

Paul Basham Associates					Page 1																																																																																																																																																																																																																			
Lancaster Court Fareham Hampshire, PO15 5TU			RING SA (SOUTH)																																																																																																																																																																																																																					
Date 17/04/2019			Designed by JB																																																																																																																																																																																																																					
File Ring Soakaway. lin10 + ...			Checked by RW																																																																																																																																																																																																																					
Innovyze			Source Control 2018.1.1																																																																																																																																																																																																																					
<p>Summary of Results for 10 year Return Period (+30%)</p> <p>Half Drain Time : 34 minutes.</p> <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>-2.501</td><td>1.099</td><td>3.4</td><td>9.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>-2.324</td><td>1.276</td><td>3.7</td><td>11.4</td><td>O K</td></tr><tr><td>60 min Summer</td><td>-2.254</td><td>1.346</td><td>3.8</td><td>12.0</td><td>O K</td></tr><tr><td>120 min Summer</td><td>-2.312</td><td>1.288</td><td>3.7</td><td>11.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>-2.404</td><td>1.196</td><td>3.6</td><td>10.7</td><td>O K</td></tr><tr><td>240 min Summer</td><td>-2.499</td><td>1.101</td><td>3.4</td><td>9.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>-2.673</td><td>0.927</td><td>3.2</td><td>8.3</td><td>O K</td></tr><tr><td>480 min Summer</td><td>-2.818</td><td>0.782</td><td>2.9</td><td>7.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>-2.940</td><td>0.660</td><td>2.7</td><td>5.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>-3.043</td><td>0.557</td><td>2.6</td><td>5.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>-3.207</td><td>0.393</td><td>2.3</td><td>3.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>-3.420</td><td>0.180</td><td>1.9</td><td>1.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>-3.551</td><td>0.049</td><td>1.7</td><td>0.4</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>-3.561</td><td>0.039</td><td>1.4</td><td>0.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>-3.571</td><td>0.029</td><td>1.0</td><td>0.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>-3.576</td><td>0.024</td><td>0.8</td><td>0.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>-3.580</td><td>0.020</td><td>0.7</td><td>0.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>-3.582</td><td>0.018</td><td>0.6</td><td>0.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>-3.584</td><td>0.016</td><td>0.5</td><td>0.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>-2.349</td><td>1.251</td><td>3.7</td><td>11.2</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>70.770</td><td>0.0</td><td>16</td></tr><tr><td>30 min Summer</td><td>46.698</td><td>0.0</td><td>27</td></tr><tr><td>60 min Summer</td><td>29.629</td><td>0.0</td><td>44</td></tr><tr><td>120 min Summer</td><td>18.344</td><td>0.0</td><td>78</td></tr><tr><td>180 min Summer</td><td>13.747</td><td>0.0</td><td>112</td></tr><tr><td>240 min Summer</td><td>11.169</td><td>0.0</td><td>146</td></tr><tr><td>360 min Summer</td><td>8.317</td><td>0.0</td><td>210</td></tr><tr><td>480 min Summer</td><td>6.743</td><td>0.0</td><td>274</td></tr><tr><td>600 min Summer</td><td>5.728</td><td>0.0</td><td>336</td></tr><tr><td>720 min Summer</td><td>5.011</td><td>0.0</td><td>398</td></tr><tr><td>960 min Summer</td><td>4.057</td><td>0.0</td><td>520</td></tr><tr><td>1440 min Summer</td><td>3.009</td><td>0.0</td><td>752</td></tr><tr><td>2160 min Summer</td><td>2.231</td><td>0.0</td><td>1080</td></tr><tr><td>2880 min Summer</td><td>1.803</td><td>0.0</td><td>1428</td></tr><tr><td>4320 min Summer</td><td>1.335</td><td>0.0</td><td>2172</td></tr><tr><td>5760 min Summer</td><td>1.078</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>0.913</td><td>0.0</td><td>3544</td></tr><tr><td>8640 min Summer</td><td>0.798</td><td>0.0</td><td>4384</td></tr><tr><td>10080 min Summer</td><td>0.711</td><td>0.0</td><td>5096</td></tr><tr><td>15 min Winter</td><td>70.770</td><td>0.0</td><td>16</td></tr></tbody></table>							Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	-2.501	1.099	3.4	9.8	O K	30 min Summer	-2.324	1.276	3.7	11.4	O K	60 min Summer	-2.254	1.346	3.8	12.0	O K	120 min Summer	-2.312	1.288	3.7	11.5	O K	180 min Summer	-2.404	1.196	3.6	10.7	O K	240 min Summer	-2.499	1.101	3.4	9.8	O K	360 min Summer	-2.673	0.927	3.2	8.3	O K	480 min Summer	-2.818	0.782	2.9	7.0	O K	600 min Summer	-2.940	0.660	2.7	5.9	O K	720 min Summer	-3.043	0.557	2.6	5.0	O K	960 min Summer	-3.207	0.393	2.3	3.5	O K	1440 min Summer	-3.420	0.180	1.9	1.6	O K	2160 min Summer	-3.551	0.049	1.7	0.4	O K	2880 min Summer	-3.561	0.039	1.4	0.3	O K	4320 min Summer	-3.571	0.029	1.0	0.3	O K	5760 min Summer	-3.576	0.024	0.8	0.2	O K	7200 min Summer	-3.580	0.020	0.7	0.2	O K	8640 min Summer	-3.582	0.018	0.6	0.2	O K	10080 min Summer	-3.584	0.016	0.5	0.1	O K	15 min Winter	-2.349	1.251	3.7	11.