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<p style="text-align: center;"><u>Summary of Results for 1 year Return Period</u></p> <p style="text-align: center;">Half Drain Time : 215 minutes.</p> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>33.145</td><td>0.145</td><td>0.0</td><td>8.1</td><td>8.1</td><td>117.4</td><td>O K</td></tr><tr><td>30 min Summer</td><td>33.175</td><td>0.175</td><td>0.0</td><td>9.3</td><td>9.3</td><td>141.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>33.208</td><td>0.208</td><td>0.0</td><td>9.8</td><td>9.8</td><td>167.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>33.238</td><td>0.238</td><td>0.0</td><td>10.2</td><td>10.2</td><td>192.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>33.252</td><td>0.252</td><td>0.0</td><td>10.4</td><td>10.4</td><td>203.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>33.260</td><td>0.260</td><td>0.0</td><td>10.5</td><td>10.5</td><td>210.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>33.270</td><td>0.270</td><td>0.0</td><td>10.6</td><td>10.6</td><td>217.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>33.273</td><td>0.273</td><td>0.0</td><td>10.6</td><td>10.6</td><td>220.6</td><td>O K</td></tr><tr><td>600 min Summer</td><td>33.273</td><td>0.273</td><td>0.0</td><td>10.6</td><td>10.6</td><td>220.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>33.271</td><td>0.271</td><td>0.0</td><td>10.6</td><td>10.6</td><td>218.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>33.264</td><td>0.264</td><td>0.0</td><td>10.5</td><td>10.5</td><td>213.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>33.244</td><td>0.244</td><td>0.0</td><td>10.3</td><td>10.3</td><td>197.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>33.214</td><td>0.214</td><td>0.0</td><td>9.9</td><td>9.9</td><td>172.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>33.189</td><td>0.189</td><td>0.0</td><td>9.6</td><td>9.6</td><td>152.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>33.151</td><td>0.151</td><td>0.0</td><td>8.5</td><td>8.5</td><td>122.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>33.130</td><td>0.130</td><td>0.0</td><td>7.3</td><td>7.3</td><td>105.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>33.117</td><td>0.117</td><td>0.0</td><td>6.4</td><td>6.4</td><td>94.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>33.107</td><td>0.107</td><td>0.0</td><td>5.7</td><td>5.7</td><td>86.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>33.100</td><td>0.100</td><td>0.0</td><td>5.1</td><td>5.1</td><td>81.0</td><td>O K</td></tr><tr><td>15 min Winter</td><td>33.163</td><td>0.163</td><td>0.0</td><td>9.1</td><td>9.1</td><td>131.4</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>33.477</td><td>0.0</td><td>113.5</td><td>32</td></tr><tr><td>30 min Summer</td><td>20.665</td><td>0.0</td><td>142.2</td><td>44</td></tr><tr><td>60 min Summer</td><td>12.756</td><td>0.0</td><td>184.0</td><td>70</td></tr><tr><td>120 min Summer</td><td>7.874</td><td>0.0</td><td>228.3</td><td>122</td></tr><tr><td>180 min Summer</td><td>5.938</td><td>0.0</td><td>258.8</td><td>160</td></tr><tr><td>240 min Summer</td><td>4.860</td><td>0.0</td><td>282.9</td><td>192</td></tr><tr><td>360 min Summer</td><td>3.665</td><td>0.0</td><td>320.5</td><td>260</td></tr><tr><td>480 min Summer</td><td>3.000</td><td>0.0</td><td>350.2</td><td>328</td></tr><tr><td>600 min Summer</td><td>2.569</td><td>0.0</td><td>374.9</td><td>398</td></tr><tr><td>720 min Summer</td><td>2.263</td><td>0.0</td><td>396.4</td><td>466</td></tr><tr><td>960 min Summer</td><td>1.861</td><td>0.0</td><td>434.9</td><td>600</td></tr><tr><td>1440 min Summer</td><td>1.413</td><td>0.0</td><td>494.7</td><td>862</td></tr><tr><td>2160 min Summer</td><td>1.073</td><td>0.0</td><td>570.5</td><td>1236</td></tr><tr><td>2880 min Summer</td><td>0.883</td><td>0.0</td><td>625.3</td><td>1592</td></tr><tr><td>4320 min Summer</td><td>0.646</td><td>0.0</td><td>683.4</td><td>2296</td></tr><tr><td>5760 min Summer</td><td>0.518</td><td>0.0</td><td>736.6</td><td>3008</td></tr><tr><td>7200 min Summer</td><td>0.436</td><td>0.0</td><td>774.8</td><td>3744</td></tr><tr><td>8640 min Summer</td><td>0.379</td><td>0.0</td><td>806.9</td><td>4424</td></tr><tr><td>10080 min Summer</td><td>0.336</td><td>0.0</td><td>833.2</td><td>5152</td></tr><tr><td>15 min Winter</td><td>33.477</td><td>0.0</td><td>128.2</td><td>32</td></tr></table>								Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	33.145	0.145	0.0	8.1	8.1	117.4	O K	30 min Summer	33.175	0.175	0.0	9.3	9.3	141.5	O K	60 min Summer	33.208	0.208	0.0	9.8	9.8	167.9	O K	120 min Summer	33.238	0.238	0.0	10.2	10.2	192.3	O K	180 min Summer	33.252	0.252	0.0	10.4	10.4	203.1	O K	240 min Summer	33.260	0.260	0.0	10.5	10.5	210.1	O K	360 min Summer	33.270	0.270	0.0	10.6	10.6	217.8	O K	480 min Summer	33.273	0.273	0.0	10.6	10.6	220.6	O K	600 min Summer	33.273	0.273	0.0	10.6	10.6	220.5	O K	720 min Summer	33.271	0.271	0.0	10.6	10.6	218.6	O K	960 min Summer	33.264	0.264	0.0	10.5	10.5	213.2	O K	1440 min Summer	33.244	0.244	0.0	10.3	10.3	197.2	O K	2160 min Summer	33.214	0.214	0.0	9.9	9.9	172.7	O K	2880 min Summer	33.189	0.189	0.0	9.6	9.6	152.4	O K	4320 min Summer	33.151	0.151	0.0	8.5	8.5	122.0	O K	5760 min Summer	33.130	0.130	0.0	7.3	7.3	105.4	O K	7200 min Summer	33.117	0.117	0.0	6.4	6.4	94.4	O K	8640 min Summer	33.107	0.107	0.0	5.7	5.7	86.8	O K	10080 min Summer	33.100	0.100	0.0	5.1	5.1	81.0	O K	15 min Winter	33.163	0.163	0.0	9.1	9.1	131.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	33.477	0.0	113.5	32	30 min Summer	20.665	0.0	142.2	44	60 min Summer	12.756	0.0	184.0	70	120 min Summer	7.874	0.0	228.3	122	180 min Summer	5.938	0.0	258.8	160	240 min Summer	4.860	0.0	282.9	192	360 min Summer	3.665	0.0	320.5	260	480 min Summer	3.000	0.0	350.2	328	600 min Summer	2.569	0.0	374.9	398	720 min Summer	2.263	0.0	396.4	466	960 min Summer	1.861	0.0	434.9	600	1440 min Summer	1.413	0.0	494.7	862	2160 min Summer	1.073	0.0	570.5	1236	2880 min Summer	0.883	0.0	625.3	1592	4320 min Summer	0.646	0.0	683.4	2296	5760 min Summer	0.518	0.0	736.6	3008	7200 min Summer	0.436	0.0	774.8	3744	8640 min Summer	0.379	0.0	806.9	4424	10080 min Summer	0.336	0.0	833.2	5152	15 min Winter	33.477	0.0	128.2	32
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																																																																																	
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Date 21/08/2019				Designed by MDS			
File				Checked by MDS			
Innovyze				Source Control 2018.1.1			
<u>Summary of Results for 1 year Return Period</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	33.197	0.197	0.0	9.7	9.7	158.9	O K
60 min Winter	33.234	0.234	0.0	10.2	10.2	189.4	O K
120 min Winter	33.270	0.270	0.0	10.6	10.6	218.1	O K
180 min Winter	33.286	0.286	0.0	10.7	10.7	230.6	O K
240 min Winter	33.293	0.293	0.0	10.8	10.8	236.6	O K
360 min Winter	33.301	0.301	0.0	10.8	10.8	242.7	O K
480 min Winter	33.300	0.300	0.0	10.8	10.8	242.6	O K
600 min Winter	33.296	0.296	0.0	10.8	10.8	239.1	O K
720 min Winter	33.289	0.289	0.0	10.7	10.7	233.6	O K
960 min Winter	33.274	0.274	0.0	10.6	10.6	221.3	O K
1440 min Winter	33.239	0.239	0.0	10.2	10.2	193.2	O K
2160 min Winter	33.193	0.193	0.0	9.6	9.6	156.2	O K
2880 min Winter	33.163	0.163	0.0	9.1	9.1	131.2	O K
4320 min Winter	33.128	0.128	0.0	7.1	7.1	103.2	O K
5760 min Winter	33.110	0.110	0.0	5.9	5.9	88.5	O K
7200 min Winter	33.098	0.098	0.0	5.0	5.0	79.4	O K
8640 min Winter	33.090	0.090	0.0	4.4	4.4	72.9	O K
10080 min Winter	33.084	0.084	0.0	3.9	3.9	67.9	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	20.665	0.0	160.4	44			
60 min Winter	12.756	0.0	206.7	70			
120 min Winter	7.874	0.0	256.3	124			
180 min Winter	5.938	0.0	290.5	176			
240 min Winter	4.860	0.0	317.5	204			
360 min Winter	3.665	0.0	359.6	280			
480 min Winter	3.000	0.0	392.8	356			
600 min Winter	2.569	0.0	420.6	432			
720 min Winter	2.263	0.0	444.7	504			
960 min Winter	1.861	0.0	487.9	646			
1440 min Winter	1.413	0.0	555.1	912			
2160 min Winter	1.073	0.0	639.5	1280			
2880 min Winter	0.883	0.0	700.9	1616			
4320 min Winter	0.646	0.0	766.6	2336			
5760 min Winter	0.518	0.0	825.3	3024			
7200 min Winter	0.436	0.0	868.2	3760			
8640 min Winter	0.379	0.0	904.3	4496			
10080 min Winter	0.336	0.0	934.5	5160			
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Rainfall Details


Rainfall Model	FEH
Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 507250 184950 TQ 07250 84950
C (1km)	-0.025
D1 (1km)	0.304
D2 (1km)	0.321
D3 (1km)	0.230
E (1km)	0.305
F (1km)	2.546
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 1.983

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.397	8 12	0.397	16 20	0.396
4 8	0.397	12 16	0.396		

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Model Details

Storage is Online Cover Level (m) 35.000

