

MJA Consulting						Page 1	
Monarch House Barton Lane OX14 3NB			Felpham Hampshire Homes ATTENUATION TANK				
Date 20/09/2018 File 5782 - SINGLE TANK.SRCX			Designed by S.Smith Checked by				
Innovyze			Source Control 2017.1.2				
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 394 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	2.735	0.335	0.0	2.8	2.8	52.6	O K
30 min Summer	2.847	0.447	0.0	2.8	2.8	70.1	O K
60 min Summer	2.956	0.556	0.0	2.8	2.8	87.2	O K
120 min Summer	3.046	0.646	0.0	2.8	2.8	101.2	O K
180 min Summer	3.076	0.676	0.0	2.8	2.8	106.0	O K
240 min Summer	3.081	0.681	0.0	2.8	2.8	106.7	O K
360 min Summer	3.062	0.662	0.0	2.8	2.8	103.7	O K
480 min Summer	3.042	0.642	0.0	2.8	2.8	100.6	O K
600 min Summer	3.024	0.624	0.0	2.8	2.8	97.8	O K
720 min Summer	3.008	0.608	0.0	2.8	2.8	95.3	O K
960 min Summer	2.976	0.576	0.0	2.8	2.8	90.3	O K
1440 min Summer	2.910	0.510	0.0	2.8	2.8	80.0	O K
2160 min Summer	2.803	0.403	0.0	2.8	2.8	63.2	O K
2880 min Summer	2.694	0.294	0.0	2.8	2.8	46.1	O K
4320 min Summer	2.545	0.145	0.0	2.8	2.8	22.7	O K
5760 min Summer	2.461	0.061	0.0	2.7	2.7	9.6	O K
7200 min Summer	2.418	0.018	0.0	2.6	2.6	2.8	O K
8640 min Summer	2.400	0.000	0.0	2.4	2.4	0.0	O K
10080 min Summer	2.400	0.000	0.0	2.2	2.2	0.0	O K
15 min Winter	2.779	0.379	0.0	2.8	2.8	59.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Summer	124.633	0.0	56.5	24			
30 min Summer	83.789	0.0	75.9	38			
60 min Summer	53.779	0.0	97.6	66			
120 min Summer	33.337	0.0	121.0	124			
180 min Summer	24.832	0.0	135.2	184			
240 min Summer	20.006	0.0	145.1	242			
360 min Summer	14.706	0.0	160.1	330			
480 min Summer	11.818	0.0	171.4	390			
600 min Summer	9.966	0.0	180.9	454			
720 min Summer	8.665	0.0	188.6	520			
960 min Summer	6.943	0.0	201.7	660			
1440 min Summer	5.071	0.0	220.9	938			
2160 min Summer	3.696	0.0	241.4	1348			
2880 min Summer	2.949	0.0	256.9	1704			
4320 min Summer	2.142	0.0	279.8	2380			
5760 min Summer	1.705	0.0	296.9	3056			
7200 min Summer	1.427	0.0	310.7	3688			
8640 min Summer	1.235	0.0	322.8	4400			
10080 min Summer	1.093	0.0	333.4	0			
15 min Winter	124.633	0.0	63.3	25			
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<u>Summary of Results for 100 year Return Period (+40%)</u>							
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	2.906	0.506	0.0	2.8	2.8	79.3	O K
60 min Winter	3.031	0.631	0.0	2.8	2.8	98.9	O K
120 min Winter	3.139	0.739	0.0	2.9	2.9	115.9	O K
180 min Winter	3.181	0.781	0.0	2.9	2.9	122.5	O K
240 min Winter	3.194	0.794	0.0	2.9	2.9	124.4	O K
360 min Winter	3.185	0.785	0.0	2.9	2.9	123.1	O K
480 min Winter	3.158	0.758	0.0	2.9	2.9	118.8	O K
600 min Winter	3.132	0.732	0.0	2.9	2.9	114.7	O K
720 min Winter	3.110	0.710	0.0	2.8	2.8	111.2	O K
960 min Winter	3.064	0.664	0.0	2.8	2.8	104.0	O K
1440 min Winter	2.965	0.565	0.0	2.8	2.8	88.5	O K
2160 min Winter	2.798	0.398	0.0	2.8	2.8	62.4	O K
2880 min Winter	2.635	0.235	0.0	2.8	2.8	36.9	O K
4320 min Winter	2.456	0.056	0.0	2.7	2.7	8.8	O K
5760 min Winter	2.400	0.000	0.0	2.4	2.4	0.0	O K
7200 min Winter	2.400	0.000	0.0	2.0	2.0	0.0	O K
8640 min Winter	2.400	0.000	0.0	1.8	1.8	0.0	O K
10080 min Winter	2.400	0.000	0.0	1.6	1.6	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	83.789	0.0	85.1	38			
60 min Winter	53.779	0.0	109.3	66			
120 min Winter	33.337	0.0	135.5	122			
180 min Winter	24.832	0.0	151.5	180			
240 min Winter	20.006	0.0	162.6	236			
360 min Winter	14.706	0.0	179.3	346			
480 min Winter	11.818	0.0	192.0	442			
600 min Winter	9.966	0.0	202.4	476			
720 min Winter	8.665	0.0	211.4	554			
960 min Winter	6.943	0.0	225.8	710			
1440 min Winter	5.071	0.0	247.3	1016			
2160 min Winter	3.696	0.0	270.2	1456			
2880 min Winter	2.949	0.0	287.9	1788			
4320 min Winter	2.142	0.0	313.4	2388			
5760 min Winter	1.705	0.0	332.6	0			
7200 min Winter	1.427	0.0	348.1	0			
8640 min Winter	1.235	0.0	361.5	0			
10080 min Winter	1.093	0.0	373.4	0			
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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) 0.242

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.100	4	8	0.100	8	12	0.042

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Model Details

Storage is Online Cover Level (m) 4.000

Cellular Storage Structure

Invert Level (m) 2.400 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	165.0	165.0	0.801	0.0	207.4
0.800	165.0	207.4			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0083-2800-0800-2800
Design Head (m) 0.800
Design Flow (l/s) 2.8
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 83
Invert Level (m) 2.300
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.8
Flush-Flo™	0.238	2.8
Kick-Flo®	0.514	2.3
Mean Flow over Head Range	-	2.4

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	2.4	1.200	3.4	3.000	5.2	7.000	7.7
0.200	2.8	1.400	3.6	3.500	5.5	7.500	8.0
0.300	2.8	1.600	3.9	4.000	5.9	8.000	8.2
0.400	2.7	1.800	4.1	4.500	6.2	8.500	8.4
0.500	2.4	2.000	4.3	5.000	6.6	9.000	8.7
0.600	2.5	2.200	4.5	5.500	6.9	9.500	8.9
0.800	2.8	2.400	4.7	6.000	7.2		
1.000	3.1	2.600	4.8	6.500	7.4		

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