

Shaun Tonge Engineering							Page 1																																																																																																																																																																																																																																																																																	
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 15 minutes. <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>51.212</td><td>0.612</td><td>0.0</td><td>5.5</td><td>5.5</td><td>7.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>51.275</td><td>0.675</td><td>0.0</td><td>5.5</td><td>5.5</td><td>7.7</td><td>O K</td></tr><tr><td>60 min Summer</td><td>51.244</td><td>0.644</td><td>0.0</td><td>5.5</td><td>5.5</td><td>7.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>51.077</td><td>0.477</td><td>0.0</td><td>5.5</td><td>5.5</td><td>5.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>50.915</td><td>0.315</td><td>0.0</td><td>5.5</td><td>5.5</td><td>3.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>50.810</td><td>0.210</td><td>0.0</td><td>5.5</td><td>5.5</td><td>2.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>50.725</td><td>0.125</td><td>0.0</td><td>5.0</td><td>5.0</td><td>1.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>50.703</td><td>0.103</td><td>0.0</td><td>4.1</td><td>4.1</td><td>1.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>50.690</td><td>0.090</td><td>0.0</td><td>3.5</td><td>3.5</td><td>1.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>50.682</td><td>0.082</td><td>0.0</td><td>3.0</td><td>3.0</td><td>0.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>50.671</td><td>0.071</td><td>0.0</td><td>2.4</td><td>2.4</td><td>0.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>50.659</td><td>0.059</td><td>0.0</td><td>1.8</td><td>1.8</td><td>0.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>50.649</td><td>0.049</td><td>0.0</td><td>1.3</td><td>1.3</td><td>0.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>50.644</td><td>0.044</td><td>0.0</td><td>1.0</td><td>1.0</td><td>0.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>50.637</td><td>0.037</td><td>0.0</td><td>0.8</td><td>0.8</td><td>0.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>50.632</td><td>0.032</td><td>0.0</td><td>0.6</td><td>0.6</td><td>0.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>50.630</td><td>0.030</td><td>0.0</td><td>0.5</td><td>0.5</td><td>0.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>50.627</td><td>0.027</td><td>0.0</td><td>0.4</td><td>0.4</td><td>0.3</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>50.626</td><td>0.026</td><td>0.0</td><td>0.4</td><td>0.4</td><td>0.3</td><td>O K</td></tr><tr><td>15 min Winter</td><td>51.304</td><td>0.704</td><td>0.0</td><td>5.5</td><td>5.5</td><td>8.0</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 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Summer	51.244	0.644	0.0	5.5	5.5	7.3	O K	120 min Summer	51.077	0.477	0.0	5.5	5.5	5.4	O K	180 min Summer	50.915	0.315	0.0	5.5	5.5	3.6	O K	240 min Summer	50.810	0.210	0.0	5.5	5.5	2.4	O K	360 min Summer	50.725	0.125	0.0	5.0	5.0	1.4	O K	480 min Summer	50.703	0.103	0.0	4.1	4.1	1.2	O K	600 min Summer	50.690	0.090	0.0	3.5	3.5	1.0	O K	720 min Summer	50.682	0.082	0.0	3.0	3.0	0.9	O K	960 min Summer	50.671	0.071	0.0	2.4	2.4	0.8	O K	1440 min Summer	50.659	0.059	0.0	1.8	1.8	0.7	O K	2160 min Summer	50.649	0.049	0.0	1.3	1.3	0.6	O K	2880 min Summer	50.644	0.044	0.0	1.0	1.0	0.5	O K	4320 min Summer	50.637	0.037	0.0	0.8	0.8	0.4	O K	5760 min Summer	50.632	0.032	0.0	0.6	0.6	0.4	O K	7200 min Summer	50.630	0.030	0.0	0.5	0.5	0.3	O K	8640 min Summer	50.627	0.027	0.0	0.4	0.4	0.3	O K	10080 min Summer	50.626	0.026	0.0	0.4	0.4	0.3	O K	15 min Winter	51.304	0.704	0.0	5.5	5.5	8.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	126.478	0.0	10.4	15	30 min Summer	84.424	0.0	13.9	23	60 min Summer	53.779	0.0	17.7	40	120 min Summer	33.103	0.0	21.8	74	180 min Summer	24.574	0.0	24.3	102	240 min Summer	19.761	0.0	26.1	130	360 min Summer	14.466	0.0	28.6	186	480 min Summer	11.596	0.0	30.6	246	600 min Summer	9.760	0.0	32.2	306	720 min Summer	8.474	0.0	33.6	366	960 min Summer	6.774	0.0	35.8	488	1440 min Summer	4.933	0.0	39.1	724	2160 min Summer	3.584	0.0	42.6	1072	2880 min Summer	2.854	0.0	45.2	1468	4320 min Summer	2.067	0.0	49.1	2164	5760 min Summer	1.642	0.0	52.0	2936	7200 min Summer	1.373	0.0	54.4	3608	8640 min Summer	1.186	0.0	56.3	4320	10080 min Summer	1.048	0.0	58.1	5048	15 min Winter	126.478	0.0	11.7	15
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CADS		Source Control 2020.1.3

Model Details

Storage is Online Cover Level (m) 52.000

Cellular Storage Structure

Invert Level (m) 50.600 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 ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	12.0	12.0	0.900	0.0	23.2
0.800	12.0	23.2			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0113-5500-0800-5500
Design Head (m) 0.800
Design Flow (l/s) 5.5
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 113
Invert Level (m) 50.600
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	5.5
Flush-Flo™	0.243	5.5
Kick-Flo®	0.540	4.6
Mean Flow over Head Range	-	4.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.0	1.200	6.6	3.000	10.2	7.000	15.3
0.200	5.5	1.400	7.1	3.500	11.0	7.500	15.8
0.300	5.4	1.600	7.6	4.000	11.7	8.000	16.3
0.400	5.3	1.800	8.0	4.500	12.4	8.500	16.8
0.500	4.9	2.000	8.4	5.000	13.0	9.000	17.3
0.600	4.8	2.200	8.8	5.500	13.6	9.500	17.7
0.800	5.5	2.400	9.2	6.000	14.2		
1.000	6.1	2.600	9.6	6.500	14.8		

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