Summary of Results for 100 year Return Period

Half Drain Time : 26 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.230	0.230	0.0	7.0	7.0	14.2	O K
30 min Summer	0.276	0.276	0.0	7.0	7.0	17.0	O K
60 min Summer	0.286	0.286	0.0	7.0	7.0	17.6	O K
120 min Summer	0.252	0.252	0.0	7.0	7.0	15.6	O K
180 min Summer	0.211	0.211	0.0	7.0	7.0	13.0	O K
240 min Summer	0.176	0.176	0.0	6.9	6.9	10.9	O K
360 min Summer	0.135	0.135	0.0	6.6	6.6	8.3	O K
480 min Summer	0.116	0.116	0.0	5.6	5.6	7.2	O K
600 min Summer	0.104	0.104	0.0	4.9	4.9	6.4	O K
720 min Summer	0.095	0.095	0.0	4.3	4.3	5.9	O K
960 min Summer	0.083	0.083	0.0	3.5	3.5	5.1	O K
1440 min Summer	0.069	0.069	0.0	2.6	2.6	4.3	O K
2160 min Summer	0.058	0.058	0.0	1.9	1.9	3.6	O K
2880 min Summer	0.051	0.051	0.0	1.5	1.5	3.1	O K
4320 min Summer	0.043	0.043	0.0	1.1	1.1	2.6	O K
5760 min Summer	0.038	0.038	0.0	0.9	0.9	2.3	O K
7200 min Summer	0.034	0.034	0.0	0.7	0.7	2.1	O K
8640 min Summer	0.032	0.032	0.0	0.6	0.6	1.9	O K
10080 min Summer	0.029	0.029	0.0	0.5	0.5	1.8	O K
15 min Winter	0.262	0.262	0.0	7.0	7.0	16.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	104.564	0.0	19.3	21
30 min Summer	67.582	0.0	25.0	31
60 min Summer	41.548	0.0	30.8	48
120 min Summer	24.678	0.0	36.6	80
180 min Summer	17.966	0.0	40.0	112
240 min Summer	14.266	0.0	42.3	140
360 min Summer	10.278	0.0	45.8	198
480 min Summer	8.146	0.0	48.3	256
600 min Summer	6.797	0.0	50.4	316
720 min Summer	5.860	0.0	52.2	376
960 min Summer	4.634	0.0	55.0	498
1440 min Summer	3.324	0.0	59.2	738
2160 min Summer	2.381	0.0	63.6	1104
2880 min Summer	1.878	0.0	66.9	1472
4320 min Summer	1.342	0.0	71.7	2188
5760 min Summer	1.057	0.0	75.3	2936
7200 min Summer	0.878	0.0	78.2	3616
8640 min Summer	0.754	0.0	80.6	4408
10080 min Summer	0.663	0.0	82.6	5136
15 min Winter	104.564	0.0	21.7	21

Summary of Results for 100 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	0.316	0.316	0.0	7.0	7.0	19.5	O K
60 min Winter	0.320	0.320	0.0	7.0	7.0	19.8	O K
120 min Winter	0.262	0.262	0.0	7.0	7.0	16.2	O K
180 min Winter	0.198	0.198	0.0	7.0	7.0	12.2	O K
240 min Winter	0.151	0.151	0.0	6.9	6.9	9.3	O K
360 min Winter	0.115	0.115	0.0	5.6	5.6	7.1	O K
480 min Winter	0.099	0.099	0.0	4.6	4.6	6.1	O K
600 min Winter	0.088	0.088	0.0	3.9	3.9	5.4	O K
720 min Winter	0.081	0.081	0.0	3.4	3.4	5.0	O K
960 min Winter	0.070	0.070	0.0	2.7	2.7	4.3	O K
1440 min Winter	0.058	0.058	0.0	1.9	1.9	3.6	O K
2160 min Winter	0.049	0.049	0.0	1.4	1.4	3.0	O K
2880 min Winter	0.043	0.043	0.0	1.1	1.1	2.6	O K
4320 min Winter	0.036	0.036	0.0	0.8	0.8	2.2	O K
5760 min Winter	0.032	0.032	0.0	0.6	0.6	1.9	O K
7200 min Winter	0.029	0.029	0.0	0.5	0.5	1.8	O K
8640 min Winter	0.027	0.027	0.0	0.4	0.4	1.6	O K
10080 min Winter	0.025	0.025	0.0	0.4	0.4	1.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	67.582	0.0	28.0	32
60 min Winter	41.548	0.0	34.5	52
120 min Winter	24.678	0.0	41.0	86
180 min Winter	17.966	0.0	44.8	116
240 min Winter	14.266	0.0	47.4	144
360 min Winter	10.278	0.0	51.2	200
480 min Winter	8.146	0.0	54.2	258
600 min Winter	6.797	0.0	56.5	318
720 min Winter	5.860	0.0	58.4	378
960 min Winter	4.634	0.0	61.6	500
1440 min Winter	3.324	0.0	66.3	744
2160 min Winter	2.381	0.0	71.3	1088
2880 min Winter	1.878	0.0	74.9	1472
4320 min Winter	1.342	0.0	80.3	2208
5760 min Winter	1.057	0.0	84.3	2920
7200 min Winter	0.878	0.0	87.5	3584
8640 min Winter	0.754	0.0	90.2	4424
10080 min Winter	0.663	0.0	92.5	5144

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)	20.500	Shortest Storm (mins)	15
Ratio R	0.437	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.099

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.033	4	8	0.033	8	12	0.033

Model Details

Storage is Online Cover Level (m) 0.500

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	65.0	0.0	0.500	65.0	0.0

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0130-7000-0500-7000
Design Head (m)	0.500
Design Flow (l/s)	7.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	130
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	7.0
Flush-Flo™	0.199	7.0
Kick-Flo®	0.382	6.1
Mean Flow over Head Range	-	5.6

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	4.7	1.200	10.5	3.000	16.2	7.000	24.4
0.200	7.0	1.400	11.3	3.500	17.5	7.500	25.3
0.300	6.7	1.600	12.0	4.000	18.6	8.000	26.1
0.400	6.3	1.800	12.7	4.500	19.7	8.500	27.0
0.500	7.0	2.000	13.4	5.000	20.8	9.000	27.7
0.600	7.6	2.200	14.0	5.500	21.6	9.500	28.5
0.800	8.7	2.400	14.6	6.000	22.6		
1.000	9.6	2.600	15.2	6.500	23.5		