

Robert Clark Associates				Page 1																																																																																																																																																																																																																			
Willow Cottage Herne Lane Rustington BN16 3EE			Apple Barn Cottage Climping 10 year storm calcs																																																																																																																																																																																																																				
Date 27.4.19 File Geocell G2-3.SRCX			Designed by Checked by																																																																																																																																																																																																																				
Micro Drainage			Source Control 2016.1																																																																																																																																																																																																																				
Summary of Results for 10 year Return Period (+40%) Half Drain Time : 541 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>5.623</td><td>0.098</td><td>0.1</td><td>1.4</td><td>0 K</td></tr><tr><td>30 min Summer</td><td>5.652</td><td>0.127</td><td>0.1</td><td>1.8</td><td>0 K</td></tr><tr><td>60 min Summer</td><td>5.683</td><td>0.158</td><td>0.1</td><td>2.3</td><td>0 K</td></tr><tr><td>120 min Summer</td><td>5.713</td><td>0.188</td><td>0.1</td><td>2.7</td><td>0 K</td></tr><tr><td>180 min Summer</td><td>5.728</td><td>0.203</td><td>0.1</td><td>2.9</td><td>0 K</td></tr><tr><td>240 min Summer</td><td>5.736</td><td>0.211</td><td>0.1</td><td>3.0</td><td>0 K</td></tr><tr><td>360 min Summer</td><td>5.744</td><td>0.219</td><td>0.1</td><td>3.1</td><td>0 K</td></tr><tr><td>480 min Summer</td><td>5.747</td><td>0.222</td><td>0.1</td><td>3.2</td><td>0 K</td></tr><tr><td>600 min Summer</td><td>5.747</td><td>0.222</td><td>0.1</td><td>3.2</td><td>0 K</td></tr><tr><td>720 min Summer</td><td>5.747</td><td>0.222</td><td>0.1</td><td>3.2</td><td>0 K</td></tr><tr><td>960 min Summer</td><td>5.745</td><td>0.220</td><td>0.1</td><td>3.1</td><td>0 K</td></tr><tr><td>1440 min Summer</td><td>5.736</td><td>0.211</td><td>0.1</td><td>3.0</td><td>0 K</td></tr><tr><td>2160 min Summer</td><td>5.719</td><td>0.194</td><td>0.1</td><td>2.8</td><td>0 K</td></tr><tr><td>2880 min Summer</td><td>5.702</td><td>0.177</td><td>0.1</td><td>2.5</td><td>0 K</td></tr><tr><td>4320 min Summer</td><td>5.670</td><td>0.145</td><td>0.1</td><td>2.1</td><td>0 K</td></tr><tr><td>5760 min Summer</td><td>5.642</td><td>0.117</td><td>0.1</td><td>1.7</td><td>0 K</td></tr><tr><td>7200 min Summer</td><td>5.620</td><td>0.095</td><td>0.1</td><td>1.4</td><td>0 K</td></tr><tr><td>8640 min Summer</td><td>5.602</td><td>0.077</td><td>0.1</td><td>1.1</td><td>0 K</td></tr><tr><td>10080 min Summer</td><td>5.589</td><td>0.064</td><td>0.1</td><td>0.9</td><td>0 K</td></tr><tr><td>15 min Winter</td><td>5.635</td><td>0.110</td><td>0.1</td><td>1.6</td><td>0 K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>76.214</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>50.290</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>31.908</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>19.755</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>14.804</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>12.028</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>8.957</td><td>0.0</td><td>360</td></tr><tr><td>480 min Summer</td><td>7.262</td><td>0.0</td><td>420</td></tr><tr><td>600 min Summer</td><td>6.168</td><td>0.0</td><td>482</td></tr><tr><td>720 min Summer</td><td>5.396</td><td>0.0</td><td>546</td></tr><tr><td>960 min Summer</td><td>4.369</td><td>0.0</td><td>676</td></tr><tr><td>1440 min Summer</td><td>3.241</td><td>0.0</td><td>954</td></tr><tr><td>2160 min Summer</td><td>2.402</td><td>0.0</td><td>1364</td></tr><tr><td>2880 min Summer</td><td>1.942</td><td>0.0</td><td>1760</td></tr><tr><td>4320 min Summer</td><td>1.437</td><td>0.0</td><td>2548</td></tr><tr><td>5760 min Summer</td><td>1.161</td><td>0.0</td><td>3288</td></tr><tr><td>7200 min Summer</td><td>0.983</td><td>0.0</td><td>3968</td></tr><tr><td>8640 min Summer</td><td>0.859</td><td>0.0</td><td>4672</td></tr><tr><td>10080 min Summer</td><td>0.766</td><td>0.0</td><td>5344</td></tr><tr><td>15 min Winter</td><td>76.214</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	5.623	0.098	0.1	1.4	0 K	30 min Summer	5.652	0.127	0.1	1.8	0 K	60 min Summer	5.683	0.158	0.1	2.3	0 K	120 min Summer	5.713	0.188	0.1	2.7	0 K	180 min Summer	5.728	0.203	0.1	2.9	0 K	240 min Summer	5.736	0.211	0.1	3.0	0 K	360 min Summer	5.744	0.219	0.1	3.1	0 K	480 min Summer	5.747	0.222	0.1	3.2	0 K	600 min Summer	5.747	0.222	0.1	3.2	0 K	720 min Summer	5.747	0.222	0.1	3.2	0 K	960 min Summer	5.745	0.220	0.1	3.1	0 K	1440 min Summer	5.736	0.211	0.1	3.0	0 K	2160 min Summer	5.719	0.194	0.1	2.8	0 K	2880 min Summer	5.702	0.177	0.1	2.5	0 K	4320 min Summer	5.670	0.145	0.1	2.1	0 K	5760 min Summer	5.642	0.117	0.1	1.7	0 K	7200 min Summer	5.620	0.095	0.1	1.4	0 K	8640 min Summer	5.602	0.077	0.1	1.1	0 K	10080 min Summer	5.589	0.064	0.1	0.9	0 K	15 min Winter	5.635	0.110	0.1	1.6	0 K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	76.214	0.0	19	30 min Summer	50.290	0.0	33	60 min Summer	31.908	0.0	62	120 min Summer	19.755	0.0	122	180 min Summer	14.804	0.0	182	240 min Summer	12.028	0.0	242	360 min Summer	8.957	0.0	360	480 min Summer	7.262	0.0	420	600 min Summer	6.168	0.0	482	720 min Summer	5.396	0.0	546	960 min Summer	4.369	0.0	676	1440 min Summer	3.241	0.0	954	2160 min Summer	2.402	0.0	1364	2880 min Summer	1.942	0.0	1760	4320 min Summer	1.437	0.0	2548	5760 min Summer	1.161	0.0	3288	7200 min Summer	0.983	0.0	3968	8640 min Summer	0.859	0.0	4672	10080 min Summer	0.766	0.0	5344	15 min Winter	76.214	0.0	19
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
15 min Summer	5.623	0.098	0.1	1.4	0 K																																																																																																																																																																																																																		
30 min Summer	5.652	0.127	0.1	1.8	0 K																																																																																																																																																																																																																		
60 min Summer	5.683	0.158	0.1	2.3	0 K																																																																																																																																																																																																																		
120 min Summer	5.713	0.188	0.1	2.7	0 K																																																																																																																																																																																																																		
180 min Summer	5.728	0.203	0.1	2.9	0 K																																																																																																																																																																																																																		
240 min Summer	5.736	0.211	0.1	3.0	0 K																																																																																																																																																																																																																		
360 min Summer	5.744	0.219	0.1	3.1	0 K																																																																																																																																																																																																																		
480 min Summer	5.747	0.222	0.1	3.2	0 K																																																																																																																																																																																																																		