Cellular Storage Structure

Invert Level (m) 33.000 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	850.0	0.0	5.200	0.0	0.0
0.400	850.0	0.0	5.600	0.0	0.0
0.800	850.0	0.0	6.000	0.0	0.0
1.200	850.0	0.0	6.400	0.0	0.0
1.600	850.0	0.0	6.800	0.0	0.0
2.000	850.0	0.0	7.200	0.0	0.0
2.400	0.0	0.0	7.600	0.0	0.0
2.800	0.0	0.0	8.000	0.0	0.0
3.200	0.0	0.0	8.400	0.0	0.0
3.600	0.0	0.0	8.800	0.0	0.0
4.000	0.0	0.0	9.200	0.0	0.0
4.400	0.0	0.0	9.600	0.0	0.0
4.800	0.0	0.0	10.000	0.0	0.0


Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0142-1170-2000-1170  
Design Head (m) 2.000  
Design Flow (l/s) 11.7  
Flush-Flo™ Calculated  
Objective Minimise upstream storage  
Application Surface  
Sump Available Yes  
Diameter (mm) 142  
Invert Level (m) 33.000  
Minimum Outlet Pipe Diameter (mm) 225  
Suggested Manhole Diameter (mm) 1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	11.7
Flush-Flo™	0.590	11.7
Kick-Flo®	1.215	9.2
Mean Flow over Head Range	-	10.2


The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated


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Hydro-Brake® Optimum Outflow Control


Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	1.200	9.4	3.000	14.2	7.000	21.2
0.200	9.7	1.400	9.9	3.500	15.2	7.500	21.9
0.300	10.8	1.600	10.5	4.000	16.2	8.000	22.6
0.400	11.4	1.800	11.1	4.500	17.2	8.500	23.3
0.500	11.6	2.000	11.7	5.000	18.1	9.000	24.0
0.600	11.7	2.200	12.2	5.500	18.9	9.500	24.6
0.800	11.5	2.400	12.7	6.000	19.7		
1.000	10.9	2.600	13.2	6.500	20.5		


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<p style="text-align: center;"><u>Summary of Results for 30 year Return Period</u></p> <p style="text-align: center;">Half Drain Time : 509 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 Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>33.468</td><td>0.468</td><td>0.0</td><td>11.6</td><td>11.6</td><td>377.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>33.540</td><td>0.540</td><td>0.0</td><td>11.7</td><td>11.7</td><td>436.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>33.617</td><td>0.617</td><td>0.0</td><td>11.7</td><td>11.7</td><td>498.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>33.691</td><td>0.691</td><td>0.0</td><td>11.7</td><td>11.7</td><td>557.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>33.727</td><td>0.727</td><td>0.0</td><td>11.7</td><td>11.7</td><td>586.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>33.745</td><td>0.745</td><td>0.0</td><td>11.7</td><td>11.7</td><td>601.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>33.756</td><td>0.756</td><td>0.0</td><td>11.7</td><td>11.7</td><td>610.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>33.751</td><td>0.751</td><td>0.0</td><td>11.7</td><td>11.7</td><td>606.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>33.744</td><td>0.744</td><td>0.0</td><td>11.7</td><td>11.7</td><td>600.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>33.734</td><td>0.734</td><td>0.0</td><td>11.7</td><td>11.7</td><td>593.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>33.717</td><td>0.717</td><td>0.0</td><td>11.7</td><td>11.7</td><td>578.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>33.671</td><td>0.671</td><td>0.0</td><td>11.7</td><td>11.7</td><td>542.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>33.598</td><td>0.598</td><td>0.0</td><td>11.7</td><td>11.7</td><td>482.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>33.529</td><td>0.529</td><td>0.0</td><td>11.7</td><td>11.7</td><td>427.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>33.388</td><td>0.388</td><td>0.0</td><td>11.3</td><td>11.3</td><td>313.6</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>33.294</td><td>0.294</td><td>0.0</td><td>10.8</td><td>10.8</td><td>237.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>33.231</td><td>0.231</td><td>0.0</td><td>10.1</td><td>10.1</td><td>186.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>33.188</td><td>0.188</td><td>0.0</td><td>9.6</td><td>9.6</td><td>152.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>33.162</td><td>0.162</td><td>0.0</td><td>9.1</td><td>9.1</td><td>130.