

MJA Consulting			Page 1																																																																																																																																																																																																																			
Monarch House Barton Lane OX14 3NB		Westergate & Eastergate Double Permeable Driveway 1:100+40%cc																																																																																																																																																																																																																				
Date 09/04/2018 File Typical Double Permeabl...		Designed by C.Pendle Checked by																																																																																																																																																																																																																				
Innovyze		Source Control 2017.1.2																																																																																																																																																																																																																				
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 107 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>99.239</td><td>0.239</td><td>0.8</td><td>5.7</td><td>O K</td></tr><tr><td>30 min Summer</td><td>99.302</td><td>0.302</td><td>0.8</td><td>7.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>99.349</td><td>0.349</td><td>0.8</td><td>8.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>99.361</td><td>0.361</td><td>0.8</td><td>8.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>99.352</td><td>0.352</td><td>0.8</td><td>8.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>99.337</td><td>0.337</td><td>0.8</td><td>8.2</td><td>O K</td></tr><tr><td>360 min Summer</td><td>99.307</td><td>0.307</td><td>0.8</td><td>7.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>99.276</td><td>0.276</td><td>0.8</td><td>6.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>99.247</td><td>0.247</td><td>0.8</td><td>5.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>99.218</td><td>0.218</td><td>0.8</td><td>5.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>99.167</td><td>0.167</td><td>0.8</td><td>3.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>99.093</td><td>0.093</td><td>0.8</td><td>2.0</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>99.049</td><td>0.049</td><td>0.8</td><td>0.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>99.039</td><td>0.039</td><td>0.7</td><td>0.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>99.029</td><td>0.029</td><td>0.5</td><td>0.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>99.025</td><td>0.025</td><td>0.4</td><td>0.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>99.023</td><td>0.023</td><td>0.3</td><td>0.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>99.021</td><td>0.021</td><td>0.3</td><td>0.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>99.020</td><td>0.020</td><td>0.3</td><td>0.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>99.269</td><td>0.269</td><td>0.8</td><td>6.5</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>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>100</td></tr><tr><td>180 min Summer</td><td>25.552</td><td>0.0</td><td>132</td></tr><tr><td>240 min Summer</td><td>20.570</td><td>0.0</td><td>166</td></tr><tr><td>360 min Summer</td><td>15.173</td><td>0.0</td><td>234</td></tr><tr><td>480 min Summer</td><td>12.206</td><td>0.0</td><td>302</td></tr><tr><td>600 min Summer</td><td>10.302</td><td>0.0</td><td>368</td></tr><tr><td>720 min Summer</td><td>8.963</td><td>0.0</td><td>432</td></tr><tr><td>960 min Summer</td><td>7.189</td><td>0.0</td><td>552</td></tr><tr><td>1440 min Summer</td><td>5.257</td><td>0.0</td><td>780</td></tr><tr><td>2160 min Summer</td><td>3.836</td><td>0.0</td><td>1100</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>2200</td></tr><tr><td>5760 min Summer</td><td>1.773</td><td>0.0</td><td>2912</td></tr><tr><td>7200 min Summer</td><td>1.487</td><td>0.0</td><td>3616</td></tr><tr><td>8640 min Summer</td><td>1.289</td><td>0.0</td><td>4288</td></tr><tr><td>10080 min Summer</td><td>1.142</td><td>0.0</td><td>5088</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	99.239	0.239	0.8	5.7	O K	30 min Summer	99.302	0.302	0.8	7.3	O K	60 min Summer	99.349	0.349	0.8	8.5	O K	120 min Summer	99.361	0.361	0.8	8.8	O K	180 min Summer	99.352	0.352	0.8	8.6	O K	240 min Summer	99.337	0.337	0.8	8.2	O K	360 min Summer	99.307	0.307	0.8	7.5	O K	480 min Summer	99.276	0.276	0.8	6.7	O K	600 min Summer	99.247	0.247	0.8	5.9	O K	720 min Summer	99.218	0.218	0.8	5.2	O K	960 min Summer	99.167	0.167	0.8	3.9	O K	1440 min Summer	99.093	0.093	0.8	2.0	O K	2160 min Summer	99.049	0.049	0.8	0.9	O K	2880 min Summer	99.039	0.039	0.7	0.7	O K	4320 min Summer	99.029	0.029	0.5	0.4	O K	5760 min Summer	99.025	0.025	0.4	0.3	O K	7200 min Summer	99.023	0.023	0.3	0.2	O K	8640 min Summer	99.021	0.021	0.3	0.2	O K	10080 min Summer	99.020	0.020	0.3	0.2	O K	15 min Winter	99.269	0.269	0.8	6.5	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	100	180 min Summer	25.552	0.0	132	240 min Summer	20.570	0.0	166	360 min Summer	15.173	0.0	234	480 min Summer	12.206	0.0	302	600 min Summer	10.302	0.0	368	720 min Summer	8.963	0.0	432	960 min Summer	7.189	0.0	552	1440 min Summer	5.257	0.0	780	2160 min Summer	3.836	0.0	1100	2880 min Summer	3.063	0.0	1468	4320 min Summer	2.226	0.0	2200	5760 min Summer	1.773	0.0	2912	7200 min Summer	1.487	0.0	3616	8640 min Summer	1.289	0.0	4288	10080 min Summer	1.142	0.0	5088	15 min Winter	127.204	0.0	18
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																	
15 min Summer	99.239	0.239	0.8	5.7	O K																																																																																																																																																																																																																	