600 min Summer	5.747	0.222	0.1	3.2	0 K																																																																																																																																																																																																																		
720 min Summer	5.747	0.222	0.1	3.2	0 K																																																																																																																																																																																																																		
960 min Summer	5.745	0.220	0.1	3.1	0 K																																																																																																																																																																																																																		
1440 min Summer	5.736	0.211	0.1	3.0	0 K																																																																																																																																																																																																																		
2160 min Summer	5.719	0.194	0.1	2.8	0 K																																																																																																																																																																																																																		
2880 min Summer	5.702	0.177	0.1	2.5	0 K																																																																																																																																																																																																																		
4320 min Summer	5.670	0.145	0.1	2.1	0 K																																																																																																																																																																																																																		
5760 min Summer	5.642	0.117	0.1	1.7	0 K																																																																																																																																																																																																																		
7200 min Summer	5.620	0.095	0.1	1.4	0 K																																																																																																																																																																																																																		
8640 min Summer	5.602	0.077	0.1	1.1	0 K																																																																																																																																																																																																																		
10080 min Summer	5.589	0.064	0.1	0.9	0 K																																																																																																																																																																																																																		
15 min Winter	5.635	0.110	0.1	1.6	0 K																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																				
15 min Summer	76.214	0.0	19																																																																																																																																																																																																																				
30 min Summer	50.290	0.0	33																																																																																																																																																																																																																				
60 min Summer	31.908	0.0	62																																																																																																																																																																																																																				
120 min Summer	19.755	0.0	122																																																																																																																																																																																																																				
180 min Summer	14.804	0.0	182																																																																																																																																																																																																																				
240 min Summer	12.028	0.0	242																																																																																																																																																																																																																				
360 min Summer	8.957	0.0	360																																																																																																																																																																																																																				
480 min Summer	7.262	0.0	420																																																																																																																																																																																																																				
600 min Summer	6.168	0.0	482																																																																																																																																																																																																																				
720 min Summer	5.396	0.0	546																																																																																																																																																																																																																				
960 min Summer	4.369	0.0	676																																																																																																																																																																																																																				
1440 min Summer	3.241	0.0	954																																																																																																																																																																																																																				
2160 min Summer	2.402	0.0	1364																																																																																																																																																																																																																				
2880 min Summer	1.942	0.0	1760																																																																																																																																																																																																																				
4320 min Summer	1.437	0.0	2548																																																																																																																																																																																																																				
5760 min Summer	1.161	0.0	3288																																																																																																																																																																																																																				
7200 min Summer	0.983	0.0	3968																																																																																																																																																																																																																				
8640 min Summer	0.859	0.0	4672																																																																																																																																																																																																																				
10080 min Summer	0.766	0.0	5344																																																																																																																																																																																																																				
15 min Winter	76.214	0.0	19																																																																																																																																																																																																																				
©1982-2016 XP Solutions																																																																																																																																																																																																																							