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>33.526</td><td>0.526</td><td>0.0</td><td>11.7</td><td>11.7</td><td>424.6</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>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>105.674</td><td>0.0</td><td>377.5</td><td>33</td></tr><tr><td>30 min Summer</td><td>61.515</td><td>0.0</td><td>440.5</td><td>47</td></tr><tr><td>60 min Summer</td><td>35.809</td><td>0.0</td><td>525.5</td><td>76</td></tr><tr><td>120 min Summer</td><td>20.845</td><td>0.0</td><td>612.5</td><td>132</td></tr><tr><td>180 min Summer</td><td>15.190</td><td>0.0</td><td>669.8</td><td>188</td></tr><tr><td>240 min Summer</td><td>12.135</td><td>0.0</td><td>713.7</td><td>246</td></tr><tr><td>360 min Summer</td><td>8.842</td><td>0.0</td><td>780.2</td><td>360</td></tr><tr><td>480 min Summer</td><td>7.064</td><td>0.0</td><td>831.1</td><td>422</td></tr><tr><td>600 min Summer</td><td>5.935</td><td>0.0</td><td>872.7</td><td>482</td></tr><tr><td>720 min Summer</td><td>5.147</td><td>0.0</td><td>908.2</td><td>544</td></tr><tr><td>960 min Summer</td><td>4.132</td><td>0.0</td><td>971.6</td><td>678</td></tr><tr><td>1440 min Summer</td><td>3.032</td><td>0.0</td><td>1067.3</td><td>950</td></tr><tr><td>2160 min Summer</td><td>2.225</td><td>0.0</td><td>1186.6</td><td>1352</td></tr><tr><td>2880 min Summer</td><td>1.786</td><td>0.0</td><td>1269.7</td><td>1740</td></tr><tr><td>4320 min Summer</td><td>1.263</td><td>0.0</td><td>1343.2</td><td>2472</td></tr><tr><td>5760 min Summer</td><td>0.988</td><td>0.0</td><td>1407.6</td><td>3176</td></tr><tr><td>7200 min Summer</td><td>0.816</td><td>0.0</td><td>1453.3</td><td>3840</td></tr><tr><td>8640 min Summer</td><td>0.698</td><td>0.0</td><td>1491.0</td><td>4512</td></tr><tr><td>10080 min Summer</td><td>0.612</td><td>0.0</td><td>1521.5</td><td>5240</td></tr><tr><td>15 min Winter</td><td>105.674</td><td>0.0</td><td>423.7</td><td>33</td></tr></tbody></table>									Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	33.468	0.468	0.0	11.6	11.6	377.9	O K	30 min Summer	33.540	0.540	0.0	11.7	11.7	436.3	O K	60 min Summer	33.617	0.617	0.0	11.7	11.7	498.2	O K	120 min Summer	33.691	0.691	0.0	11.7	11.7	557.8	O K	180 min Summer	33.727	0.727	0.0	11.7	11.7	586.8	O K	240 min Summer	33.745	0.745	0.0	11.7	11.7	601.9	O K	360 min Summer	33.756	0.756	0.0	11.7	11.7	610.4	O K	480 min Summer	33.751	0.751	0.0	11.7	11.7	606.4	O K	600 min Summer	33.744	0.744	0.0	11.7	11.7	600.5	O K	720 min Summer	33.734	0.734	0.0	11.7	11.7	593.0	O K	960 min Summer	33.717	0.717	0.0	11.7	11.7	578.9	O K	1440 min Summer	33.671	0.671	0.0	11.7	11.7	542.1	O K	2160 min Summer	33.598	0.598	0.0	11.7	11.7	482.9	O K	2880 min Summer	33.529	0.529	0.0	11.7	11.7	427.3	O K	4320 min Summer	33.388	0.388	0.0	11.3	11.3	313.6	O K	5760 min Summer	33.294	0.294	0.0	10.8	10.8	237.4	O K	7200 min Summer	33.231	0.231	0.0	10.1	10.1	186.1	O K	8640 min 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2160 min Summer	33.598	0.598	0.0	11.7	11.7	482.9	O K																																																																																																																																																																																																																																																																																		
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1440 min Summer	3.032	0.0	1067.3	950																																																																																																																																																																																																																																																																																					
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4320 min Summer	1.263	0.0	1343.2	2472																																																																																																																																																																																																																																																																																					
5760 min Summer	0.988	0.0	1407.6	3176																																																																																																																																																																																																																																																																																					
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Innovyze				Source Control 2018.1.1			
<u>Summary of Results for 30 year Return Period</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	33.608	0.608	0.0	11.7	11.7	490.8	O K
60 min Winter	33.695	0.695	0.0	11.7	11.7	561.5	O K
120 min Winter	33.782	0.782	0.0	11.7	11.7	631.3	O K
180 min Winter	33.826	0.826	0.0	11.7	11.7	666.9	O K
