

MJA Consulting				Page 1																																																																																																																																																																																																																			
Monarch House Barton Lane OX14 3NB		Swale 4																																																																																																																																																																																																																					
Date 07/03/2018 12:38 File Swale 4.srcx		Designed by stewart Checked by																																																																																																																																																																																																																					
Innovyze		Source Control 2017.1.2																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 139 minutes. <table><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><tr><td>15 min Summer</td><td>99.249</td><td>0.249</td><td>1.1</td><td>10.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>99.276</td><td>0.276</td><td>1.2</td><td>13.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>99.296</td><td>0.296</td><td>1.3</td><td>15.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>99.306</td><td>0.306</td><td>1.4</td><td>16.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>99.308</td><td>0.308</td><td>1.4</td><td>17.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>99.307</td><td>0.307</td><td>1.4</td><td>17.0</td><td>O K</td></tr><tr><td>360 min Summer</td><td>99.303</td><td>0.303</td><td>1.4</td><td>16.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>99.297</td><td>0.297</td><td>1.3</td><td>15.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>99.291</td><td>0.291</td><td>1.3</td><td>15.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>99.285</td><td>0.285</td><td>1.3</td><td>14.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>99.273</td><td>0.273</td><td>1.2</td><td>12.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>99.253</td><td>0.253</td><td>1.1</td><td>10.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>99.231</td><td>0.231</td><td>0.9</td><td>8.4</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>99.213</td><td>0.213</td><td>0.8</td><td>6.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>99.185</td><td>0.185</td><td>0.7</td><td>4.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>99.166</td><td>0.166</td><td>0.6</td><td>3.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>99.151</td><td>0.151</td><td>0.5</td><td>3.0</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>99.139</td><td>0.139</td><td>0.4</td><td>2.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>99.130</td><td>0.130</td><td>0.4</td><td>2.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>99.261</td><td>0.261</td><td>1.1</td><td>11.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>134.746</td><td>0.0</td><td>18</td></tr><tr><td>30 min Summer</td><td>90.474</td><td>0.0</td><td>32</td></tr><tr><td>60 min Summer</td><td>57.877</td><td>0.0</td><td>60</td></tr><tr><td>120 min Summer</td><td>35.655</td><td>0.0</td><td>100</td></tr><tr><td>180 min Summer</td><td>26.413</td><td>0.0</td><td>132</td></tr><tr><td>240 min Summer</td><td>21.237</td><td>0.0</td><td>166</td></tr><tr><td>360 min Summer</td><td>15.626</td><td>0.0</td><td>236</td></tr><tr><td>480 min Summer</td><td>12.548</td><td>0.0</td><td>304</td></tr><tr><td>600 min Summer</td><td>10.575</td><td>0.0</td><td>370</td></tr><tr><td>720 min Summer</td><td>9.191</td><td>0.0</td><td>436</td></tr><tr><td>960 min Summer</td><td>7.358</td><td>0.0</td><td>568</td></tr><tr><td>1440 min Summer</td><td>5.368</td><td>0.0</td><td>820</td></tr><tr><td>2160 min Summer</td><td>3.907</td><td>0.0</td><td>1188</td></tr><tr><td>2880 min Summer</td><td>3.115</td><td>0.0</td><td>1556</td></tr><tr><td>4320 min Summer</td><td>2.259</td><td>0.0</td><td>2252</td></tr><tr><td>5760 min Summer</td><td>1.796</td><td>0.0</td><td>2992</td></tr><tr><td>7200 min Summer</td><td>1.506</td><td>0.0</td><td>3680</td></tr><tr><td>8640 min Summer</td><td>1.304</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>1.154</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>134.746</td><td>0.0</td><td>18</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	99.249	0.249	1.1	10.2	O K	30 min Summer	99.276	0.276	1.2	13.2	O K	60 min Summer	99.296	0.296	1.3	15.6	O K	120 min Summer	99.306	0.306	1.4	16.9	O K	180 min Summer	99.308	0.308	1.4	17.2	O K	240 min Summer	99.307	0.307	1.4	17.0	O K	360 min Summer	99.303	0.303	1.4	16.5	O K	480 min Summer	99.297	0.297	1.3	15.8	O K	600 min Summer	99.291	0.291	1.3	15.0	O K	720 min Summer	99.285	0.285	1.3	14.2	O K	960 min Summer	99.273	0.273	1.2	12.8	O K	1440 min Summer	99.253	0.253	1.1	10.6	O K	2160 min Summer	99.231	0.231	0.9	8.4	O K	2880 min Summer	99.213	0.213	0.8	6.9	O K	4320 min Summer	99.185	0.185	0.7	4.9	O K	5760 min Summer	99.166	0.166	0.6	3.8	O K	7200 min Summer	99.151	0.151	0.5	3.0	O K	8640 min Summer	99.139	0.139	0.4	2.5	O K	10080 min Summer	99.130	0.130	0.4	2.1	O K	15 min Winter	99.261	0.261	1.1	11.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	134.746	0.0	18	30 min Summer	90.474	0.0	32	60 min Summer	57.877	0.0	60	120 min Summer	35.655	0.0	100	180 min Summer	26.413	0.0	132	240 min Summer	21.237	0.0	166	360 min Summer	15.626	0.0	236	480 min Summer	12.548	0.0	304	600 min Summer	10.575	0.0	370	720 min Summer	9.191	0.0	436	960 min Summer	7.358	0.0	568	1440 min Summer	5.368	0.0	820	2160 min Summer	3.907	0.0	1188	2880 min Summer	3.115	0.0	1556	4320 min Summer	2.259	0.0	2252	5760 min Summer	1.796	0.0	2992	7200 min Summer	1.506	0.0	3680	8640 min Summer	1.304	0.0	4416	10080 min Summer	1.154	0.0	5144	15 min Winter	134.746	0.0	18
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
15 min Summer	99.249	0.249	1.1	10.2	O K																																																																																																																																																																																																																		
30 min Summer	99.276	0.276	1.2	13.2	O K																																																																																																																																																																																																																		
60 min Summer	99.296	0.296	1.3	15.6	O K																																																																																																																																																																																																																		
120 min Summer	99.306	0.306	1.4	16.9	O K																																																																																																																																																																																																																		
180 min Summer	99.308	0.308	1.4	17.2	O K																																																																																																																																																																																																																		
240 min Summer	99.307	0.307	1.4	17.0	O K																																																																																																																																																																																																																		
360 min Summer	99.303	0.303	1.4	16.5	O K																																																																																																																																																																																																																		
480 min Summer	99.297	0.297	1.3	15.8	O K																																																																																																																																																																																																																		
