

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control Σ (l/s)	Max Outflow (l/s)	Max Volume (m ³)	Status
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	Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
10080 min	Summer	1.081	0.0	100.7	5136
15 min	Winter	125.130	0.0	19.4	21
30 min	Winter	83.961	0.0	26.1	32
60 min	Winter	53.779	0.0	33.4	50
120 min	Winter	33.273	0.0	41.3	88
180 min	Winter	24.762	0.0	46.2	118
240 min	Winter	19.940	0.0	49.6	146
360 min	Winter	14.641	0.0	54.6	198
480 min	Winter	11.758	0.0	58.4	256
600 min	Winter	9.910	0.0	61.6	316
720 min	Winter	8.613	0.0	64.2	376
960 min	Winter	6.897	0.0	68.6	500
1440 min	Winter	5.034	0.0	75.1	730
2160 min	Winter	3.666	0.0	82.0	1100
2880 min	Winter	2.923	0.0	87.2	1468
4320 min	Winter	2.121	0.0	94.9	2196
5760 min	Winter	1.688	0.0	100.7	2864
7200 min	Winter	1.412	0.0	105.3	3712
8640 min	Winter	1.221	0.0	109.3	4264

Topping Engineers Ltd			Page 5																																																																																																														
Aire House 12 Victoria Avenue Harrogate, HG1 1ED																																																																																																																	
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Innovyze			Source Control 2020.1.3																																																																																																														
<u>Model Details</u> Storage is Online Cover Level (m) 10.000 <u>Cellular Storage Structure</u> Invert Level (m) 9.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><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><tr><td>0.000</td><td>50.0</td><td>50.0</td><td>0.500</td><td>0.0</td><td>62.0</td></tr><tr><td>0.400</td><td>50.0</td><td>62.0</td><td></td><td></td><td></td></tr></table> <u>Hydro-Brake® Optimum Outflow Control</u> Unit Reference MD-SHE-0131-6900-0400-6900 Design Head (m) 0.400 Design Flow (l/s) 6.9 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 131 Invert Level (m) 9.000 Minimum Outlet Pipe Diameter (mm) 150 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.400</td><td>6.9</td><td>Kick-Flo®</td><td>0.324</td><td>6.3</td></tr><tr><td>Flush-Flo™</td><td>0.191</td><td>6.9</td><td>Mean Flow over Head Range</td><td>-</td><td>5.4</td></tr></table> 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><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><tr><td>0.100</td><td>4.7</td><td>1.200</td><td>11.6</td><td>3.000</td><td>17.9</td><td>7.000</td><td>27.0</td></tr><tr><td>0.200</td><td>6.9</td><td>1.400</td><td>12.4</td><td>3.500</td><td>19.3</td><td>7.500</td><td>28.0</td></tr><tr><td>0.300</td><td>6.5</td><td>1.600</td><td>13.2</td><td>4.000</td><td>20.5</td><td>8.000</td><td>28.9</td></tr><tr><td>0.400</td><td>6.9</td><td>1.800</td><td>14.0</td><td>4.500</td><td>21.6</td><td>8.500</td><td>29.8</td></tr><tr><td>0.500</td><td>7.7</td><td>2.000</td><td>14.7</td><td>5.000</td><td>22.8</td><td>9.000</td><td>30.7</td></tr><tr><td>0.600</td><td>8.3</td><td>2.200</td><td>15.4</td><td>5.500</td><td>23.9</td><td>9.500</td><td>31.5</td></tr><tr><td>0.800</td><td>9.5</td><td>2.400</td><td>16.1</td><td>6.000</td><td>25.0</td><td></td><td></td></tr><tr><td>1.000</td><td>10.6</td><td>2.600</td><td>16.7</td><td>6.500</td><td>26.1</td><td></td><td></td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	50.0	50.0	0.500	0.0	62.0	0.400	50.0	62.0				Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.400	6.9	Kick-Flo®	0.324	6.3	Flush-Flo™	0.191	6.9	Mean Flow over Head Range	-	5.4	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	4.7	1.200	11.6	3.000	17.9	7.000	27.0	0.200	6.9	1.400	12.4	3.500	19.3	7.500	28.0	0.300	6.5	1.600	13.2	4.000	20.5	8.000	28.9	0.400	6.9	1.800	14.0	4.500	21.6	8.500	29.8	0.500	7.7	2.000	14.7	5.000	22.8	9.000	30.7	0.600	8.3	2.200	15.4	5.500	23.9	9.500	31.5	0.800	9.5	2.400	16.1	6.000	25.0			1.000	10.6	2.600	16.7	6.500	26.1		
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