240 min Winter	33.851	0.851	0.0	11.7	11.7	687.1	O K
360 min Winter	33.871	0.871	0.0	11.7	11.7	703.3	O K
480 min Winter	33.869	0.869	0.0	11.7	11.7	702.0	O K
600 min Winter	33.856	0.856	0.0	11.7	11.7	691.4	O K
720 min Winter	33.841	0.841	0.0	11.7	11.7	679.0	O K
960 min Winter	33.815	0.815	0.0	11.7	11.7	658.2	O K
1440 min Winter	33.745	0.745	0.0	11.7	11.7	601.7	O K
2160 min Winter	33.630	0.630	0.0	11.7	11.7	508.7	O K
2880 min Winter	33.524	0.524	0.0	11.7	11.7	423.1	O K
4320 min Winter	33.334	0.334	0.0	11.1	11.1	269.3	O K
5760 min Winter	33.224	0.224	0.0	10.1	10.1	180.5	O K
7200 min Winter	33.165	0.165	0.0	9.1	9.1	133.2	O K
8640 min Winter	33.142	0.142	0.0	8.0	8.0	114.8	O K
10080 min Winter	33.127	0.127	0.0	7.0	7.0	102.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	61.515	0.0	493.9	47			
60 min Winter	35.809	0.0	589.2	74			
120 min Winter	20.845	0.0	686.6	130			
180 min Winter	15.190	0.0	750.7	188			
240 min Winter	12.135	0.0	799.7	244			
360 min Winter	8.842	0.0	874.2	356			
480 min Winter	7.064	0.0	931.1	464			
600 min Winter	5.935	0.0	977.7	564			
720 min Winter	5.147	0.0	1017.3	588			
960 min Winter	4.132	0.0	1088.2	736			
1440 min Winter	3.032	0.0	1195.0	1038			
2160 min Winter	2.225	0.0	1329.4	1464			
2880 min Winter	1.786	0.0	1422.6	1856			
4320 min Winter	1.263	0.0	1505.7	2564			
5760 min Winter	0.988	0.0	1576.8	3232			
7200 min Winter	0.816	0.0	1628.1	3824			
8640 min Winter	0.698	0.0	1670.6	4504			
10080 min Winter	0.612	0.0	1705.5	5248			
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4 Market Square Old Amersham Buckinghamshire, HP7 0DQ				Hillingdon Gardens SW Attenuation Estimate Calculations			
Date 21/08/2019				Designed by MDS			
File				Checked by MDS			
Innovyze				Source Control 2018.1.1			
<u>Summary of Results for 100 year Return Period</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	33.910	0.910	0.0	11.7	11.7	735.2	O K
60 min Winter	34.025	1.025	0.0	11.7	11.7	827.7	O K
120 min Winter	34.140	1.140	0.0	11.7	11.7	920.4	O K
180 min Winter	34.202	1.202	0.0	11.7	11.7	970.7	O K
240 min Winter	34.241	1.241	0.0	11.7	11.7	1001.8	O K
360 min Winter	34.280	1.280	0.0	11.7	11.7	1033.6	O K
480 min Winter	34.292	1.292	0.0	11.7	11.7	1043.2	O K
600 min Winter	34.289	1.289	0.0	11.7	11.7	1040.5	O K
720 min Winter	34.275	1.275	0.0	11.7	11.7	1029.9	O K
960 min Winter	34.240	1.240	0.0	11.7	11.7	1001.3	O K
1440 min Winter	34.137	1.137	0.0	11.7	11.7	917.9	O K
2160 min Winter	33.988	0.988	0.0	11.7	11.7	798.1	O K
2880 min Winter	33.846	0.846	0.0	11.7	11.7	683.1	O K
4320 min Winter	33.557	0.557	0.0	11.7	11.7	449.4	O K
5760 min Winter	33.369	0.369	0.0	11.3	11.3	297.8	O K
7200 min Winter	33.255	0.255	0.0	10.4	10.4	205.8	O K
8640 min Winter	33.187	0.187	0.0	9.5	9.5	151.1	O K
10080 min Winter	33.155	0.155	0.0	8.7	8.7	125.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	91.030	0.0	727.8	48			
60 min Winter	51.886	0.0	855.3	76			
120 min Winter	29.574	0.0	975.1	134			
180 min Winter	21.286	0.0	1052.5	190			
240 min Winter	16.857	0.0	1111.0	248			
360 min Winter	12.133	0.0	1198.6	362			
480 min Winter	9.608	0.0	1264.6	476			
600 min Winter	8.018	0.0	1317.8	590			
720 min Winter	6.916	0.0	1362.5	700			
960 min Winter	5.503	0.0	1441.5	916			
1440 min Winter	3.989	0.0	1553.1	1124			
2160 min Winter	2.891	0.0	1727.9	1552			
2880 min Winter	2.300	0.0	1833.0	1968			
4320 min Winter	1.607	0.0	1917.8	2724			
5760 min Winter	1.246	0.0	1989.3	3400			
7200 min Winter	1.022	0.0	2040.3	4040			
8640 min Winter	0.870	0.0	2082.3	4672			
10080 min Winter	0.759	0.0	2116.4	5256			
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4 Market Square Old Amersham Buckinghamshire, HP7 0DQ				Hillingdon Gardens SW Attenuation Estimate Calculations																																																																																																																																																																																																																																																																																					
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Innovyze				Source Control 2018.1.1																																																																																																																																																																																																																																																																																					