600 min Summer	99.291	0.291	1.3	15.0	O K																																																																																																																																																																																																																		
720 min Summer	99.285	0.285	1.3	14.2	O K																																																																																																																																																																																																																		
960 min Summer	99.273	0.273	1.2	12.8	O K																																																																																																																																																																																																																		
1440 min Summer	99.253	0.253	1.1	10.6	O K																																																																																																																																																																																																																		
2160 min Summer	99.231	0.231	0.9	8.4	O K																																																																																																																																																																																																																		
2880 min Summer	99.213	0.213	0.8	6.9	O K																																																																																																																																																																																																																		
4320 min Summer	99.185	0.185	0.7	4.9	O K																																																																																																																																																																																																																		
5760 min Summer	99.166	0.166	0.6	3.8	O K																																																																																																																																																																																																																		
7200 min Summer	99.151	0.151	0.5	3.0	O K																																																																																																																																																																																																																		
8640 min Summer	99.139	0.139	0.4	2.5	O K																																																																																																																																																																																																																		
10080 min Summer	99.130	0.130	0.4	2.1	O K																																																																																																																																																																																																																		
15 min Winter	99.261	0.261	1.1	11.5	O K																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																				
15 min Summer	134.746	0.0	18																																																																																																																																																																																																																				
30 min Summer	90.474	0.0	32																																																																																																																																																																																																																				
60 min Summer	57.877	0.0	60																																																																																																																																																																																																																				
120 min Summer	35.655	0.0	100																																																																																																																																																																																																																				
180 min Summer	26.413	0.0	132																																																																																																																																																																																																																				
240 min Summer	21.237	0.0	166																																																																																																																																																																																																																				
360 min Summer	15.626	0.0	236																																																																																																																																																																																																																				
480 min Summer	12.548	0.0	304																																																																																																																																																																																																																				
600 min Summer	10.575	0.0	370																																																																																																																																																																																																																				
720 min Summer	9.191	0.0	436																																																																																																																																																																																																																				
960 min Summer	7.358	0.0	568																																																																																																																																																																																																																				
1440 min Summer	5.368	0.0	820																																																																																																																																																																																																																				
2160 min Summer	3.907	0.0	1188																																																																																																																																																																																																																				
2880 min Summer	3.115	0.0	1556																																																																																																																																																																																																																				
4320 min Summer	2.259	0.0	2252																																																																																																																																																																																																																				
5760 min Summer	1.796	0.0	2992																																																																																																																																																																																																																				
7200 min Summer	1.506	0.0	3680																																																																																																																																																																																																																				
8640 min Summer	1.304	0.0	4416																																																																																																																																																																																																																				
10080 min Summer	1.154	0.0	5144																																																																																																																																																																																																																				
15 min Winter	134.746	0.0	18																																																																																																																																																																																																																				
©1982-2017 XP Solutions																																																																																																																																																																																																																							

