

The Civil Engineering Practice					Page 1
11 Tungsten Building George Street Fishersgate BN41 1RA					
Date 16/06/2020 12:49 File Detailed Reservoir		Designed by microdrainage Checked by			
Innovyze		Source Control 2020.1			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	4.131	0.281	20.0	1634.2	O K
30 min Summer	4.224	0.374	20.0	2188.2	O K
60 min Summer	4.325	0.475	20.0	2792.0	Flood Risk
120 min Summer	4.394	0.544	20.0	3214.9	Flood Risk
180 min Summer	4.436	0.586	20.0	3470.2	Flood Risk
240 min Summer	4.462	0.612	20.0	3630.9	Flood Risk
360 min Summer	4.488	0.638	20.0	3789.4	Flood Risk
480 min Summer	4.502	0.652	20.0	3876.0	Flood Risk
600 min Summer	4.509	0.659	20.0	3920.0	Flood Risk
720 min Summer	4.512	0.662	20.0	3935.2	Flood Risk
960 min Summer	4.507	0.657	20.0	3906.4	Flood Risk
1440 min Summer	4.480	0.630	20.0	3740.8	Flood Risk
2160 min Summer	4.439	0.589	20.0	3488.5	Flood Risk
2880 min Summer	4.414	0.564	20.0	3334.4	Flood Risk
4320 min Summer	4.382	0.532	20.0	3137.3	Flood Risk
5760 min Summer	4.357	0.507	20.0	2989.6	Flood Risk
7200 min Summer	4.337	0.487	20.0	2866.5	Flood Risk
8640 min Summer	4.319	0.469	20.0	2761.0	Flood Risk
10080 min Summer	4.305	0.455	20.0	2673.2	Flood Risk
15 min Winter	4.147	0.297	20.0	1726.5	O K
30 min Winter	4.245	0.395	20.0	2312.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	143.326	0.0	1657.8	23	
30 min Summer	96.309	0.0	1687.7	38	
60 min Summer	61.878	0.0	2865.6	68	
120 min Summer	36.241	0.0	3280.5	128	
180 min Summer	26.483	0.0	3252.9	186	
240 min Summer	21.099	0.0	3237.3	246	
360 min Summer	15.131	0.0	3222.4	366	
480 min Summer	11.956	0.0	3214.9	484	
600 min Summer	9.958	0.0	3210.9	604	
720 min Summer	8.573	0.0	3208.4	724	
960 min Summer	6.762	0.0	3205.8	962	
1440 min Summer	4.848	0.0	3204.3	1440	
2160 min Summer	3.496	0.0	5829.1	1836	
2880 min Summer	2.789	0.0	6203.3	2220	
4320 min Summer	2.056	0.0	5839.8	3024	
5760 min Summer	1.675	0.0	7448.6	3864	
7200 min Summer	1.442	0.0	8017.1	4688	
8640 min Summer	1.284	0.0	8569.2	5536	
10080 min Summer	1.173	0.0	9125.8	6352	
15 min Winter	143.326	0.0	1709.4	23	
30 min Winter	96.309	0.0	1678.4	37	
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Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	4.351	0.501	20.0	2951.4	Flood Risk
120 min Winter	4.425	0.575	20.0	3404.9	Flood Risk
180 min Winter	4.470	0.620	20.0	3678.8	Flood Risk
240 min Winter	4.498	0.648	20.0	3852.9	Flood Risk
360 min Winter	4.527	0.677	20.0	4030.2	Flood Risk
480 min Winter	4.544	0.694	20.0	4131.9	Flood Risk
600 min Winter	4.553	0.703	20.0	4188.9	Flood Risk
720 min Winter	4.557	0.707	20.0	4215.7	Flood Risk
960 min Winter	4.556	0.706	20.0	4208.9	Flood Risk
1440 min Winter	4.537	0.687	20.0	4088.4	Flood Risk
2160 min Winter	4.492	0.642	20.0	3813.0	Flood Risk
2880 min Winter	4.457	0.607	20.0	3598.8	Flood Risk
4320 min Winter	4.410	0.560	20.0	3312.5	Flood Risk
5760 min Winter	4.368	0.518	20.0	3054.0	Flood Risk
7200 min Winter	4.327	0.477	20.0	2805.4	Flood Risk
8640 min Winter	4.286	0.436	20.0	2557.9	O K
10080 min Winter	4.251	0.401	20.0	2351.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	61.878	0.0	3023.0	66	
120 min Winter	36.241	0.0	3261.3	126	
180 min Winter	26.483	0.0	3235.6	184	
240 min Winter	21.099	0.0	3222.5	242	
360 min Winter	15.131	0.0	3211.6	360	
480 min Winter	11.956	0.0	3206.7	478	
600 min Winter	9.958	0.0	3204.5	594	
720 min Winter	8.573	0.0	3203.3	710	
960 min Winter	6.762	0.0	3201.3	938	
1440 min Winter	4.848	0.0	3197.7	1386	
2160 min Winter	3.496	0.0	6153.7	2016	
2880 min Winter	2.789	0.0	6364.3	2284	
4320 min Winter	2.056	0.0	5953.6	3240	
5760 min Winter	1.675	0.0	7868.3	4152	
7200 min Winter	1.442	0.0	8460.1	5112	
8640 min Winter	1.284	0.0	9049.3	5960	
10080 min Winter	1.173	0.0	9636.6	6760	
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Model Details

Storage is Online Cover Level (m) 4.600

Tank or Pond Structure

Invert Level (m) 3.850

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	5722.0	0.700	6200.9	1.400	0.0	2.100	0.0
0.100	5789.2	0.750	6235.8	1.500	0.0	2.200	0.0
0.200	5856.9	0.751	0.0	1.600	0.0	2.300	0.0
0.300	5924.9	1.000	0.0	1.700	0.0	2.400	0.0
0.400	5993.3	1.100	0.0	1.800	0.0	2.500	0.0
0.500	6062.1	1.200	0.0	1.900	0.0		
0.600	6131.3	1.300	0.0	2.000	0.0		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0199-2000-1000-2000
Design Head (m)	1.000
Design Flow (l/s)	20.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	199
Invert Level (m)	3.600
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	20.0	Kick-Flo®	0.721	17.1
Flush-Flo™	0.340	20.0	Mean Flow over Head Range	-	16.8

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	6.9	1.200	21.8	3.000	33.8	7.000	51.0
0.200	18.7	1.400	23.5	3.500	36.4	7.500	52.7
0.300	19.9	1.600	25.0	4.000	38.9	8.000	54.4
0.400	19.9	1.800	26.5	4.500	41.1	8.500	56.0
0.500	19.5	2.000	27.8	5.000	43.3	9.000	57.6
0.600	19.0	2.200	29.1	5.500	45.3	9.500	59.1
0.800	18.0	2.400	30.4	6.000	47.3		
1.000	20.0	2.600	31.6	6.500	49.2		

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