<p style="text-align: center;"><u>Summary of Results for 100 year Return Period (+40%)</u></p> <p style="text-align: center;">Half Drain Time : 1136 minutes.</p> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>34.008</td><td>1.008</td><td>0.0</td><td>11.7</td><td>11.7</td><td>814.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>34.145</td><td>1.145</td><td>0.0</td><td>11.7</td><td>11.7</td><td>924.7</td><td>O K</td></tr><tr><td>60 min Summer</td><td>34.293</td><td>1.293</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1044.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>34.444</td><td>1.444</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1165.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>34.526</td><td>1.526</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1232.5</td><td>O K</td></tr><tr><td>240 min Summer</td><td>34.579</td><td>1.579</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1275.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>34.638</td><td>1.638</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1322.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>34.663</td><td>1.663</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1343.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>34.670</td><td>1.670</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1348.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>34.664</td><td>1.664</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1343.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>34.639</td><td>1.639</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1323.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>34.574</td><td>1.574</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1271.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>34.479</td><td>1.479</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1193.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>34.386</td><td>1.386</td><td>0.0</td><td>11.7</td><td>11.7</td><td>1119.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>34.106</td><td>1.106</td><td>0.0</td><td>11.7</td><td>11.7</td><td>892.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>33.874</td><td>0.874</td><td>0.0</td><td>11.7</td><td>11.7</td><td>705.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>33.695</td><td>0.695</td><td>0.0</td><td>11.7</td><td>11.7</td><td>560.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>33.554</td><td>0.554</td><td>0.0</td><td>11.7</td><td>11.7</td><td>447.7</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>33.448</td><td>0.448</td><td>0.0</td><td>11.5</td><td>11.5</td><td>361.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>34.132</td><td>1.132</td><td>0.0</td><td>11.7</td><td>11.7</td><td>914.0</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>223.589</td><td>0.0</td><td>794.0</td><td>34</td></tr><tr><td>30 min Summer</td><td>127.442</td><td>0.0</td><td>885.9</td><td>49</td></tr><tr><td>60 min Summer</td><td>72.640</td><td>0.0</td><td>1069.0</td><td>78</td></tr><tr><td>120 min Summer</td><td>41.404</td><td>0.0</td><td>1217.6</td><td>136</td></tr><tr><td>180 min Summer</td><td>29.801</td><td>0.0</td><td>1313.3</td><td>194</td></tr><tr><td>240 min Summer</td><td>23.600</td><td>0.0</td><td>1385.2</td><td>254</td></tr><tr><td>360 min Summer</td><td>16.986</td><td>0.0</td><td>1491.8</td><td>370</td></tr><tr><td>480 min Summer</td><td>13.451</td><td>0.0</td><td>1569.9</td><td>488</td></tr><tr><td>600 min Summer</td><td>11.225</td><td>0.0</td><td>1629.9</td><td>606</td></tr><tr><td>720 min Summer</td><td>9.682</td><td>0.0</td><td>1675.6</td><td>724</td></tr><tr><td>960 min Summer</td><td>7.705</td><td>0.0</td><td>1724.1</td><td>942</td></tr><tr><td>1440 min Summer</td><td>5.584</td><td>0.0</td><td>1669.5</td><td>1166</td></tr><tr><td>2160 min Summer</td><td>4.047</td><td>0.0</td><td>2159.3</td><td>1556</td></tr><tr><td>2880 min Summer</td><td>3.220</td><td>0.0</td><td>2289.7</td><td>1972</td></tr><tr><td>4320 min Summer</td><td>2.249</td><td>0.0</td><td>2395.6</td><td>2744</td></tr><tr><td>5760 min Summer</td><td>1.744</td><td>0.0</td><td>2487.2</td><td>3472</td></tr><tr><td>7200 min Summer</td><td>1.431</td><td>0.0</td><td>2551.1</td><td>4184</td></tr><tr><td>8640 min Summer</td><td>1.218</td><td>0.0</td><td>2603.7</td><td>4856</td></tr><tr><td>10080 min Summer</td><td>1.063</td><td>0.0</td><td>2646.5</td><td>5552</td></tr><tr><td>15 