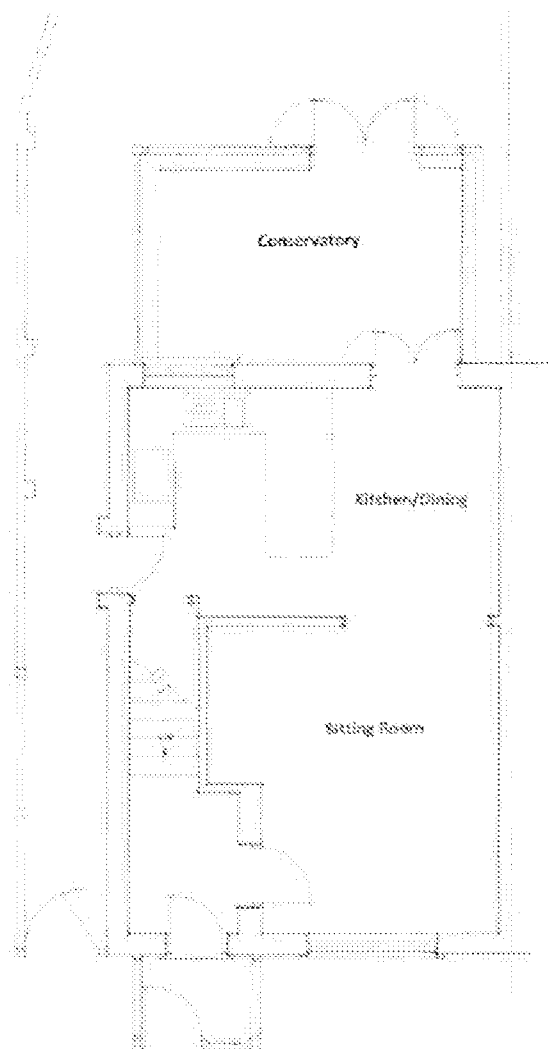
3. BRE 365 Soakaway Test Results

Test Pit No	Infiltration Rate (1-3 Tests)			Depth of Test	Soil Type
SAT1	1.62x10 ⁻⁵ m/s	1.31x10 ⁻⁵ m/s	1.03x10⁻⁵m/s	0.9m	Sandy Clays

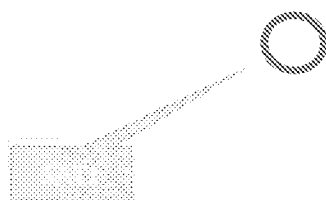
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Appendix A – Soakaway Test Location Plan



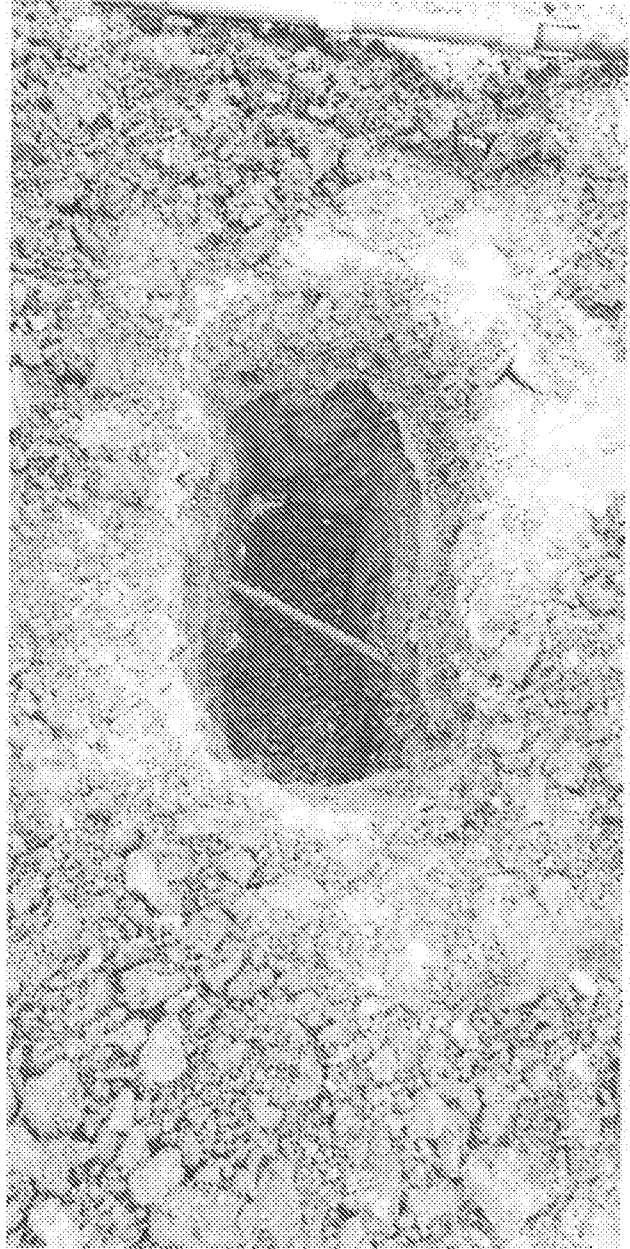
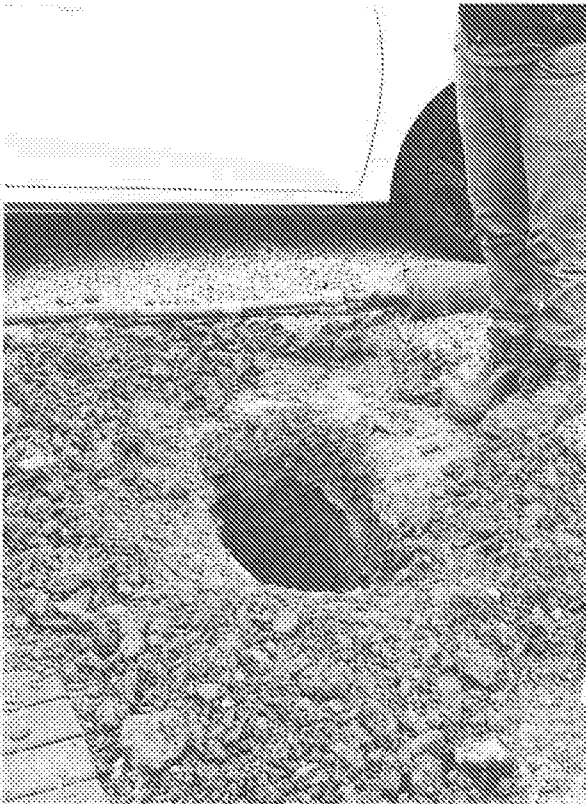
Ground Floor Plan " As Existing