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	70.770	0.0	16	30 min Summer	46.698	0.0	27	60 min Summer	29.629	0.0	44	120 min Summer	18.344	0.0	78	180 min Summer	13.747	0.0	112	240 min Summer	11.169	0.0	146	360 min Summer	8.317	0.0	210	480 min Summer	6.743	0.0	274	600 min Summer	5.728	0.0	336	720 min Summer	5.011	0.0	398	960 min Summer	4.057	0.0	520	1440 min Summer	3.009	0.0	752	2160 min Summer	2.231	0.0	1080	2880 min Summer	1.803	0.0	1428	4320 min Summer	1.335	0.0	2172	5760 min Summer	1.078	0.0	2936	7200 min Summer	0.913	0.0	3544	8640 min Summer	0.798	0.0	4384	10080 min Summer	0.711	0.0	5096	15 min Winter	70.770	0.0	16
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																			
15 min Summer	-2.501	1.099	3.4	9.8	O K																																																																																																																																																																																																																			
30 min Summer	-2.324	1.276	3.7	11.4	O K																																																																																																																																																																																																																			
60 min Summer	-2.254	1.346	3.8	12.0	O K																																																																																																																																																																																																																			
120 min Summer	-2.312	1.288	3.7	11.5	O K																																																																																																																																																																																																																			
180 min Summer	-2.404	1.196	3.6	10.7	O K																																																																																																																																																																																																																			
240 min Summer	-2.499	1.101	3.4	9.8	O K																																																																																																																																																																																																																			
360 min Summer	-2.673	0.927	3.2	8.3	O K																																																																																																																																																																																																																			
480 min Summer	-2.818	0.782	2.9	7.0	O K																																																																																																																																																																																																																			
600 min Summer	-2.940	0.660	2.7	5.9	O K																																																																																																																																																																																																																			
720 min Summer	-3.043	0.557	2.6	5.0	O K																																																																																																																																																																																																																			
960 min Summer	-3.207	0.393	2.3	3.5	O K																																																																																																																																																																																																																			
1440 min Summer	-3.420	0.180	1.9	1.6	O K																																																																																																																																																																																																																			
2160 min Summer	-3.551	0.049	1.7	0.4	O K																																																																																																																																																																																																																			
2880 min Summer	-3.561	0.039	1.4	0.3	O K																																																																																																																																																																																																																			
4320 min Summer	-3.571	0.029	1.0	0.3	O K																																																																																																																																																																																																																			
5760 min Summer	-3.576	0.024	0.8	0.2	O K																																																																																																																																																																																																																			
7200 min Summer	-3.580	0.020	0.7	0.2	O K																																																																																																																																																																																																																			