Robert Clark Associates			Page 2		
Willow Cottage Herne Lane Rustington BN16 3EE		Apple Barn Cottage Climping 10 year storm calcs			
Date 27.4.19 File Geocell G2-3.SRCX		Designed by Checked by			
Micro Drainage		Source Control 2016.1			
<u>Summary of Results for 10 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	5.668	0.143	0.1	2.0	0 K
60 min Winter	5.703	0.178	0.1	2.5	0 K
120 min Winter	5.737	0.212	0.1	3.0	0 K
180 min Winter	5.755	0.230	0.1	3.3	0 K
240 min Winter	5.766	0.241	0.1	3.4	0 K
360 min Winter	5.777	0.252	0.1	3.6	0 K
480 min Winter	5.781	0.256	0.1	3.6	0 K
600 min Winter	5.781	0.256	0.1	3.6	0 K
720 min Winter	5.779	0.254	0.1	3.6	0 K
960 min Winter	5.776	0.251	0.1	3.6	0 K
1440 min Winter	5.762	0.237	0.1	3.4	0 K
2160 min Winter	5.735	0.210	0.1	3.0	0 K
2880 min Winter	5.708	0.183	0.1	2.6	0 K
4320 min Winter	5.659	0.134	0.1	1.9	0 K
5760 min Winter	5.619	0.094	0.1	1.3	0 K
7200 min Winter	5.590	0.065	0.1	0.9	0 K
8640 min Winter	5.574	0.049	0.0	0.7	0 K
10080 min Winter	5.569	0.044	0.0	0.6	0 K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	50.290	0.0	33		
60 min Winter	31.908	0.0	62		
120 min Winter	19.755	0.0	120		
180 min Winter	14.804	0.0	178		
240 min Winter	12.028	0.0	236		
360 min Winter	8.957	0.0	348		
480 min Winter	7.262	0.0	456		
600 min Winter	6.168	0.0	556		
720 min Winter	5.396	0.0	578		
960 min Winter	4.369	0.0	732		
1440 min Winter	3.241	0.0	1038		
2160 min Winter	2.402	0.0	1476		
2880 min Winter	1.942	0.0	1904		
4320 min Winter	1.437	0.0	2684		
5760 min Winter	1.161	0.0	3400		
7200 min Winter	0.983	0.0	4032		
8640 min Winter	0.859	0.0	4576		
10080 min Winter	0.766	0.0	5248		
©1982-2016 XP Solutions					

Robert Clark Associates		Page 3
Willow Cottage Herne Lane Rustington BN16 3EE	Apple Barn Cottage Climping 10 year storm calcs	
Date 27.4.19 File Geocell G2-3.SRCX	Designed by Checked by	
Micro Drainage Source Control 2016.1		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.010

Time (mins)	Area (ha)
From:	To:
0	4 0.010

©1982-2016 XP Solutions

Robert Clark Associates		Page 4
Willow Cottage Herne Lane Rustington BN16 3EE	Apple Barn Cottage Climping 10 year storm calcs	
Date 27.4.19 File Geocell G2-3.SRCX	Designed by Checked by	
Micro Drainage Source Control 2016.1		

Model Details

Storage is Online Cover Level (m) 6.425

Cellular Storage Structure

Invert Level (m)	5.525
Infiltration Coefficient Base (m/hr)	0.03402
Infiltration Coefficient Side (m/hr)	0.03402
Safety Factor	3.0
Porosity	0.95

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	15.0	15.0	0.500	0.0	21.4
0.400	15.0	21.4			

©1982-2016 XP Solutions