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Catherine House Old Harborough Road Brixworth NN6 9BX	Kyngs Golf Club - 81270 1 in 30 year storm																																																																																																																																																																																																																																																																					
Date 01/06/2023 File 81270 - ATTENUATION BASIN	Designed by AGS Checked by DE																																																																																																																																																																																																																																																																					
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<u>Summary of Results for 1 year Return Period</u> Half Drain Time: 615 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 Control (l/s)</th><th>Max Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>98.398</td><td>0.093</td><td>3.5</td><td>2.0</td><td>1.5</td><td>84.072</td><td>O K</td></tr><tr><td>30 min Summer</td><td>98.425</td><td>0.120</td><td>3.5</td><td>2.0</td><td>1.5</td><td>108.480</td><td>O K</td></tr><tr><td>60 min Summer</td><td>98.454</td><td>0.149</td><td>3.5</td><td>2.0</td><td>1.5</td><td>134.696</td><td>O K</td></tr><tr><td>120 min Summer</td><td>98.484</td><td>0.179</td><td>3.5</td><td>2.0</td><td>1.5</td><td>161.816</td><td>O K</td></tr><tr><td>180 min Summer</td><td>98.501</td><td>0.196</td><td>3.5</td><td>2.0</td><td>1.5</td><td>177.184</td><td>O K</td></tr><tr><td>240 min Summer</td><td>98.513</td><td>0.208</td><td>3.5</td><td>2.0</td><td>1.5</td><td>188.032</td><td>O K</td></tr><tr><td>360 min Summer</td><td>98.527</td><td>0.222</td><td>3.5</td><td>2.0</td><td>1.5</td><td>200.688</td><td>O K</td></tr><tr><td>480 min Summer</td><td>98.536</td><td>0.231</td><td>3.5</td><td>2.0</td><td>1.5</td><td>208.824</td><td>O K</td></tr><tr><td>600 min Summer</td><td>98.541</td><td>0.236</td><td>3.5</td><td>2.0</td><td>1.5</td><td>213.344</td><td>O K</td></tr><tr><td>720 min Summer</td><td>98.544</td><td>0.239</td><td>3.5</td><td>2.0</td><td>1.5</td><td>216.056</td><td>O K</td></tr><tr><td>960 min Summer</td><td>98.546</td><td>0.241</td><td>3.5</td><td>2.0</td><td>1.5</td><td>217.864</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>98.543</td><td>0.238</td><td>3.5</td><td>2.0</td><td>1.5</td><td>215.152</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>98.535</td><td>0.230</td><td>3.5</td><td>2.0</td><td>1.5</td><td>207.920</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>98.526</td><td>0.221</td><td>3.5</td><td>2.0</td><td>1.5</td><td>199.784</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>98.508</td><td>0.203</td><td>3.5</td><td>2.0</td><td>1.5</td><td>183.512</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>98.490</td><td>0.185</td><td>3.5</td><td>2.0</td><td>1.5</td><td>167.240</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>98.474</td><td>0.169</td><td>3.5</td><td>2.0</td><td>1.5</td><td>152.776</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>98.459</td><td>0.154</td><td>3.5</td><td>2.0</td><td>1.5</td><td>139.216</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>98.445</td><td>0.141</td><td>3.5</td><td>2.0</td><td>1.5</td><td>127.464</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>73.219</td><td>0.0</td><td>109.5</td><td>23</td></tr><tr><td>30 min Summer</td><td>47.686</td><td>0.0</td><td>116.9</td><td>37</td></tr><tr><td>60 min Summer</td><td>29.711</td><td>0.0</td><td>220.