8640 min Summer	-3.582	0.018	0.6	0.2	O K																																																																																																																																																																																																																			
10080 min Summer	-3.584	0.016	0.5	0.1	O K																																																																																																																																																																																																																			
15 min Winter	-2.349	1.251	3.7	11.2	O K																																																																																																																																																																																																																			
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																					
15 min Summer	70.770	0.0	16																																																																																																																																																																																																																					
30 min Summer	46.698	0.0	27																																																																																																																																																																																																																					
60 min Summer	29.629	0.0	44																																																																																																																																																																																																																					
120 min Summer	18.344	0.0	78																																																																																																																																																																																																																					
180 min Summer	13.747	0.0	112																																																																																																																																																																																																																					
240 min Summer	11.169	0.0	146																																																																																																																																																																																																																					
360 min Summer	8.317	0.0	210																																																																																																																																																																																																																					
480 min Summer	6.743	0.0	274																																																																																																																																																																																																																					
600 min Summer	5.728	0.0	336																																																																																																																																																																																																																					
720 min Summer	5.011	0.0	398																																																																																																																																																																																																																					
960 min Summer	4.057	0.0	520																																																																																																																																																																																																																					
1440 min Summer	3.009	0.0	752																																																																																																																																																																																																																					
2160 min Summer	2.231	0.0	1080																																																																																																																																																																																																																					
2880 min Summer	1.803	0.0	1428																																																																																																																																																																																																																					
4320 min Summer	1.335	0.0	2172																																																																																																																																																																																																																					
5760 min Summer	1.078	0.0	2936																																																																																																																																																																																																																					
7200 min Summer	0.913	0.0	3544																																																																																																																																																																																																																					
8640 min Summer	0.798	0.0	4384																																																																																																																																																																																																																					
10080 min Summer	0.711	0.0	5096																																																																																																																																																																																																																					
