

Shaun Tonge Engineering					Page 1																																																																																																																																																																																																																		
11 Broomhead Road Wombell Barnsley S73 0SA																																																																																																																																																																																																																							
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<u>Summary of Results for 30 year Return Period</u> Half Drain Time : 42 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>50.217</td><td>0.517</td><td>0.6</td><td>2.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>50.314</td><td>0.614</td><td>0.6</td><td>2.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>50.359</td><td>0.659</td><td>0.6</td><td>2.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>50.346</td><td>0.646</td><td>0.6</td><td>2.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>50.305</td><td>0.605</td><td>0.6</td><td>2.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>50.261</td><td>0.561</td><td>0.6</td><td>2.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>50.179</td><td>0.479</td><td>0.5</td><td>1.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>50.111</td><td>0.411</td><td>0.5</td><td>1.6</td><td>O K</td></tr><tr><td>600 min Summer</td><td>50.053</td><td>0.353</td><td>0.5</td><td>1.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>50.003</td><td>0.303</td><td>0.4</td><td>1.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>49.923</td><td>0.223</td><td>0.4</td><td>0.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>49.817</td><td>0.117</td><td>0.3</td><td>0.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>49.749</td><td>0.049</td><td>0.3</td><td>0.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>49.740</td><td>0.040</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>49.729</td><td>0.029</td><td>0.2</td><td>0.1</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>49.723</td><td>0.023</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>49.720</td><td>0.020</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>49.717</td><td>0.017</td><td>0.1</td><td>0.1</td><td>O 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Summer</td><td>4.740</td><td>0.0</td><td>400</td></tr><tr><td>960 min Summer</td><td>3.810</td><td>0.0</td><td>522</td></tr><tr><td>1440 min Summer</td><td>2.797</td><td>0.0</td><td>762</td></tr><tr><td>2160 min Summer</td><td>2.051</td><td>0.0</td><td>1100</td></tr><tr><td>2880 min Summer</td><td>1.644</td><td>0.0</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>1.203</td><td>0.0</td><td>2160</td></tr><tr><td>5760 min Summer</td><td>0.963</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>0.810</td><td>0.0</td><td>3600</td></tr><tr><td>8640 min Summer</td><td>0.703</td><td>0.0</td><td>4288</td></tr><tr><td>10080 min Summer</td><td>0.624</td><td>0.0</td><td>4976</td></tr><tr><td>15 min Winter</td><td>69.625</td><td>0.0</td><td>17</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	50.217	0.517	0.6	2.0	O K	30 min Summer	50.314	0.614	0.6	2.3	O K	60 min Summer	50.359	0.659	0.6	2.5	O K	120 min Summer	50.346	0.646	0.6	2.5	O K	180 min Summer	50.305	0.605	0.6	2.3	O K	240 min Summer	50.261	0.561	0.6	2.1	O K	360 min Summer	50.179	0.479	0.5	1.8	O K	480 min Summer	50.111	0.411	0.5	1.6	O K	600 min Summer	50.053	0.353	0.5	1.3	O K	720 min Summer	50.003	0.303	0.4	1.2	O K	960 min Summer	49.923	0.223	0.4	0.8	O K	1440 min Summer	49.817	0.117	0.3	0.4	O K	2160 min Summer	49.749	0.049	0.3	0.2	O K	2880 min Summer	49.740	0.040	0.2	0.2	O K	4320 min Summer	49.729	0.029	0.2	0.1	O K	5760 min Summer	49.723	0.023	0.1	0.1	O K	7200 min Summer	49.720	0.020	0.1	0.1	O K	8640 min Summer	49.717	0.017	0.1	0.1	O K	10080 min Summer	49.715	0.015	0.1	0.1	O K	15 min Winter	50.286	0.586	0.6	2.