

The Civil Engineering Practice					Page 1																																																																																																																																																																																																																		
11 Tungsten Building George Street Fishersgate BN41 1RA		Manor Nursery Angmering West Sussex																																																																																																																																																																																																																					
Date 23/09/2020 File Soakaway 7 Factor Safet...		Designed by S Burgess Checked by SRD																																																																																																																																																																																																																					
Innovyze		Source Control 2020.1																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 352 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>14.737</td><td>0.937</td><td>0.4</td><td>6.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>15.093</td><td>1.293</td><td>0.4</td><td>9.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>15.447</td><td>1.647</td><td>0.4</td><td>11.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>15.745</td><td>1.945</td><td>0.4</td><td>13.2</td><td>O K</td></tr><tr><td>180 min Summer</td><td>15.855</td><td>2.055</td><td>0.4</td><td>13.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>15.881</td><td>2.081</td><td>0.4</td><td>14.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>15.870</td><td>2.070</td><td>0.4</td><td>14.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>15.836</td><td>2.036</td><td>0.4</td><td>13.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>15.790</td><td>1.990</td><td>0.4</td><td>13.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>15.737</td><td>1.937</td><td>0.4</td><td>13.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>15.619</td><td>1.819</td><td>0.4</td><td>12.4</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>15.375</td><td>1.575</td><td>0.4</td><td>10.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>15.036</td><td>1.236</td><td>0.4</td><td>8.8</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>14.747</td><td>0.947</td><td>0.4</td><td>6.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>14.339</td><td>0.539</td><td>0.4</td><td>4.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>14.144</td><td>0.344</td><td>0.4</td><td>3.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>14.096</td><td>0.296</td><td>0.3</td><td>2.7</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>14.061</td><td>0.261</td><td>0.3</td><td>2.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>14.034</td><td>0.234</td><td>0.3</td><td>2.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>14.873</td><td>1.073</td><td>0.4</td><td>7.7</td><td>O 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>128.238</td><td>0.0</td><td>21</td></tr><tr><td>30 min Summer</td><td>86.178</td><td>0.0</td><td>36</td></tr><tr><td>60 min Summer</td><td>55.250</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>34.177</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>25.410</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>20.436</td><td>0.0</td><td>240</td></tr><tr><td>360 min Summer</td><td>15.037</td><td>0.0</td><td>304</td></tr><tr><td>480 min Summer</td><td>12.081</td><td>0.0</td><td>366</td></tr><tr><td>600 min Summer</td><td>10.185</td><td>0.0</td><td>430</td></tr><tr><td>720 min Summer</td><td>8.854</td><td>0.0</td><td>498</td></tr><tr><td>960 min Summer</td><td>7.093</td><td>0.0</td><td>636</td></tr><tr><td>1440 min Summer</td><td>5.178</td><td>0.0</td><td>908</td></tr><tr><td>2160 min Summer</td><td>3.772</td><td>0.0</td><td>1296</td></tr><tr><td>2880 min Summer</td><td>3.009</td><td>0.0</td><td>1648</td></tr><tr><td>4320 min Summer</td><td>2.184</td><td>0.0</td><td>2336</td></tr><tr><td>5760 min Summer</td><td>1.738</td><td>0.0</td><td>2992</td></tr><tr><td>7200 min Summer</td><td>1.455</td><td>0.0</td><td>3680</td></tr><tr><td>8640 min Summer</td><td>1.260</td><td>0.0</td><td>4408</td></tr><tr><td>10080 min Summer</td><td>1.115</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>128.238</td><td>0.0</td><td>21</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	14.737	0.937	0.4	6.9	O K	30 min Summer	15.093	1.293	0.4	9.1	O K	60 min Summer	15.447	1.647	0.4	11.3	O K	120 min Summer	15.745	1.945	0.4	13.2	O K	180 min Summer	15.855	2.055	0.4	13.9	O K	240 min Summer	15.881	2.081	0.4	14.1	O K	360 min Summer	15.870	2.070	0.4	14.0	O K	480 min Summer	15.836	2.036	0.4	13.8	O K	600 min Summer	15.790	1.990	0.4	13.5	O K	720 min Summer	15.737	1.937	0.4	13.2	O K	960 min Summer	15.619	1.819	0.4	12.4	O K	1440 min Summer	15.375	1.575	0.4	10.9	O K	2160 min Summer	15.036	1.236	0.4	8.8	O K	2880 min Summer	14.747	0.947	0.4	6.9	O K	4320 min Summer	14.339	0.539	0.4	4.4	O K	5760 min Summer	14.144	0.344	0.4	3.1	O K	7200 min Summer	14.096	0.296	0.3	2.7	O K	8640 min Summer	14.061	0.261	0.3	2.4	O K	10080 min Summer	14.034	0.234	0.3	2.1	O K	15 min Winter	14.873	1.073	0.4	7.7	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	128.238	0.0	21	30 min Summer	86.178	0.0	36	60 min Summer	55.250	0.0	64	120 min Summer	34.177	0.0	122	180 min Summer	25.410	0.0	182	240 min Summer	20.436	0.0	240	360 min Summer	15.037	0.0	304	480 min Summer	12.081	0.0	366	600 min Summer	10.185	0.0	430	720 min Summer	8.854	0.0	498	960 min Summer	7.093	0.0	636	1440 min Summer	5.178	0.0	908	2160 min Summer	3.772	0.0	1296	2880 min Summer	3.009	0.0	1648	4320 min Summer	2.184	0.0	2336	5760 min Summer	1.738	0.0	2992	7200 min Summer	1.455	0.0	3680	8640 min Summer	1.260	0.0	4408	10080 min Summer	1.115	0.0	5144	15 min Winter	128.238	0.0	21
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
15 min Summer	14.737	0.937	0.4	6.9	O K																																																																																																																																																																																																																		
30 min Summer	15.093	1.293	0.4	9.1	O K																																																																																																																																																																																																																		
60 min Summer	15.447	1.647	0.4	11.3	O K																																																																																																																																																																																																																		
120 min Summer	15.745	1.945	0.4	13.2	O K																																																																																																																																																																																																																		
180 min Summer	15.855	2.055	0.4	13.9	O K																																																																																																																																																																																																																		
240 min Summer	15.881	2.081	0.4	14.1	O K																																																																																																																																																																																																																		
360 min Summer	15.870	2.070	0.4	14.0	O K																																																																																																																																																																																																																		
480 min Summer	15.836	2.036	0.4	13.8	O K																																																																																																																																																																																																																		
600 min Summer	15.790	1.990	0.4	13.5	O K																																																																																																																																																																																																																		
720 min Summer	15.737	1.937	0.4	13.2	O K																																																																																																																																																																																																																		
960 min Summer	15.619	1.819	0.4	12.4	O K																																																																																																																																																																																																																		
1440 min Summer	15.375	1.575	0.4	10.9	O K																																																																																																																																																																																																																		
2160 min Summer	15.036	1.236	0.4	8.8	O K																																																																																																																																																																																																																		
2880 min Summer	14.747	0.947	0.4	6.9	O K																																																																																																																																																																																																																		
4320 min Summer	14.339	0.539	0.4	4.4	O K																																																																																																																																																																																																																		
5760 min Summer	14.144	0.344	0.4	3.1	O K																																																																																																																																																																																																																		
7200 min Summer	14.096	0.296	0.3	2.7	O K																																																																																																																																																																																																																		
8640 min Summer	14.061	0.261	0.3	2.4	O K																																																																																																																																																																																																																		
10080 min Summer	14.034	0.234	0.3	2.1	O K																																																																																																																																																																																																																		
15 min Winter	14.873	1.073	0.4	7.7	O K																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																				
15 min Summer	128.238	0.0	21																																																																																																																																																																																																																				
30 min Summer	86.178	0.0	36																																																																																																																																																																																																																				
60 min Summer	55.250	0.0	64																																																																																																																																																																																																																				
120 min Summer	34.177	0.0	122																																																																																																																																																																																																																				
180 min Summer	25.410	0.0	182																																																																																																																																																																																																																				
240 min Summer	20.436	0.0	240																																																																																																																																																																																																																				
360 min Summer	15.037	0.0	304																																																																																																																																																																																																																				
480 min Summer	12.081	0.0	366																																																																																																																																																																																																																				
600 min Summer	10.185	0.0	430																																																																																																																																																																																																																				
720 min Summer	8.854	0.0	498																																																																																																																																																																																																																				
960 min Summer	7.093	0.0	636																																																																																																																																																																																																																				
1440 min Summer	5.178	0.0	908																																																																																																																																																																																																																				
2160 min Summer	3.772	0.0	1296																																																																																																																																																																																																																				
2880 min Summer	3.009	0.0	1648																																																																																																																																																																																																																				
4320 min Summer	2.184	0.0	2336																																																																																																																																																																																																																				
5760 min Summer	1.738	0.0	2992																																																																																																																																																																																																																				
7200 min Summer	1.455	0.0	3680																																																																																																																																																																																																																				
8640 min Summer	1.260	0.0	4408																																																																																																																																																																																																																				
10080 min Summer	1.115	0.0	5144																																																																																																																																																																																																																				
15 min Winter	128.238	0.0	21																																																																																																																																																																																																																				
©1982-2020 Innovyze																																																																																																																																																																																																																							