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Appendix B – Site Photographs



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Consulting Civil Engineers

Appendix C – Infiltration Calculator

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Job: 28 Downview Road, Yapton - 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	=	0.9
Trial pit length	=	1

ap50 = 1.32 m/squared

tp75-25 = 6300 seconds

Vp 75-25 = 0.135 m/cubed

F = 1.62E-05

Job: 28 Downview Road, Yapton - 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	=	0.9
Trial pit length	=	1

ap50 = 1.32 m/squared

tp75-25 = 7800 seconds

Vp 75-25 = 0.135 m/cubed

F = 1.31E-05

Job: 28 Downview Road, Yapton - Test 3

Infiltration Calculator

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

V_{p75-25} = Effective storage volume between 75% and 25% effective depth

a_{p50} = Internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} = 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	=	0.9
Trial pit length	=	1
a_{p50}	=	1.32 m/squared
t_{p75-25}	=	9900 seconds
V_{p75-25}	=	0.135 m/cubed
F	=	1.03E-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)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.001	5.00	9.990	450	1074.140	255.400	0.500
S2	0.001	5.00	10.005	450	1077.828	255.400	0.552
SAT	0.001	5.00	10.005	100	1078.658	252.836	0.579

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	1.128	100.0	450	1.000	9.990	9.490	9.490	10.005	9.490	9.490
1.001	1.128	100.0	450	1.001	10.005	9.490	9.490	10.005	9.490	9.490

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450	Manhole	Manhole	S2	450	Manhole	Manhole
1.001	S2	450	Manhole	Manhole	SAT	100	Manhole	Manhole

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	1074.140	255.400	9.990	0.500	450				
							0	1.000	9.490
							1	1.000	9.490
S2	1077.828	255.400	10.005	0.552	450				
							0	1.001	9.490
							1	1.001	9.490
SAT	1078.658	252.836	10.005	0.579	100				
							0	1.001	9.490
							1	1.001	9.490

Results for 1 year Critical Storm Duration... Lowest mass balance: 96.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	S1	38	9.499	0.009	0.1	0.0018	0.0000	OK
60 minute winter	S2	38	9.466	0.013	0.2	0.0025	0.0000	OK
60 minute winter	SAT	132	9.177	-0.249	0.2	0.1665	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
60 minute winter	S1	1.000	S2	0.1	0.222	0.017	0.0017
60 minute winter	S2	1.001	SAT	0.2	0.348	0.033	0.0015
60 minute winter	SAT	Infiltration		0.0			



Results for 10 year Critical Storm Duration. Lowest mass balance: 56.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	11	9.505	0.015	0.3	0.0030	0.0000	OK
15 minute winter	S2	11	9.475	0.022	0.6	0.0044	0.0000	OK
120 minute winter	SAT	172	9.328	-0.098	0.2	0.3825	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	S1	1.000	S2	0.3	0.296	0.050	0.0038
15 minute winter	S2	1.001	SAT	0.6	0.475	0.099	0.0034
120 minute winter	SAT	Infiltration		0.0			

Results for 30 year Critical Storm Duration. Lowest mass balance: 55.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	12	9.505	0.015	0.3	0.0030	0.0000	OK
15 minute summer	S2	12	9.475	0.022	0.6	0.0044	0.0000	OK
180 minute winter	SAT	312	9.458	0.032	0.2	0.5678	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	1.000	S2	0.3	0.297	0.050	0.0038
15 minute summer	S2	1.001	SAT	0.6	0.475	0.099	0.0034
180 minute winter	SAT	Infiltration		0.0			

Results for 100 year 40% CC Critical Storm Duration. Lowest mass balance: 56.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	S1	560	9.677	0.187	0.1	0.0372	0.0000	Link Depth = 1.000
360 minute winter	S2	416	9.677	0.224	0.2	0.0436	0.0000	Link Depth = 1.001
360 minute winter	SAT	504	9.677	0.251	0.2	0.5727	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute winter	S1	1.000	S2	0.1	0.217	0.017	0.0289
360 minute winter	S2	1.001	SAT	0.2	0.348	0.033	0.0211
360 minute winter	SAT	Infiltration		0.0			