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	69.625	0.0	17	30 min Summer	46.099	0.0	30	60 min Summer	29.238	0.0	46	120 min Summer	18.009	0.0	80	180 min Summer	13.416	0.0	114	240 min Summer	10.836	0.0	148	360 min Summer	7.992	0.0	214	480 min Summer	6.438	0.0	278	600 min Summer	5.441	0.0	340	720 min Summer	4.740	0.0	400	960 min Summer	3.810	0.0	522	1440 min Summer	2.797	0.0	762	2160 min Summer	2.051	0.0	1100	2880 min Summer	1.644	0.0	1468	4320 min Summer	1.203	0.0	2160	5760 min Summer	0.963	0.0	2936	7200 min Summer	0.810	0.0	3600	8640 min Summer	0.703	0.0	4288	10080 min Summer	0.624	0.0	4976	15 min Winter	69.625	0.0	17
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11 Broomhead Road Wombell Barnsley S73 0SA						
Date 04/07/2019 10:32 File Plots 24-26.SRCX		Designed by Shaun Checked by				
CADS			Source Control 2018.1			
<u>Summary of Results for 30 year Return Period</u>						
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	
30 min Winter	50.404	0.704		0.7 2.7	O K	
60 min Winter	50.453	0.753		0.7 2.9	O K	
120 min Winter	50.421	0.721		0.7 2.7	O K	
180 min Winter	50.355	0.655		0.6 2.5	O K	
240 min Winter	50.288	0.588		0.6 2.2	O K	
360 min Winter	50.171	0.471		0.5 1.8	O K	
480 min Winter	50.077	0.377		0.5 1.4	O K	
600 min Winter	50.001	0.301		0.4 1.1	O K	
720 min Winter	49.938	0.238		0.4 0.9	O K	
960 min Winter	49.843	0.143		0.4 0.5	O K	
1440 min Winter	49.749	0.049		0.3 0.2	O K	
2160 min Winter	49.736	0.036		0.2 0.1	O K	
2880 min Winter	49.729	0.029		0.2 0.1	O K	
4320 min Winter	49.721	0.021		0.1 0.1	O K	
5760 min Winter	49.717	0.017		0.1 0.1	O K	
7200 min Winter	49.714	0.014		0.1 0.1	O K	
8640 min Winter	49.712	0.012		0.1 0.0	O K	
10080 min Winter	49.711	0.011		0.1 0.0	O K	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)			
30 min Winter	46.099	0.0	30			
60 min Winter	29.238	0.0	48			
120 min Winter	18.009	0.0	86			
180 min Winter	13.416	0.0	124			
240 min Winter	10.836	0.0	158			
360 min Winter	7.992	0.0	226			
480 min Winter	6.438	0.0	292			
600 min Winter	5.441	0.0	356			
720 min Winter	4.740	0.0	418			
960 min Winter	3.810	0.0	538			
1440 min Winter	2.797	0.0	734			
2160 min Winter	2.051	0.0	1092			
2880 min Winter	1.644	0.0	1460			
4320 min Winter	1.203	0.0	2184			
5760 min Winter	0.963	0.0	2840			
7200 min Winter	0.810	0.0	3648			
8640 min Winter	0.703	0.0	4256			
10080 min Winter	0.624	0.0	5056			
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<u>Rainfall Details</u> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>Return Period (years)</td> <td>30</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>0.362</td> <td>Longest Storm (mins)</td> <td>10080</td> </tr> <tr> <td>Summer Storms</td> <td>Yes</td> <td>Climate Change %</td> <td>+0</td> </tr> </table> <u>Time Area Diagram</u> Total Area (ha) 0.018 <table> <thead> <tr> <th colspan="2">Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>(ha)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4</td> <td>0.018</td> </tr> </tbody> </table>			Rainfall Model	FSR	Winter Storms	Yes	Return Period (years)	30	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	19.000	Shortest Storm (mins)	15	Ratio R	0.362	Longest Storm (mins)	10080	Summer Storms	Yes	Climate Change %	+0	Time (mins)		Area	From:	To:	(ha)	0	4	0.018
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<u>Model Details</u> Storage is Online Cover Level (m) 52.000 <u>Cellular Storage Structure</u> Invert Level (m) 49.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.50040 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.50040 <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>4.0</td> <td>4.0</td> <td>0.900</td> <td>0.0</td> <td>10.4</td> </tr> <tr> <td>0.800</td> <td>4.0</td> <td>10.4</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	0.000	4.0	4.0	0.900	0.0	10.4	0.800	4.0	10.4			
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