The Civil Engineering Practice					Page 2
11 Tungsten Building George Street Fishersgate BN41 1RA		Manor Nursery Angmering West Sussex			
Date 23/09/2020 File Soakaway 7 Factor Safet...		Designed by S Burgess Checked by SRD			
Innovyze		Source Control 2020.1			
<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	15.276	1.476	0.4	10.3	O K
60 min Winter	15.681	1.881	0.4	12.8	O K
120 min Winter	16.034	2.234	0.4	15.0	Flood Risk
180 min Winter	16.177	2.377	0.4	15.9	Flood Risk
240 min Winter	16.225	2.425	0.4	16.2	Flood Risk
360 min Winter	16.225	2.425	0.4	16.2	Flood Risk
480 min Winter	16.165	2.365	0.4	15.8	Flood Risk
600 min Winter	16.103	2.303	0.4	15.5	Flood Risk
720 min Winter	16.026	2.226	0.4	15.0	Flood Risk
960 min Winter	15.850	2.050	0.4	13.9	O K
1440 min Winter	15.475	1.675	0.4	11.5	O K
2160 min Winter	14.953	1.153	0.4	8.2	O K
2880 min Winter	14.532	0.732	0.4	5.6	O K
4320 min Winter	14.131	0.331	0.4	3.0	O K
5760 min Winter	14.067	0.267	0.3	2.4	O K
7200 min Winter	14.025	0.225	0.3	2.1	O K
8640 min Winter	13.996	0.196	0.2	1.8	O K
10080 min Winter	13.974	0.174	0.2	1.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	86.178	0.0	35		
60 min Winter	55.250	0.0	64		
120 min Winter	34.177	0.0	120		
180 min Winter	25.410	0.0	178		
240 min Winter	20.436	0.0	234		
360 min Winter	15.037	0.0	342		
480 min Winter	12.081	0.0	392		
600 min Winter	10.185	0.0	464		
720 min Winter	8.854	0.0	542		
960 min Winter	7.093	0.0	694		
1440 min Winter	5.178	0.0	982		
2160 min Winter	3.772	0.0	1368		
2880 min Winter	3.009	0.0	1728		
4320 min Winter	2.184	0.0	2288		
5760 min Winter	1.738	0.0	3000		
7200 min Winter	1.455	0.0	3744		
8640 min Winter	1.260	0.0	4416		
10080 min Winter	1.115	0.0	5144		
©1982-2020 Innovyze					