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>17.979</td><td>0.0</td><td>228.4</td><td>126</td></tr><tr><td>180 min Summer</td><td>13.265</td><td>0.0</td><td>233.6</td><td>186</td></tr><tr><td>240 min Summer</td><td>10.647</td><td>0.0</td><td>237.3</td><td>246</td></tr><tr><td>360 min Summer</td><td>7.777</td><td>0.0</td><td>242.7</td><td>364</td></tr><tr><td>480 min Summer</td><td>6.223</td><td>0.0</td><td>246.5</td><td>484</td></tr><tr><td>600 min Summer</td><td>5.232</td><td>0.0</td><td>248.9</td><td>602</td></tr><tr><td>720 min Summer</td><td>4.539</td><td>0.0</td><td>249.3</td><td>722</td></tr><tr><td>960 min Summer</td><td>3.626</td><td>0.0</td><td>248.7</td><td>956</td></tr><tr><td>1440 min Summer</td><td>2.638</td><td>0.0</td><td>246.9</td><td>1172</td></tr><tr><td>2160 min Summer</td><td>1.918</td><td>0.0</td><td>463.2</td><td>1556</td></tr><tr><td>2880 min Summer</td><td>1.528</td><td>0.0</td><td>469.0</td><td>1964</td></tr><tr><td>4320 min Summer</td><td>1.109</td><td>0.0</td><td>477.5</td><td>2772</td></tr><tr><td>5760 min Summer</td><td>0.883</td><td>0.0</td><td>779.5</td><td>3584</td></tr><tr><td>7200 min Summer</td><td>0.739</td><td>0.0</td><td>784.9</td><td>4392</td></tr><tr><td>8640 min Summer</td><td>0.639</td><td>0.0</td><td>789.4</td><td>5184</td></tr><tr><td>10080 min Summer</td><td>0.565</td><td>0.0</td><td>793.4</td><td>5944</td></tr></table>			Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	98.398	0.093	3.5	2.0	1.5	84.072	O K	30 min Summer	98.425	0.120	3.5	2.0	1.5	108.480	O K	60 min Summer	98.454	0.149	3.5	2.0	1.5	134.696	O K	120 min Summer	98.484	0.179	3.5	2.0	1.5	161.816	O K	180 min Summer	98.501	0.196	3.5	2.0	1.5	177.184	O K	240 min Summer	98.513	0.208	3.5	2.0	1.5	188.032	O K	360 min Summer	98.527	0.222	3.5	2.0	1.5	200.688	O K	480 min Summer	98.536	0.231	3.5	2.0	1.5	208.824	O K	600 min Summer	98.541	0.236	3.5	2.0	1.5	213.344	O K	720 min Summer	98.544	0.239	3.5	2.0	1.5	216.056	O K	960 min Summer	98.546	0.241	3.5	2.0	1.5	217.864	O K	1440 min Summer	98.543	0.238	3.5	2.0	1.5	215.152	O K	2160 min Summer	98.535	0.230	3.5	2.0	1.5	207.920	O K	2880 min Summer	98.526	0.221	3.5	2.0	1.5	199.784	O K	4320 min Summer	98.508	0.203	3.5	2.0	1.5	183.512	O K	5760 min Summer	98.490	0.185	3.5	2.0	1.5	167.240	O K	7200 min Summer	98.474	0.169	3.5	2.0	1.5	152.776	O K	8640 min Summer	98.459	0.154	3.5	2.0	1.5	139.216	O K	10080 min Summer	98.445	0.141	3.5	2.0	1.5	127.464	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	73.219	0.0	109.5	23	30 min Summer	47.686	0.0	116.9	37	60 min Summer	29.711	0.0	220.0	68	120 min Summer	17.979	0.0	228.4	126	180 min Summer	13.265	0.0	233.6	186	240 min Summer	10.647	0.0	237.3	246	360 min Summer	7.777	0.0	242.7	364	480 min Summer	6.223	0.0	246.5	484	600 min Summer	5.232	0.0	248.9	602	720 min Summer	4.539	0.0	249.3	722	960 min Summer	3.626	0.0	248.7	956	1440 min Summer	2.638	0.0	246.9	1172	2160 min Summer	1.918	0.0	463.2	1556	2880 min Summer	1.528	0.0	469.0	1964	4320 min Summer	1.109	0.0	477.5	2772	5760 min Summer	0.883	0.0	779.5	3584	7200 min Summer	0.739	0.0	784.9	4392	8640 min Summer	0.639	0.0	789.4	5184	10080 min Summer	0.565	0.0	793.4	5944
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Date 01/06/2023 File 81270 - ATTENUATION BASIN			Designed by AGS Checked by DE				
Micro Drainage Source Control 2018.1.1							
Summary of Results for 1 year Return Period							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
15 min Winter	98.408	0.103	3.5	2.0	1.5	93.112	O K
30 min Winter	98.439	0.134	3.5	2.0	1.5	121.136	O K
60 min Winter	98.471	0.166	3.5	2.0	1.5	150.064	O K
120 min Winter	98.505	0.200	3.5	2.0	1.5	180.800	O K
180 min Winter	98.524	0.219	3.5	2.0	1.5	197.976	O K
240 min Winter	98.537	0.232	3.5	2.0	1.5	209.728	O K
360 min Winter	98.553	0.248	3.5	2.0	1.5	224.192	O K
480 min Winter	98.564	0.259	3.5	2.0	1.5	234.136	O K
600 min Winter	98.570	0.265	3.6	2.0	1.6	239.560	O K
720 min Winter	98.575	0.270	3.6	2.0	1.6	244.080	O K
960 min Winter	98.579	0.274	3.6	2.0	1.6	247.696	O K
1440 min Winter	98.576	0.271	3.6	2.0	1.6	244.984	O K