30 min Summer	99.302	0.302	0.8	7.3	O K																																																																																																																																																																																																																	
60 min Summer	99.349	0.349	0.8	8.5	O K																																																																																																																																																																																																																	
120 min Summer	99.361	0.361	0.8	8.8	O K																																																																																																																																																																																																																	
180 min Summer	99.352	0.352	0.8	8.6	O K																																																																																																																																																																																																																	
240 min Summer	99.337	0.337	0.8	8.2	O K																																																																																																																																																																																																																	
360 min Summer	99.307	0.307	0.8	7.5	O K																																																																																																																																																																																																																	
480 min Summer	99.276	0.276	0.8	6.7	O K																																																																																																																																																																																																																	
600 min Summer	99.247	0.247	0.8	5.9	O K																																																																																																																																																																																																																	
720 min Summer	99.218	0.218	0.8	5.2	O K																																																																																																																																																																																																																	
960 min Summer	99.167	0.167	0.8	3.9	O K																																																																																																																																																																																																																	
1440 min Summer	99.093	0.093	0.8	2.0	O K																																																																																																																																																																																																																	
2160 min Summer	99.049	0.049	0.8	0.9	O K																																																																																																																																																																																																																	
2880 min Summer	99.039	0.039	0.7	0.7	O K																																																																																																																																																																																																																	
4320 min Summer	99.029	0.029	0.5	0.4	O K																																																																																																																																																																																																																	
5760 min Summer	99.025	0.025	0.4	0.3	O K																																																																																																																																																																																																																	
7200 min Summer	99.023	0.023	0.3	0.2	O K																																																																																																																																																																																																																	
8640 min Summer	99.021	0.021	0.3	0.2	O K																																																																																																																																																																																																																	
10080 min Summer	99.020	0.020	0.3	0.2	O K																																																																																																																																																																																																																	
15 min Winter	99.269	0.269	0.8	6.5	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	100																																																																																																																																																																																																																			
180 min Summer	25.552	0.0	132																																																																																																																																																																																																																			
240 min Summer	20.570	0.0	166																																																																																																																																																																																																																			
360 min Summer	15.173	0.0	234																																																																																																																																																																																																																			
480 min Summer	12.206	0.0	302																																																																																																																																																																																																																			
600 min Summer	10.302	0.0	368																																																																																																																																																																																																																			