The Civil Engineering Practice		Page 3
11 Tungsten Building George Street Fishersgate BN41 1RA	Manor Nursery Angmering West Sussex	
Date 23/09/2020	Designed by S Burgess	
File Soakaway 7 Factor Safet...	Checked by SRD	
Innovyze		Source Control 2020.1

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

Time Area Diagram

Total Area (ha) 0.030

Time (mins)	Area	Time (mins)	Area
From:	To: (ha)	From:	To: (ha)
0	4 0.019	4	8 0.011

Time Area Diagram

Total Area (ha) 0.000

Time (mins)	Area
From:	To: (ha)
0	4 0.000

©1982-2020 Innovyze

The Civil Engineering Practice		Page 4																				
11 Tungsten Building George Street Fishersgate BN41 1RA	Manor Nursery Angmering West Sussex																					
Date 23/09/2020 File Soakaway 7 Factor Safet...	Designed by S Burgess Checked by SRD																					
Innovyze Source Control 2020.1																						
<u>Model Details</u> Storage is Online Cover Level (m) 16.300 <u>Lined Soakaway Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00000</td> <td>Ring Diameter (m)</td> <td>2.00</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>0.72360</td> <td>Pit Multiplier</td> <td>1.4</td> </tr> <tr> <td>Safety Factor</td> <td>4.0</td> <td>Number Required</td> <td>2</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Cap Volume Depth (m)</td> <td>2.500</td> </tr> <tr> <td>Invert Level (m)</td> <td>13.800</td> <td>Cap Infiltration Depth (m)</td> <td>0.350</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.00000	Ring Diameter (m)	2.00	Infiltration Coefficient Side (m/hr)	0.72360	Pit Multiplier	1.4	Safety Factor	4.0	Number Required	2	Porosity	0.30	Cap Volume Depth (m)	2.500	Invert Level (m)	13.800	Cap Infiltration Depth (m)	0.350
Infiltration Coefficient Base (m/hr)	0.00000	Ring Diameter (m)	2.00																			
Infiltration Coefficient Side (m/hr)	0.72360	Pit Multiplier	1.4																			
Safety Factor	4.0	Number Required	2																			
Porosity	0.30	Cap Volume Depth (m)	2.500																			
Invert Level (m)	13.800	Cap Infiltration Depth (m)	0.350																			
©1982-2020 Innovyze																						