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Wessex House Upper Market Street Eastleigh Hampshire SO50 5FD	Upper Bognor Road Bognor Attenuation Tank	
Date 18/03/2022 File Tank 17.03.22.SRCX	Designed by S Baker Checked by	
Micro Drainage	Source Control 2018.1.1	

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 52 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.250	0.250	0.0	2.5	2.5	9.2	O K
30 min Summer	0.314	0.314	0.0	2.5	2.5	11.5	O K
60 min Summer	0.348	0.348	0.0	2.5	2.5	12.7	O K
120 min Summer	0.350	0.350	0.0	2.5	2.5	12.8	O K
180 min Summer	0.329	0.329	0.0	2.5	2.5	12.0	O K
240 min Summer	0.301	0.301	0.0	2.5	2.5	11.0	O K
360 min Summer	0.240	0.240	0.0	2.5	2.5	8.8	O K
480 min Summer	0.190	0.190	0.0	2.5	2.5	7.0	O K
600 min Summer	0.151	0.151	0.0	2.5	2.5	5.5	O K
720 min Summer	0.123	0.123	0.0	2.5	2.5	4.5	O K
960 min Summer	0.094	0.094	0.0	2.4	2.4	3.4	O K
1440 min Summer	0.074	0.074	0.0	1.8	1.8	2.7	O K
2160 min Summer	0.060	0.060	0.0	1.4	1.4	2.2	O K
2880 min Summer	0.052	0.052	0.0	1.1	1.1	1.9	O K
4320 min Summer	0.043	0.043	0.0	0.8	0.8	1.6	O K
5760 min Summer	0.038	0.038	0.0	0.6	0.6	1.4	O K
7200 min Summer	0.034	0.034	0.0	0.5	0.5	1.2	O K
8640 min Summer	0.032	0.032	0.0	0.5	0.5	1.2	O K
10080 min Summer	0.030	0.030	0.0	0.4	0.4	1.1	O K
15 min Winter	0.285	0.285	0.0	2.5	2.5	10.4	O K
30 min Winter	0.358	0.358	0.0	2.5	2.5	13.1	O K
60 min Winter	0.396	0.396	0.0	2.5	2.5	14.5	O K
120 min Winter	0.392	0.392	0.0	2.5	2.5	14.3	O K
180 min Winter	0.359	0.359	0.0	2.5	2.5	13.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	124.633	0.0	10.7	17
30 min Summer	83.789	0.0	14.4	31
60 min Summer	53.779	0.0	18.5	50
120 min Summer	33.337	0.0	23.0	84
180 min Summer	24.832	0.0	25.7	118
240 min Summer	20.006	0.0	27.6	154
360 min Summer	14.706	0.0	30.4	216
480 min Summer	11.818	0.0	32.6	276
600 min Summer	9.966	0.0	34.4	332
720 min Summer	8.665	0.0	35.9	388
960 min Summer	6.943	0.0	38.3	498
1440 min Summer	5.071	0.0	42.0	736
2160 min Summer	3.696	0.0	45.9	1100
2880 min Summer	2.949	0.0	48.8	1468
4320 min Summer	2.142	0.0	53.2	2196
5760 min Summer	1.705	0.0	56.4	2880
7200 min Summer	1.427	0.0	59.1	3624
8640 min Summer	1.235	0.0	61.3	4360
10080 min Summer	1.093	0.0	63.3	5072
15 min Winter	124.633	0.0	12.0	17
30 min Winter	83.789	0.0	16.2	31
60 min Winter	53.779	0.0	20.8	56
120 min Winter	33.337	0.0	25.7	90
180 min Winter	24.832	0.0	28.8	128

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m ³)	Status
240 min Winter	0.316	0.316	0.0	2.5	2.5	11.6	O K
360 min Winter	0.220	0.220	0.0	2.5	2.5	8.0	O K
480 min Winter	0.148	0.148	0.0	2.5	2.5	5.4	O K
600 min Winter	0.105	0.105	0.0	2.5	2.5	3.9	O K
720 min Winter	0.090	0.090	0.0	2.3	2.3	3.3	O K
960 min Winter	0.074	0.074	0.0	1.9	1.9	2.7	O K
1440 min Winter	0.059	0.059	0.0	1.4	1.4	2.2	O K
2160 min Winter	0.049	0.049	0.0	1.0	1.0	1.8	O K
2880 min Winter	0.043	0.043	0.0	0.8	0.8	1.6	O K
4320 min Winter	0.036	0.036	0.0	0.6	0.6	1.3	O K
5760 min Winter	0.032	0.032	0.0	0.5	0.5	1.2	O K
7200 min Winter	0.029	0.029	0.0	0.4	0.4	1.0	O K
8640 min Winter	0.027	0.027	0.0	0.3	0.3	1.0	O K
10080 min Winter	0.025	0.025	0.0	0.3	0.3	0.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
240 min Winter	20.006	0.0	30.9	166
360 min Winter	14.706	0.0	34.1	230
480 min Winter	11.818	0.0	36.5	284
600 min Winter	9.966	0.0	38.5	330
720 min Winter	8.665	0.0	40.2	382
960 min Winter	6.943	0.0	42.9	500
1440 min Winter	5.071	0.0	47.0	738
2160 min Winter	3.696	0.0	51.4	1104
2880 min Winter	2.949	0.0	54.7	1468
4320 min Winter	2.142	0.0	59.6	2124
5760 min Winter	1.705	0.0	63.2	2888
7200 min Winter	1.427	0.0	66.1	3672
8640 min Winter	1.235	0.0	68.7	4304
10080 min Winter	1.093	0.0	70.9	5144

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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 %	+40

Time Area Diagram

Total Area (ha) 0.046

Time (mins)	Area
From:	To: (ha)

0	4	0.046
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Model Details

Storage is Online Cover Level (m) 0.400

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 (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	38.5	38.5	0.400	38.5	48.5	0.401	0.0	48.5

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0084-2500-0400-2500
Design Head (m) 0.400
Design Flow (l/s) 2.5
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 84
Invert Level (m) 0.000
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.400	2.5	Kick-Flo®	0.293	2.2
Flush-Flo™	0.133	2.5	Mean Flow over Head Range	-	2.1

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)	Depth (m)	Flow (l/s)
0.100	2.5	0.800	3.4	2.000	5.3	4.000	7.3	7.000	9.6
0.200	2.4	1.000	3.8	2.200	5.5	4.500	7.7	7.500	9.9
0.300	2.2	1.200	4.1	2.400	5.7	5.000	8.1	8.000	10.3
0.400	2.5	1.400	4.4	2.600	5.9	5.500	8.5	8.500	10.6
0.500	2.8	1.600	4.7	3.000	6.4	6.000	8.9	9.000	10.9
0.600	3.0	1.800	5.0	3.500	6.8	6.500	9.3	9.500	11.2