15 min Winter	70.770	0.0	16																																																																																																																																																																																																																					
©1982-2018 Innovyze																																																																																																																																																																																																																								

Paul Basham Associates				Page 2	
Lancaster Court Fareham Hampshire, PO15 5TU		RING SA (SOUTH)			
Date 17/04/2019		Designed by JB			
File Ring Soakaway. lin10 + ...		Checked by RW			
Innovyze		Source Control 2018.1.1			
Summary of Results for 10 year Return Period (+30%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	-2.133	1.467	4.0	13.1	O K
60 min Winter	-2.062	1.538	4.2	13.7	O K
120 min Winter	-2.173	1.427	4.0	12.7	O K
180 min Winter	-2.326	1.274	3.7	11.4	O K
240 min Winter	-2.472	1.128	3.5	10.1	O K
360 min Winter	-2.720	0.880	3.1	7.9	O K
480 min Winter	-2.916	0.684	2.8	6.1	O K
600 min Winter	-3.072	0.528	2.5	4.7	O K
720 min Winter	-3.198	0.402	2.3	3.6	O K
960 min Winter	-3.387	0.213	2.0	1.9	O K
1440 min Winter	-3.553	0.047	1.6	0.4	O K
2160 min Winter	-3.565	0.035	1.2	0.3	O K
2880 min Winter	-3.572	0.028	1.0	0.3	O K
4320 min Winter	-3.579	0.021	0.7	0.2	O K
5760 min Winter	-3.583	0.017	0.6	0.2	O K
7200 min Winter	-3.585	0.015	0.5	0.1	O K
8640 min Winter	-3.587	0.013	0.4	0.1	O K
10080 min Winter	-3.589	0.011	0.4	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	46.698	0.0	29		
60 min Winter	29.629	0.0	46		
120 min Winter	18.344	0.0	84		
180 min Winter	13.747	0.0	120		
240 min Winter	11.169	0.0	156		
360 min Winter	8.317	0.0	222		
480 min Winter	6.743	0.0	286		
600 min Winter	5.728	0.0	350		
720 min Winter	5.011	0.0	410		
960 min Winter	4.057	0.0	530		
1440 min Winter	3.009	0.0	732		
2160 min Winter	2.231	0.0	1072		
2880 min Winter	1.803	0.0	1468		
4320 min Winter	1.335	0.0	2156		
5760 min Winter	1.078	0.0	2880		
7200 min Winter	0.913	0.0	3560		
8640 min Winter	0.798	0.0	4416		
10080 min Winter	0.711	0.0	5000		
©1982-2018 Innovyze					

Paul Basham Associates		Page 3																																	
Lancaster Court Fareham Hampshire, PO15 5TU	RING SA (SOUTH)																																		
Date 17/04/2019	Designed by JB																																		
File Ring Soakaway. 1in10 + ...	Checked by RW																																		
Innovyze		Source Control 2018.1.1																																	
<p style="text-align: center;"><u>Rainfall Details</u></p> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>Return Period (years)</td> <td>10</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.000</td> <td>Shortest Storm (mins)</td> <td>15</td> </tr> <tr> <td>Ratio R</td> <td>0.350</td> <td>Longest Storm (mins)</td> <td>10080</td> </tr> <tr> <td>Summer Storms</td> <td>Yes</td> <td>Climate Change %</td> <td>+30</td> </tr> </table> <p style="text-align: center;"><u>Time Area Diagram</u></p> <p>Total Area (ha) 0.092</p> <table> <tr> <th colspan="2">Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>(ha)</th> </tr> <tr> <td>0</td> <td>4</td> <td>0.092</td> </tr> </table>			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 %	+30	Time (mins)		Area	From:	To:	(ha)	0	4	0.092
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 %	+30																																
Time (mins)		Area																																	
From:	To:	(ha)																																	
0	4	0.092																																	
©1982-2018 Innovyze																																			

Paul Basham Associates		Page 4																				
Lancaster Court Fareham Hampshire, PO15 5TU	RING SA (SOUTH)																					
Date 17/04/2019	Designed by JB																					
File Ring Soakaway. 1in10 + ...	Checked by RW																					
Innovyze		Source Control 2018.1.1																				
<p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 0.000</p> <p style="text-align: center;"><u>Lined Soakaway Structure</u></p> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>1.81080</td> <td>Ring Diameter (m)</td> <td>2.70</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>1.81080</td> <td>Pit Multiplier</td> <td>1.5</td> </tr> <tr> <td>Safety Factor</td> <td>5.0</td> <td>Number Required</td> <td>1</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Cap Volume Depth (m)</td> <td>2.900</td> </tr> <tr> <td>Invert Level (m)</td> <td>-3.600</td> <td>Cap Infiltration Depth (m)</td> <td>2.900</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	1.81080	Ring Diameter (m)	2.70	Infiltration Coefficient Side (m/hr)	1.81080	Pit Multiplier	1.5	Safety Factor	5.0	Number Required	1	Porosity	0.30	Cap Volume Depth (m)	2.900	Invert Level (m)	-3.600	Cap Infiltration Depth (m)	2.900
Infiltration Coefficient Base (m/hr)	1.81080	Ring Diameter (m)	2.70																			
Infiltration Coefficient Side (m/hr)	1.81080	Pit Multiplier	1.5																			
Safety Factor	5.0	Number Required	1																			
Porosity	0.30	Cap Volume Depth (m)	2.900																			
Invert Level (m)	-3.600	Cap Infiltration Depth (m)	2.900																			
©1982-2018 Innovyze																						