

MJA Consulting				Page 1																																																																																																																																																																																																																			
Monarch House Barton Lane OX14 3NB		Westergate & Eastergate 108,109,110,111,118,119,120 1:100+40%cc																																																																																																																																																																																																																					
Date 01/11/2018 File PLOTS 108, 109, 110, 11...		Designed by S.Smith Checked by																																																																																																																																																																																																																					
Innovyze		Source Control 2017.1.2																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 119 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>99.254</td><td>0.254</td><td>0.4</td><td>2.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>99.324</td><td>0.324</td><td>0.4</td><td>3.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>99.378</td><td>0.378</td><td>0.4</td><td>3.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>99.395</td><td>0.395</td><td>0.4</td><td>4.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>99.387</td><td>0.387</td><td>0.4</td><td>4.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>99.372</td><td>0.372</td><td>0.4</td><td>3.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>99.342</td><td>0.342</td><td>0.4</td><td>3.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>99.311</td><td>0.311</td><td>0.4</td><td>3.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>99.281</td><td>0.281</td><td>0.4</td><td>2.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>99.252</td><td>0.252</td><td>0.4</td><td>2.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>99.198</td><td>0.198</td><td>0.4</td><td>2.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>99.115</td><td>0.115</td><td>0.4</td><td>1.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>99.054</td><td>0.054</td><td>0.4</td><td>0.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>99.042</td><td>0.042</td><td>0.3</td><td>0.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>99.031</td><td>0.031</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>99.025</td><td>0.025</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>99.021</td><td>0.021</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>99.019</td><td>0.019</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>99.018</td><td>0.018</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>99.287</td><td>0.287</td><td>0.4</td><td>2.9</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>127.204</td><td>0.0</td><td>18</td></tr><tr><td>30 min Summer</td><td>85.821</td><td>0.0</td><td>32</td></tr><tr><td>60 min Summer</td><td>55.250</td><td>0.0</td><td>60</td></tr><tr><td>120 min Summer</td><td>34.307</td><td>0.0</td><td>104</td></tr><tr><td>180 min Summer</td><td>25.552</td><td>0.0</td><td>136</td></tr><tr><td>240 min Summer</td><td>20.570</td><td>0.0</td><td>168</td></tr><tr><td>360 min Summer</td><td>15.173</td><td>0.0</td><td>238</td></tr><tr><td>480 min Summer</td><td>12.206</td><td>0.0</td><td>304</td></tr><tr><td>600 min Summer</td><td>10.302</td><td>0.0</td><td>372</td></tr><tr><td>720 min Summer</td><td>8.963</td><td>0.0</td><td>436</td></tr><tr><td>960 min Summer</td><td>7.189</td><td>0.0</td><td>560</td></tr><tr><td>1440 min Summer</td><td>5.257</td><td>0.0</td><td>794</td></tr><tr><td>2160 min Summer</td><td>3.836</td><td>0.0</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>3.063</td><td>0.0</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>2.226</td><td>0.0</td><td>2192</td></tr><tr><td>5760 min Summer</td><td>1.773</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.487</td><td>0.0</td><td>3672</td></tr><tr><td>8640 min Summer</td><td>1.289</td><td>0.0</td><td>4264</td></tr><tr><td>10080 min Summer</td><td>1.142</td><td>0.0</td><td>5120</td></tr><tr><td>15 min Winter</td><td>127.204</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	