



Location plan - scale 1:1250

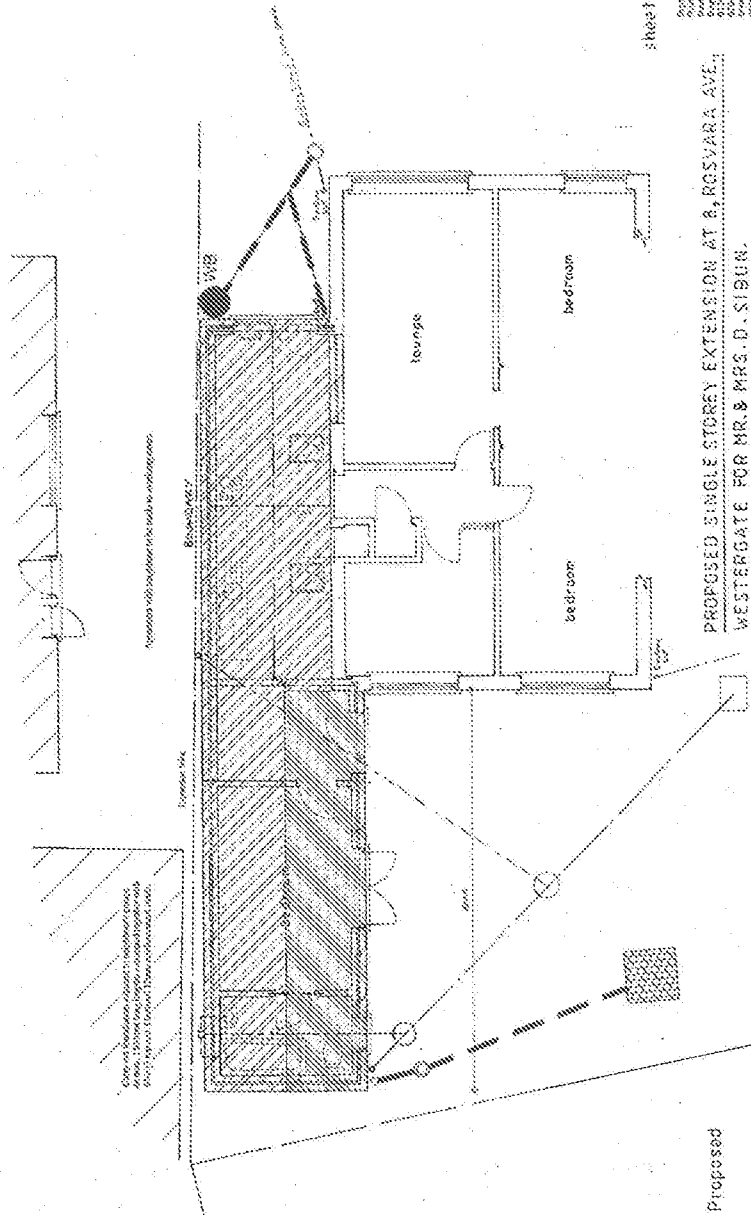
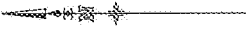
B	Water But added	RTFC	17.5.17
A	Catchpit mantle added to ex drain	RTFC	15.5.17
-	Original	RTFC	12.5.17
Rev	Description	Dm	Date

Project
8 Rosvara Avenue
Westergate

Client
Mr D. Sibun
Drawing
Title
Surface Water Drainage

Robert Clark Associates Ltd
Chartered Civil Engineers
Willow Cottage, Heene Lane, Rushington
West Sussex BN16 3EE
T: 01323 778945 E: rclark@rca.co.uk

© This drawing is the copyright of Robert Clark Associates Limited It may not be copied or reproduced without prior written authority	Scale	As shown	A3
Drawing Number	1737/D1.1	Revision	B



Sheet 1 of 1
Project Name
8 Rosvara Ave
Westergate
Rushington
West Sussex BN16 3EE
Project No
1737/D1.1
Drawing No
1737/D1.1

Plan - scale 1:100

KEY

- Proposed storm drainage
- Proposed silt trap inspection chamber
- Proposed geocellular soakaway 450mm of 1.2m deep geocell
- New roof draining to geocell
- New roof draining to existing surface water drainage system
- Water But with overflow to drain

Surface Water Drainage Design Notes

Ground conditions here comprise Topsoil over River Terrace Deposits (soft to firm silty sandy clays) over London Clay. The River Terrace Deposits were found at 0.3m below ground level and were found to comprise soft to firm silty clays with some grit and gravel and occasional flints. The London Clay was not encountered in test holes that extended to 1.2m below ground level. No groundwater was found during the investigations in early May 2017.

The drainage design is based on percolation tests carried out to BRE365 principles in two separate test holes in January 2017. A minimum soil infiltration rate of 4.493×10^{-4} m/s was obtained.