min Winter</td><td>223.589</td><td>0.0</td><td>875.2</td><td>34</td></tr></table>									Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	34.008	1.008	0.0	11.7	11.7	814.1	O K	30 min Summer	34.145	1.145	0.0	11.7	11.7	924.7	O K	60 min Summer	34.293	1.293	0.0	11.7	11.7	1044.4	O K	120 min Summer	34.444	1.444	0.0	11.7	11.7	1165.7	O K	180 min Summer	34.526	1.526	0.0	11.7	11.7	1232.5	O K	240 min Summer	34.579	1.579	0.0	11.7	11.7	1275.1	O K	360 min Summer	34.638	1.638	0.0	11.7	11.7	1322.7	O K	480 min Summer	34.663	1.663	0.0	11.7	11.7	1343.2	O K	600 min Summer	34.670	1.670	0.0	11.7	11.7	1348.2	O K	720 min Summer	34.664	1.664	0.0	11.7	11.7	1343.5	O K	960 min Summer	34.639	1.639	0.0	11.7	11.7	1323.8	O K	1440 min Summer	34.574	1.574	0.0	11.7	11.7	1271.2	O K	2160 min Summer	34.479	1.479	0.0	11.7	11.7	1193.9	O K	2880 min Summer	34.386	1.386	0.0	11.7	11.7	1119.4	O K	4320 min Summer	34.106	1.106	0.0	11.7	11.7	892.7	O K	5760 min Summer	33.874	0.874	0.0	11.7	11.7	705.8	O K	7200 min Summer	33.695	0.695	0.0	11.7	11.7	560.8	O K	8640 min Summer	33.554	0.554	0.0	11.7	11.7	447.7	O K	10080 min Summer	33.448	0.448	0.0	11.5	11.5	361.9	O K	15 min Winter	34.132	1.132	0.0	11.7	11.7	914.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	223.589	0.0	794.0	34	30 min Summer	127.442	0.0	885.9	49	60 min Summer	72.640	0.0	1069.0	78	120 min Summer	41.404	0.0	1217.6	136	180 min Summer	29.801	0.0	1313.3	194	240 min Summer	23.600	0.0	1385.2	254	360 min Summer	16.986	0.0	1491.8	370	480 min Summer	13.451	0.0	1569.9	488	600 min Summer	11.225	0.0	1629.9	606	720 min Summer	9.682	0.0	1675.6	724	960 min Summer	7.705	0.0	1724.1	942	1440 min Summer	5.584	0.0	1669.5	1166	2160 min Summer	4.047	0.0	2159.3	1556	2880 min Summer	3.220	0.0	2289.7	1972	4320 min Summer	2.249	0.0	2395.6	2744	5760 min Summer	1.744	0.0	2487.2	3472	7200 min Summer	1.431	0.0	2551.1	4184	8640 min Summer	1.218	0.0	2603.7	4856	10080 min Summer	1.063	0.0	2646.5	5552	15 min Winter	223.589	0.0	875.2	34
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																																																																																		
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600 min Summer	34.670	1.670	0.0	11.7	11.7	1348.2	O K																																																																																																																																																																																																																																																																																		
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480 min Summer	13.451	0.0	1569.9	488																																																																																																																																																																																																																																																																																					
600 min Summer	11.225	0.0	1629.9	606																																																																																																																																																																																																																																																																																					
720 min Summer	9.682	0.0	1675.6	724																																																																																																																																																																																																																																																																																					
960 min Summer	7.705	0.0	1724.1	942																																																																																																																																																																																																																																																																																					
1440 min Summer	5.584	0.0	1669.5	1166																																																																																																																																																																																																																																																																																					
2160 min Summer	4.047	0.0	2159.3	1556																																																																																																																																																																																																																																																																																					
