Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	8.293	0.793	14.6	309.1	O K
30 min Summer	8.558	1.058	14.6	412.6	O K
60 min Summer	8.832	1.332	14.6	519.4	O K
120 min Summer	9.075	1.575	14.6	614.2	O K
180 min Summer	9.179	1.679	14.6	654.9	O K
240 min Summer	9.222	1.722	14.6	671.7	O K
360 min Summer	9.235	1.735	14.6	676.6	O K
480 min Summer	9.213	1.713	14.6	668.2	O K
600 min Summer	9.186	1.686	14.6	657.5	O K
720 min Summer	9.155	1.655	14.6	645.4	O K
960 min Summer	9.089	1.589	14.6	619.9	O K
1440 min Summer	8.953	1.453	14.6	566.6	O K
2160 min Summer	8.734	1.234	14.6	481.3	O K
2880 min Summer	8.488	0.988	14.6	385.4	O K
4320 min Summer	8.143	0.643	14.6	250.6	O K
5760 min Summer	7.930	0.430	14.4	167.6	O K
7200 min Summer	7.804	0.304	13.6	118.5	O K
8640 min Summer	7.730	0.230	12.7	89.7	O K
10080 min Summer	7.687	0.187	11.9	73.0	O K
15 min Winter	8.392	0.892	14.6	347.9	O K
30 min Winter	8.694	1.194	14.6	465.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	115.731	0.0	321.4	26
30 min Summer	77.804	0.0	432.8	40
60 min Summer	49.937	0.0	558.5	70
120 min Summer	30.956	0.0	692.7	128
180 min Summer	23.058	0.0	774.0	186
240 min Summer	18.577	0.0	831.5	244
360 min Summer	13.656	0.0	916.9	360
480 min Summer	10.974	0.0	982.5	418
600 min Summer	9.254	0.0	1035.6	482
720 min Summer	8.046	0.0	1080.5	544
960 min Summer	6.447	0.0	1154.3	680
1440 min Summer	4.709	0.0	1264.1	960
2160 min Summer	3.432	0.0	1384.8	1384
2880 min Summer	2.739	0.0	1473.1	1736
4320 min Summer	1.989	0.0	1603.7	2428
5760 min Summer	1.583	0.0	1703.6	3112
7200 min Summer	1.325	0.0	1782.4	3760
8640 min Summer	1.147	0.0	1851.0	4488
10080 min Summer	1.015	0.0	1910.8	5144
15 min Winter	115.731	0.0	360.2	26
30 min Winter	77.804	0.0	484.9	40

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	9.002	1.502	14.6	585.8	O K
120 min Winter	9.283	1.783	14.6	695.6	O K
180 min Winter	9.411	1.911	14.6	745.2	O K
240 min Winter	9.469	1.969	14.6	767.8	O K
360 min Winter	9.502	2.002	14.6	780.8	O K
480 min Winter	9.485	1.985	14.6	774.0	O K
600 min Winter	9.443	1.943	14.6	757.6	O K
720 min Winter	9.406	1.906	14.6	743.2	O K
960 min Winter	9.318	1.818	14.6	708.9	O K
1440 min Winter	9.118	1.618	14.6	631.2	O K
2160 min Winter	8.794	1.294	14.6	504.8	O K
2880 min Winter	8.408	0.908	14.6	354.3	O K
4320 min Winter	7.955	0.455	14.4	177.5	O K
5760 min Winter	7.756	0.256	13.0	99.8	O K
7200 min Winter	7.676	0.176	11.6	68.6	O K
8640 min Winter	7.653	0.153	10.1	59.5	O K
10080 min Winter	7.637	0.137	9.0	53.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	49.937	0.0	625.7	68
120 min Winter	30.956	0.0	775.9	124
180 min Winter	23.058	0.0	867.0	182
240 min Winter	18.577	0.0	931.4	238
360 min Winter	13.656	0.0	1027.1	350
480 min Winter	10.974	0.0	1100.5	456
600 min Winter	9.254	0.0	1160.0	510
720 min Winter	8.046	0.0	1210.3	572
960 min Winter	6.447	0.0	1292.8	728
1440 min Winter	4.709	0.0	1415.8	1038
2160 min Winter	3.432	0.0	1551.0	1496
2880 min Winter	2.739	0.0	1650.0	1844
4320 min Winter	1.989	0.0	1796.4	2472
5760 min Winter	1.583	0.0	1908.1	3112
7200 min Winter	1.325	0.0	1996.4	3680
8640 min Winter	1.147	0.0	2073.3	4408
10080 min Winter	1.015	0.0	2140.5	5136

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 1.495

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.499	4	8	0.499	8	12	0.498

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 7.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	390.0	1.000	390.0	2.000	390.0	2.100	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0158-1460-2000-1460
Design Head (m)	2.000
Design Flow (l/s)	14.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	158
Invert Level (m)	7.500
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	14.6
Flush-Flo™	0.587	14.6
Kick-Flo®	1.221	11.6
Mean Flow over Head Range	-	12.8

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	5.7	1.200	11.9	3.000	17.7	7.000	26.6
0.200	12.2	1.400	12.3	3.500	19.1	7.500	27.5
0.300	13.5	1.600	13.1	4.000	20.3	8.000	28.3
0.400	14.2	1.800	13.9	4.500	21.5	8.500	29.2
0.500	14.5	2.000	14.6	5.000	22.6	9.000	30.0
0.600	14.6	2.200	15.3	5.500	23.7	9.500	30.8
0.800	14.3	2.400	15.9	6.000	24.7		
1.000	13.6	2.600	16.5	6.500	25.6		