A rectangular geocellular soakaway has been designed, 1m square x 0.4m high, which will be suitable to drain a roof area of 12 sq.m without flooding on a 1 in 100 year rainfall event + 40% climate change addition. The soakaway should be sited a minimum of 5m from any building to avoid any saturation of the ground and settlement affecting the structure.

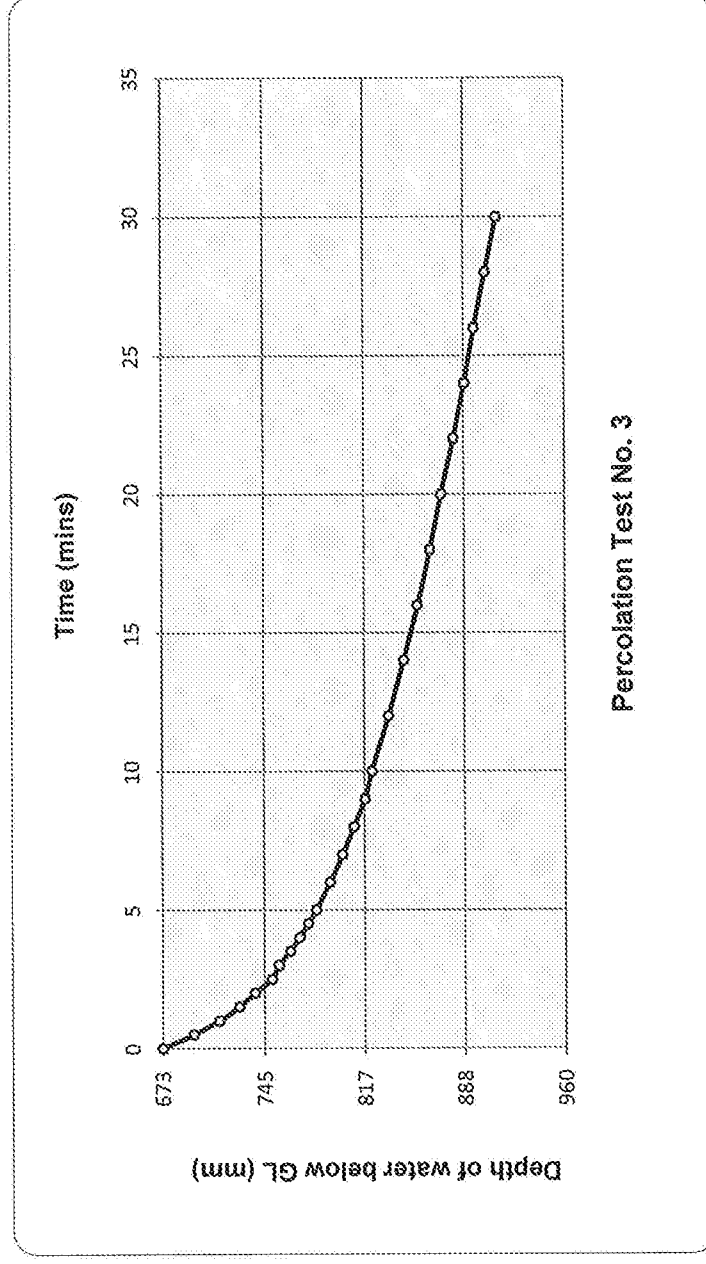
Robert Clark Associates Ltd

#8 Rosvara Avenue, Westergate

Percolation Test Test Pit TP #1

0.450 Length x 0.320 Width x 0.960 Depth

Time (mins)	Depth to Water Surface
0	673
0.5	695
1	713
1.5	727
2	738
2.5	750
3	755
3.5	763
4	770
4.5	776
5	782
6	792
7	801
8	809
9	817
10	822
12	834
14	845
16	855
18	864
20	872
22	881
24	889
26	896
28	904
30	912
35	960



Percolation Test No. 3

Soil infiltration rate: $f = \frac{0.021}{0.365 \times 21.0 \times 60} = \frac{4.493E-05 \text{ m/s}}{0.1617579 \text{ m/hr}}$

Robert Clark Associates		Page 1
Willow Cottage Herne Lane Rustington BN16 3EE	8 Rosvara Avenue Westergate	
Date 15 May 2017	Designed by RTFC	
File cells-1.SRCX	Checked by	
Micro Drainage		Source Control 2016.1