2880 min Summer	3.220	0.0	2289.7	1972																																																																																																																																																																																																																																																																																					
4320 min Summer	2.249	0.0	2395.6	2744																																																																																																																																																																																																																																																																																					
5760 min Summer	1.744	0.0	2487.2	3472																																																																																																																																																																																																																																																																																					
7200 min Summer	1.431	0.0	2551.1	4184																																																																																																																																																																																																																																																																																					
8640 min Summer	1.218	0.0	2603.7	4856																																																																																																																																																																																																																																																																																					
10080 min Summer	1.063	0.0	2646.5	5552																																																																																																																																																																																																																																																																																					
15 min Winter	223.589	0.0	875.2	34																																																																																																																																																																																																																																																																																					
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4 Market Square Old Amersham Buckinghamshire, HP7 0DQ				Hillingdon Gardens SW Attenuation Estimate Calculations			
Date 21/08/2019				Designed by MDS			
File				Checked by MDS			
Innovyze				Source Control 2018.1.1			
<p align="center"><u>Summary of Results for 100 year Return Period (+40%)</u></p>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	34.287	1.287	0.0	11.7	11.7	1038.9	O K
60 min Winter	34.453	1.453	0.0	11.7	11.7	1173.3	O K
120 min Winter	34.625	1.625	0.0	11.7	11.7	1312.1	O K
180 min Winter	34.721	1.721	0.0	11.7	11.7	1389.9	O K
240 min Winter	34.784	1.784	0.0	11.7	11.7	1440.7	O K
360 min Winter	34.858	1.858	0.0	11.7	11.7	1500.3	O K
480 min Winter	34.894	1.894	0.0	11.7	11.7	1529.3	O K
600 min Winter	34.908	1.908	0.0	11.7	11.7	1540.8	Flood Risk
720 min Winter	34.909	1.909	0.0	11.7	11.7	1541.2	Flood Risk
960 min Winter	34.896	1.896	0.0	11.7	11.7	1530.8	O K
1440 min Winter	34.816	1.816	0.0	11.7	11.7	1466.7	O K
2160 min Winter	34.696	1.696	0.0	11.7	11.7	1369.2	O K
2880 min Winter	34.568	1.568	0.0	11.7	11.7	1266.5	O K
4320 min Winter	34.195	1.195	0.0	11.7	11.7	964.8	O K
5760 min Winter	33.836	0.836	0.0	11.7	11.7	675.3	O K
7200 min Winter	33.589	0.589	0.0	11.7	11.7	475.6	O K
8640 min Winter	33.420	0.420	0.0	11.5	11.5	339.0	O K
10080 min Winter	33.309	0.309	0.0	10.9	10.9	249.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	127.442	0.0	927.7	48			
60 min Winter	72.640	0.0	1196.6	78			
120 min Winter	41.404	0.0	1361.9	134			
180 min Winter	29.801	0.0	1467.6	192			
240 min Winter	23.600	0.0	1546.2	248			
360 min Winter	16.986	0.0	1659.3	364			
480 min Winter	13.451	0.0	1734.6	478			
600 min Winter	11.225	0.0	1776.4	594			
720 min Winter	9.682	0.0	1784.8	706			
960 min Winter	7.705	0.0	1766.9	926			
1440 min Winter	5.584	0.0	1695.8	1324			
2160 min Winter	4.047	0.0	2418.0	1656			
2880 min Winter	3.220	0.0	2563.5	2124			
4320 min Winter	2.249	0.0	2679.6	3036			
5760 min Winter	1.744	0.0	2786.0	3704			
7200 min Winter	1.431	0.0	2857.7	4392			
8640 min Winter	1.218	0.0	2916.9	5016			
10080 min Winter	1.063	0.0	2965.8	5648			
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