99.254	0.254	0.4	2.6	O K	30 min Summer	99.324	0.324	0.4	3.3	O K	60 min Summer	99.378	0.378	0.4	3.9	O K	120 min Summer	99.395	0.395	0.4	4.0	O K	180 min Summer	99.387	0.387	0.4	4.0	O K	240 min Summer	99.372	0.372	0.4	3.8	O K	360 min Summer	99.342	0.342	0.4	3.5	O K	480 min Summer	99.311	0.311	0.4	3.2	O K	600 min Summer	99.281	0.281	0.4	2.8	O K	720 min Summer	99.252	0.252	0.4	2.5	O K	960 min Summer	99.198	0.198	0.4	2.0	O K	1440 min Summer	99.115	0.115	0.4	1.1	O K	2160 min Summer	99.054	0.054	0.4	0.5	O K	2880 min Summer	99.042	0.042	0.3	0.3	O K	4320 min Summer	99.031	0.031	0.2	0.2	O K	5760 min Summer	99.025	0.025	0.2	0.2	O K	7200 min Summer	99.021	0.021	0.1	0.1	O K	8640 min Summer	99.019	0.019	0.1	0.1	O K	10080 min Summer	99.018	0.018	0.1	0.1	O K	15 min Winter	99.287	0.287	0.4	2.9	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	127.204	0.0	18	30 min Summer	85.821	0.0	32	60 min Summer	55.250	0.0	60	120 min Summer	34.307	0.0	104	180 min Summer	25.552	0.0	136	240 min Summer	20.570	0.0	168	360 min Summer	15.173	0.0	238	480 min Summer	12.206	0.0	304	600 min Summer	10.302	0.0	372	720 min Summer	8.963	0.0	436	960 min Summer	7.189	0.0	560	1440 min Summer	5.257	0.0	794	2160 min Summer	3.836	0.0	1104	2880 min Summer	3.063	0.0	1468	4320 min Summer	2.226	0.0	2192	5760 min Summer	1.773	0.0	2936	7200 min Summer	1.487	0.0	3672	8640 min Summer	1.289	0.0	4264	10080 min Summer	1.142	0.0	5120	15 min Winter	127.204	0.0	18
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Monarch House Barton Lane OX14 3NB		Westergate & Eastergate 108,109,110,111,118,119,120 1:100+40%cc			
Date 01/11/2018 File PLOTS 108, 109, 110, 11...		Designed by S.Smith 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	99.368	0.368	0.4	3.8	O K
60 min Winter	99.436	0.436	0.4	4.5	O K
120 min Winter	99.463	0.463	0.4	4.8	O K
180 min Winter	99.450	0.450	0.4	4.6	O K
240 min Winter	99.430	0.430	0.4	4.4	O K
360 min Winter	99.384	0.384	0.4	3.9	O K
480 min Winter	99.335	0.335	0.4	3.4	O K
600 min Winter	99.287	0.287	0.4	2.9	O K
720 min Winter	99.241	0.241	0.4	2.4	O K
960 min Winter	99.160	0.160	0.4	1.6	O K
1440 min Winter	99.057	0.057	0.4	0.5	O K
2160 min Winter	99.039	0.039	0.3	0.3	O K
2880 min Winter	99.031	0.031	0.2	0.2	O K
4320 min Winter	99.023	0.023	0.2	0.1	O K
5760 min Winter	99.019	0.019	0.1	0.1	O K
7200 min Winter	99.018	0.018	0.1	0.1	O K
8640 min Winter	99.016	0.016	0.1	0.1	O K
10080 min Winter	99.015	0.015	0.1	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	85.821	0.0	32		
60 min Winter	55.250	0.0	60		
120 min Winter	34.307	0.0	116		
180 min Winter	25.552	0.0	146		
240 min Winter	20.570	0.0	184		
360 min Winter	15.173	0.0	258		
480 min Winter	12.206	0.0	332		
600 min Winter	10.302	0.0	400		
720 min Winter	8.963	0.0	466		
960 min Winter	7.189	0.0	588		
1440 min Winter	5.257	0.0	778		
2160 min Winter	3.836	0.0	1100		
2880 min Winter	3.063	0.0	1472		
4320 min Winter	2.226	0.0	2176		
5760 min Winter	1.773	0.0	2896		
7200 min Winter	1.487	0.0	3632		
8640 min Winter	1.289	0.0	4376		
10080 min Winter	1.142	0.0	5064		
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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)	19.500	Shortest Storm (mins)	15
Ratio R	0.342	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.012

Time (mins)	Area
From: To: (ha)	
0	4 0.012

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<u>Model Details</u> Storage is Online Cover Level (m) 100.000 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.07200</td> <td>Width (m)</td> <td>3.5</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>10.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>9.7</td> <td>Slope (1:X)</td> <td>500.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>0</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>0</td> </tr> <tr> <td>Invert Level (m)</td> <td>99.000</td> <td>Cap Volume Depth (m)</td> <td>0.500</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.07200	Width (m)	3.5	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	9.7	Slope (1:X)	500.0	Safety Factor	2.0	Depression Storage (mm)	0	Porosity	0.30	Evaporation (mm/day)	0	Invert Level (m)	99.000	Cap Volume Depth (m)	0.500
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