720 min Summer	8.963	0.0	432																																																																																																																																																																																																																			
960 min Summer	7.189	0.0	552																																																																																																																																																																																																																			
1440 min Summer	5.257	0.0	780																																																																																																																																																																																																																			
2160 min Summer	3.836	0.0	1100																																																																																																																																																																																																																			
2880 min Summer	3.063	0.0	1468																																																																																																																																																																																																																			
4320 min Summer	2.226	0.0	2200																																																																																																																																																																																																																			
5760 min Summer	1.773	0.0	2912																																																																																																																																																																																																																			
7200 min Summer	1.487	0.0	3616																																																																																																																																																																																																																			
8640 min Summer	1.289	0.0	4288																																																																																																																																																																																																																			
10080 min Summer	1.142	0.0	5088																																																																																																																																																																																																																			
15 min Winter	127.204	0.0	18																																																																																																																																																																																																																			
©1982-2017 XP Solutions																																																																																																																																																																																																																						

MJA Consulting		Page 2			
Monarch House Barton Lane OX14 3NB	Westergate & Eastergate Double Permeable Driveway 1:100+40%cc				
Date 09/04/2018 File Typical Double Permeabl...	Designed by C.Pendle 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	99.343	0.343	0.8	8.4	O K
60 min Winter	99.403	0.403	0.8	9.9	O K
120 min Winter	99.423	0.423	0.8	10.4	O K
180 min Winter	99.408	0.408	0.8	10.0	O K
240 min Winter	99.387	0.387	0.8	9.5	O K
360 min Winter	99.340	0.340	0.8	8.3	O K
480 min Winter	99.291	0.291	0.8	7.1	O K
600 min Winter	99.244	0.244	0.8	5.9	O K
720 min Winter	99.201	0.201	0.8	4.8	O K
960 min Winter	99.126	0.126	0.8	2.9	O K
1440 min Winter	99.049	0.049	0.8	0.9	O K
2160 min Winter	99.036	0.036	0.6	0.6	O K
2880 min Winter	99.029	0.029	0.5	0.4	O K
4320 min Winter	99.024	0.024	0.4	0.3	O K
5760 min Winter	99.021	0.021	0.3	0.2	O K
7200 min Winter	99.019	0.019	0.2	0.2	O K
8640 min Winter	99.018	0.018	0.2	0.2	O K
10080 min Winter	99.017	0.017	0.2	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	114		
180 min Winter	25.552	0.0	142		
240 min Winter	20.570	0.0	180		
360 min Winter	15.173	0.0	256		
480 min Winter	12.206	0.0	326		
600 min Winter	10.302	0.0	394		
720 min Winter	8.963	0.0	458		
960 min Winter	7.189	0.0	576		
1440 min Winter	5.257	0.0	748		
2160 min Winter	3.836	0.0	1108		
2880 min Winter	3.063	0.0	1468		
4320 min Winter	2.226	0.0	2168		
5760 min Winter	1.773	0.0	2880		
7200 min Winter	1.487	0.0	3664		
8640 min Winter	1.289	0.0	4408		
10080 min Winter	1.142	0.0	5024		
©1982-2017 XP Solutions					

MJA Consulting		Page 4																								
Monarch House Barton Lane OX14 3NB	Westergate & Eastergate Double Permeable Driveway 1:100+40%cc																									
Date 09/04/2018	Designed by C.Pendle																									
File Typical Double Permeabl...	Checked by																									
Innovyze	Source Control 2017.1.2																									
<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>6.5</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>13.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>23.5</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>3</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)	6.5	Membrane Percolation (mm/hr)	1000	Length (m)	13.0	Max Percolation (l/s)	23.5	Slope (1:X)	500.0	Safety Factor	2.0	Depression Storage (mm)	0	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	99.000	Cap Volume Depth (m)	0.500
Infiltration Coefficient Base (m/hr)	0.07200	Width (m)	6.5																							
Membrane Percolation (mm/hr)	1000	Length (m)	13.0																							
Max Percolation (l/s)	23.5	Slope (1:X)	500.0																							
Safety Factor	2.0	Depression Storage (mm)	0																							
Porosity	0.30	Evaporation (mm/day)	3																							
Invert Level (m)	99.000	Cap Volume Depth (m)	0.500																							
©1982-2017 XP Solutions																										