

GGP Consult					Page 1																																																																																																																																					
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Date 07/02/2023 08:04 File Huyton - 5 ls.SRCX		Designed by GGPAeecOne Checked by			
Innovyze		Source Control 2019.1			
<u>Summary of Results for 1 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	33.832	0.132	4.5	21.2	O K
120 min Winter	33.837	0.137	4.5	22.0	O K
180 min Winter	33.833	0.133	4.5	21.3	O K
240 min Winter	33.826	0.126	4.4	20.2	O K
360 min Winter	33.813	0.113	4.1	18.1	O K
480 min Winter	33.802	0.102	3.7	16.3	O K
600 min Winter	33.793	0.093	3.4	14.8	O K
720 min Winter	33.786	0.086	3.1	13.7	O K
960 min Winter	33.776	0.076	2.6	12.2	O K
1440 min Winter	33.764	0.064	2.1	10.2	O K
2160 min Winter	33.754	0.054	1.6	8.6	O K
2880 min Winter	33.748	0.048	1.3	7.6	O K
4320 min Winter	33.740	0.040	1.0	6.4	O K
5760 min Winter	33.736	0.036	0.8	5.7	O K
7200 min Winter	33.733	0.033	0.7	5.2	O K
8640 min Winter	33.730	0.030	0.6	4.8	O K
10080 min Winter	33.728	0.028	0.5	4.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	17.920	0.0	29.0	52	
120 min Winter	11.164	0.0	36.1	88	
180 min Winter	8.425	0.0	40.9	124	
240 min Winter	6.892	0.0	44.6	158	
360 min Winter	5.156	0.0	50.1	222	
480 min Winter	4.187	0.0	54.2	286	
600 min Winter	3.563	0.0	57.7	346	
720 min Winter	3.122	0.0	60.7	408	
960 min Winter	2.536	0.0	65.7	528	
1440 min Winter	1.892	0.0	73.5	768	
2160 min Winter	1.412	0.0	82.3	1144	
2880 min Winter	1.146	0.0	89.1	1500	
4320 min Winter	0.854	0.0	99.7	2208	
5760 min Winter	0.694	0.0	108.0	2936	
7200 min Winter	0.591	0.0	114.9	3664	
8640 min Winter	0.519	0.0	121.0	4352	
10080 min Winter	0.464	0.0	126.4	5136	
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Innovyze Source Control 2019.1		

Rainfall Details

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)	20.000	Shortest Storm (mins)	15
Ratio R	0.392	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.193

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.096	4 8	0.097

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Model Details Storage is Online Cover Level (m) 35.220 Tank or Pond Structure Invert Level (m) 33.700 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><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>160.0</td><td>0.800</td><td>160.0</td><td>0.801</td><td>1.0</td><td>1.520</td><td>1.0</td></tr></tbody></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0105-5000-1050-5000 Design Head (m) 1.050 Design Flow (l/s) 5.0 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 105 Invert Level (m) 33.697 Minimum Outlet Pipe Diameter (mm) 150 Suggested Manhole Diameter (mm) 1200 Control Points Head (m) Flow (l/s) Design Point (Calculated) 1.050 5.0 Flush-Flo™ 0.313 5.0 Kick-Flo® 0.667 4.1 Mean Flow over Head Range - 4.3 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 <table><thead><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr></thead><tbody><tr><td>0.100</td><td>3.5</td><td>1.200</td><td>5.3</td><td>3.000</td><td>8.2</td><td>7.000</td><td>12.2</td></tr><tr><td>0.200</td><td>4.8</td><td>1.400</td><td>5.7</td><td>3.500</td><td>8.8</td><td>7.500</td><td>12.6</td></tr><tr><td>0.300</td><td>5.0</td><td>1.600</td><td>6.1</td><td>4.000</td><td>9.4</td><td>8.000</td><td>13.0</td></tr><tr><td>0.400</td><td>4.9</td><td>1.800</td><td>6.4</td><td>4.500</td><td>9.9</td><td>8.500</td><td>13.4</td></tr><tr><td>0.500</td><td>4.8</td><td>2.000</td><td>6.7</td><td>5.000</td><td>10.4</td><td>9.000</td><td>13.8</td></tr><tr><td>0.600</td><td>4.5</td><td>2.200</td><td>7.1</td><td>5.500</td><td>10.9</td><td>9.500</td><td>14.1</td></tr><tr><td>0.800</td><td>4.4</td><td>2.400</td><td>7.3</td><td>6.000</td><td>11.3</td><td></td><td></td></tr><tr><td>1.000</td><td>4.9</td><td>2.600</td><td>7.6</td><td>6.500</td><td>11.8</td><td></td><td></td></tr></tbody></table>				Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	160.0	0.800	160.0	0.801	1.0	1.520	1.0	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	3.5	1.200	5.3	3.000	8.2	7.000	12.2	0.200	4.8	1.400	5.7	3.500	8.8	7.500	12.6	0.300	5.0	1.600	6.1	4.000	9.4	8.000	13.0	0.400	4.9	1.800	6.4	4.500	9.9	8.500	13.4	0.500	4.8	2.000	6.7	5.000	10.4	9.000	13.8	0.600	4.5	2.200	7.1	5.500	10.9	9.500	14.1	0.800	4.4	2.400	7.3	6.000	11.3			1.000	4.9	2.600	7.6	6.500	11.8		
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0.400	4.9	1.800	6.4	4.500	9.9	8.500	13.4																																																																																				
0.500	4.8	2.000	6.7	5.000	10.4	9.000	13.8																																																																																				
0.600	4.5	2.200	7.1	5.500	10.9	9.500	14.1																																																																																				
0.800	4.4	2.400	7.3	6.000	11.3																																																																																						
1.000	4.9	2.600	7.6	6.500	11.8																																																																																						
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