MJA Consulting		Page 2			
Monarch House Barton Lane OX14 3NB	Swale 4				
Date 07/03/2018 12:38 File Swale 4.srcx	Designed by stewart Checked by				
Innovyze	Source Control 2017.1.2				
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	99.290	0.290	1.3	14.9	O K
60 min Winter	99.312	0.312	1.4	17.8	O K
120 min Winter	99.323	0.323	1.5	19.3	O K
180 min Winter	99.324	0.324	1.5	19.4	O K
240 min Winter	99.322	0.322	1.5	19.1	O K
360 min Winter	99.315	0.315	1.4	18.2	O K
480 min Winter	99.306	0.306	1.4	17.0	O K
600 min Winter	99.297	0.297	1.3	15.8	O K
720 min Winter	99.289	0.289	1.3	14.7	O K
960 min Winter	99.272	0.272	1.2	12.7	O K
1440 min Winter	99.246	0.246	1.0	9.9	O K
2160 min Winter	99.216	0.216	0.8	7.2	O K
2880 min Winter	99.194	0.194	0.7	5.5	O K
4320 min Winter	99.163	0.163	0.5	3.6	O K
5760 min Winter	99.142	0.142	0.4	2.6	O K
7200 min Winter	99.126	0.126	0.4	2.0	O K
8640 min Winter	99.115	0.115	0.3	1.6	O K
10080 min Winter	99.106	0.106	0.3	1.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	90.474	0.0	32		
60 min Winter	57.877	0.0	60		
120 min Winter	35.655	0.0	112		
180 min Winter	26.413	0.0	140		
240 min Winter	21.237	0.0	180		
360 min Winter	15.626	0.0	254		
480 min Winter	12.548	0.0	326		
600 min Winter	10.575	0.0	398		
720 min Winter	9.191	0.0	464		
960 min Winter	7.358	0.0	598		
1440 min Winter	5.368	0.0	852		
2160 min Winter	3.907	0.0	1216		
2880 min Winter	3.115	0.0	1584		
4320 min Winter	2.259	0.0	2292		
5760 min Winter	1.796	0.0	3000		
7200 min Winter	1.506	0.0	3744		
8640 min Winter	1.304	0.0	4416		
10080 min Winter	1.154	0.0	5144		
©1982-2017 XP Solutions					

MJA Consulting		Page 3
Monarch House Barton Lane OX14 3NB	Swale 4	
Date 07/03/2018 12:38 File Swale 4.srcx	Designed by stewart Checked by	
Innovyze Source Control 2017.1.2		

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)	20.400	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.043

Time (mins)	Area
From:	To: (ha)
0	4 0.043

©1982-2017 XP Solutions

MJA Consulting		Page 4
Monarch House Barton Lane OX14 3NB	Swale 4	
Date 07/03/2018 12:38 File Swale 4.srcx	Designed by stewart Checked by	
Innovyze Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 100.000

Swale Structure

Infiltration Coefficient Base (m/hr)	0.07200	Length (m)	85.0
Infiltration Coefficient Side (m/hr)	0.07200	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	330.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	99.000	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.5		

©1982-2017 XP Solutions