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 45 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	0.233	0.233	0.1	0.2	O K
30 min Summer	0.278	0.278	0.1	0.3	O K
60 min Summer	0.297	0.297	0.1	0.3	O K
120 min Summer	0.290	0.290	0.1	0.3	O K
180 min Summer	0.269	0.269	0.1	0.3	O K
240 min Summer	0.247	0.247	0.1	0.2	O K
360 min Summer	0.207	0.207	0.1	0.2	O K
480 min Summer	0.175	0.175	0.1	0.2	O K
600 min Summer	0.149	0.149	0.0	0.1	O K
720 min Summer	0.127	0.127	0.0	0.1	O K
960 min Summer	0.092	0.092	0.0	0.1	O K
1440 min Summer	0.053	0.053	0.0	0.1	O K
2160 min Summer	0.039	0.039	0.0	0.0	O K
2880 min Summer	0.031	0.031	0.0	0.0	O K
4320 min Summer	0.023	0.023	0.0	0.0	O K
5760 min Summer	0.018	0.018	0.0	0.0	O K
7200 min Summer	0.015	0.015	0.0	0.0	O K
8640 min Summer	0.013	0.013	0.0	0.0	O K
10080 min Summer	0.011	0.011	0.0	0.0	O K
15 min Winter	0.264	0.264	0.1	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	138.153	0.0	17
30 min Summer	90.705	0.0	30
60 min Summer	56.713	0.0	46
120 min Summer	34.246	0.0	80
180 min Summer	25.149	0.0	116
240 min Summer	20.078	0.0	148
360 min Summer	14.585	0.0	214
480 min Summer	11.622	0.0	278
600 min Summer	9.738	0.0	338
720 min Summer	8.424	0.0	398
960 min Summer	6.697	0.0	520
1440 min Summer	4.839	0.0	738
2160 min Summer	3.490	0.0	1100
2880 min Summer	2.766	0.0	1468
4320 min Summer	1.989	0.0	2192
5760 min Summer	1.573	0.0	2936
7200 min Summer	1.311	0.0	3648
8640 min Summer	1.129	0.0	4400
10080 min Summer	0.994	0.0	5136
15 min Winter	138.153	0.0	17

Robert Clark Associates		Page 2
Willow Cottage Herne Lane Rustington BN16 3EE	8 Rosvara Avenue Westergate	
Date 15 May 2017 File cells-1.SRCX	Designed by RTEC Checked by	
Micro Drainage Source Control 2016.1		

Source Control 2016.1

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	0.317	0.317	0.1	0.3	O K
60 min Winter	0.337	0.337	0.1	0.3	O K
120 min Winter	0.322	0.322	0.1	0.3	O K
180 min Winter	0.291	0.291	0.1	0.3	O K
240 min Winter	0.258	0.258	0.1	0.2	O K
360 min Winter	0.203	0.203	0.1	0.2	O K
480 min Winter	0.159	0.159	0.0	0.2	O K
600 min Winter	0.125	0.125	0.0	0.1	O K
720 min Winter	0.097	0.097	0.0	0.1	O K
960 min Winter	0.058	0.058	0.0	0.1	O K
1440 min Winter	0.039	0.039	0.0	0.0	O K
2160 min Winter	0.029	0.029	0.0	0.0	O K
2880 min Winter	0.023	0.023	0.0	0.0	O K
4320 min Winter	0.016	0.016	0.0	0.0	O K
5760 min Winter	0.013	0.013	0.0	0.0	O K
7200 min Winter	0.011	0.011	0.0	0.0	O K
8640 min Winter	0.009	0.009	0.0	0.0	O K
10080 min Winter	0.008	0.008	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	90.705	0.0	30
60 min Winter	56.713	0.0	48
120 min Winter	34.246	0.0	88
180 min Winter	25.149	0.0	124
240 min Winter	20.078	0.0	158
360 min Winter	14.585	0.0	225
480 min Winter	11.622	0.0	290
600 min Winter	9.738	0.0	352
720 min Winter	8.424	0.0	412
960 min Winter	6.697	0.0	520
1440 min Winter	4.839	0.0	738
2160 min Winter	3.490	0.0	1096
2880 min Winter	2.766	0.0	1436
4320 min Winter	1.989	0.0	2204
5760 min Winter	1.573	0.0	2888
7200 min Winter	1.311	0.0	3672
8640 min Winter	1.129	0.0	4176
10080 min Winter	0.994	0.0	5128

Robert Clark Associates		Page 3
Willow Cottage Herne Lane Rustington BN16 3EE	8 Rosvara Avenue Westergate	
Date 15 May 2017 File cells-1.SRCX	Designed by RTFC Checked by	
Micro Drainage	Source Control 2016.1	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.001

Time (mins)	Area
From:	To: (ha)
0	4 0.001

Robert Clark Associates		Page 4																		
Willow Cottage Herne Lane Rustington BN16 3EE	8 Rosvara Avenue Westergate																			
Date 15 May 2017 File cells-1.SRCX	Designed by RTFC Checked by																			
Micro Drainage Source Control 2016.1																				
<u>Model Details</u> Storage is Online Cover Level (m) 1.000 <u>Cellular Storage Structure</u> Invert Level (m) 0.000 Safety Factor 1.5 Infiltration Coefficient Base (m/hr) 0.16175 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.16175 <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>1.0</td> <td>1.0</td> <td>0.500</td> <td>0.0</td> <td>2.6</td> </tr> <tr> <td>0.400</td> <td>1.0</td> <td>2.6</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	1.0	1.0	0.500	0.0	2.6	0.400	1.0	2.6			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	1.0	1.0	0.500	0.0	2.6															
0.400	1.0	2.6																		
©1982-2016 XP Solutions																				