2160 min Winter	98.566	0.261	3.5	2.0	1.5	235.944	O K
2880 min Winter	98.553	0.248	3.5	2.0	1.5	224.192	O K
4320 min Winter	98.526	0.221	3.5	2.0	1.5	199.784	O K
5760 min Winter	98.500	0.195	3.5	2.0	1.5	176.280	O K
7200 min Winter	98.476	0.171	3.5	2.0	1.5	154.584	O K
8640 min Winter	98.455	0.149	3.5	2.0	1.5	134.696	O K
10080 min Winter	98.436	0.130	3.4	2.0	1.4	117.520	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Winter	73.219	0.0	112.4	23			
30 min Winter	47.686	0.0	120.5	37			
60 min Winter	29.711	0.0	224.8	66			
120 min Winter	17.979	0.0	234.2	124			
180 min Winter	13.265	0.0	240.0	182			
240 min Winter	10.647	0.0	244.1	242			
360 min Winter	7.777	0.0	249.7	358			
480 min Winter	6.223	0.0	251.9	474			
600 min Winter	5.232	0.0	251.9	588			
720 min Winter	4.539	0.0	251.7	702			
960 min Winter	3.626	0.0	251.1	924			
1440 min Winter	2.638	0.0	249.4	1340			
2160 min Winter	1.918	0.0	474.3	1664			
2880 min Winter	1.528	0.0	480.8	2132			
4320 min Winter	1.109	0.0	488.4	3028			
5760 min Winter	0.883	0.0	793.3	3872			
7200 min Winter	0.739	0.0	799.3	4688			
8640 min Winter	0.639	0.0	804.3	5528			
10080 min Winter	0.565	0.0	808.7	6256			
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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>1</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>19.300</td> <td>Shortest Storm (mins)</td> <td>15</td> </tr> <tr> <td>Ratio R</td> <td>0.400</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) 2.710 <table> <thead> <tr> <th>Time (mins)</th> <th>Area</th> <th>Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>From:</th> <th>To:</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4</td> <td>4</td> <td>8</td> </tr> <tr> <td></td> <td>1.540</td> <td></td> <td>1.170</td> </tr> </tbody> </table>			Rainfall Model	FSR	Winter Storms	Yes	Return period(years)	1	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	19.300	Shortest Storm (mins)	15	Ratio R	0.400	Longest Storm (mins)	10080	Summer Storms	Yes	Climate Change%	+0	Time (mins)	Area	Time (mins)	Area	From:	To:	From:	To:	0	4	4	8		1.540		1.170
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Catherine House Old Harborough Road Brixworth NN6 9BX	Kyngs Golf Club - 81270 1 in 30 year storm																																					
Date 01/06/2023 File 81270 - ATTENUATION BASIN	Designed by AGS Checked by DE																																					
Micro Drainage		Source Control 2018.1.1																																				
<u>Model Details</u> Storage is Online Cover Level (m) 100.40 <table> <tr> <td>Invert Level (m)</td> <td>98.305</td> <td>Safety Factor</td> <td>2.0</td> </tr> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.3816</td> <td>Porosity</td> <td>1.00</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>0.3816</td> <td></td> <td></td> </tr> </table> <table> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>934.0</td> <td>0.700</td> <td>984.0</td> </tr> </tbody> </table> <u>Pipe Outflow Control</u> <table> <tr> <td>Diameter (m)</td> <td>0.150</td> <td>Entry Loss Coefficient</td> <td>0.500</td> </tr> <tr> <td>Slope (1:x)</td> <td>150.0</td> <td>Coefficient of Contraction</td> <td>0.600</td> </tr> <tr> <td>Length (m)</td> <td>95.230</td> <td>Upstream Invert Level (m)</td> <td>101.640</td> </tr> <tr> <td>Roughness k (mm)</td> <td>0.600</td> <td></td> <td></td> </tr> </table>			Invert Level (m)	98.305	Safety Factor	2.0	Infiltration Coefficient Base (m/hr)	0.3816	Porosity	1.00	Infiltration Coefficient Side (m/hr)	0.3816			Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	0.000	934.0	0.700	984.0	Diameter (m)	0.150	Entry Loss Coefficient	0.500	Slope (1:x)	150.0	Coefficient of Contraction	0.600	Length (m)	95.230	Upstream Invert Level (m)	101.640	Roughness k (mm)	0.600		
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