

Martin J Harvey		Page 1
3 Marden Way Petersfield Hampshire GU31 4PW	97 Barnham Road Barnham Attenuation	
Date 02/11/2016 16:47 File ATTENUATION.SRCX	Designed by MJH Checked by	
Micro Drainage	Source Control 2016.1	

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

Half Drain Time : 143 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	9.302	0.252	0.0	1.7	1.7	15.9	O K
30 min Summer	9.362	0.312	0.0	1.9	1.9	21.0	O K
60 min Summer	9.413	0.363	0.0	2.1	2.1	25.4	O K
120 min Summer	9.441	0.391	0.0	2.1	2.1	27.7	O K
180 min Summer	9.443	0.393	0.0	2.1	2.1	27.9	O K
240 min Summer	9.438	0.388	0.0	2.1	2.1	27.5	O K
360 min Summer	9.425	0.375	0.0	2.1	2.1	26.3	O K
480 min Summer	9.409	0.359	0.0	2.0	2.0	25.0	O K
600 min Summer	9.393	0.343	0.0	2.0	2.0	23.6	O K
720 min Summer	9.377	0.327	0.0	2.0	2.0	22.3	O K
960 min Summer	9.348	0.298	0.0	1.9	1.9	19.8	O K
1440 min Summer	9.298	0.248	0.0	1.7	1.7	15.5	O K
2160 min Summer	9.241	0.191	0.0	1.5	1.5	10.6	O K
2880 min Summer	9.193	0.143	0.0	1.5	1.5	6.5	O K
4320 min Summer	9.153	0.103	0.0	1.3	1.3	3.1	O K
5760 min Summer	9.130	0.080	0.0	1.1	1.1	2.3	O K
7200 min Summer	9.116	0.066	0.0	0.9	0.9	1.9	O K
8640 min Summer	9.106	0.056	0.0	0.8	0.8	1.6	O K
10080 min Summer	9.099	0.049	0.0	0.7	0.7	1.4	O K
15 min Winter	9.326	0.276	0.0	1.8	1.8	17.9	O K
30 min Winter	9.394	0.344	0.0	2.0	2.0	23.7	O K
60 min Winter	9.455	0.405	0.0	2.2	2.2	28.9	O K
120 min Winter	9.497	0.447	0.0	2.3	2.3	32.0	O K
180 min Winter	9.498	0.448	0.0	2.3	2.3	32.1	O K

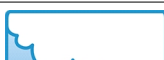
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	125.490	0.0	17.6	24
30 min Summer	85.226	0.0	24.0	37
60 min Summer	55.250	0.0	31.1	64
120 min Summer	34.527	0.0	38.8	110
180 min Summer	25.791	0.0	43.5	142
240 min Summer	20.812	0.0	46.8	174
360 min Summer	15.404	0.0	52.0	244
480 min Summer	12.420	0.0	55.9	314
600 min Summer	10.499	0.0	59.1	382
720 min Summer	9.148	0.0	61.7	448
960 min Summer	7.352	0.0	66.1	580
1440 min Summer	5.392	0.0	72.8	838
2160 min Summer	3.944	0.0	79.8	1208
2880 min Summer	3.155	0.0	85.2	1556
4320 min Summer	2.299	0.0	93.1	2212
5760 min Summer	1.835	0.0	99.1	2936
7200 min Summer	1.543	0.0	104.1	3672
8640 min Summer	1.339	0.0	108.4	4368
10080 min Summer	1.188	0.0	112.2	5072
15 min Winter	125.490	0.0	19.8	24
30 min Winter	85.226	0.0	26.8	37
60 min Winter	55.250	0.0	34.8	64
120 min Winter	34.527	0.0	43.5	118
180 min Winter	25.791	0.0	48.7	148

Martin J Harvey		Page 2
3 Marden Way Petersfield Hampshire GU31 4PW	97 Barnham Road Barnham Attenuation	
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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 Σ Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	9.489	0.439	0.0	2.3	2.3	31.5	O K
360 min Winter	9.465	0.415	0.0	2.2	2.2	29.7	O K
480 min Winter	9.440	0.390	0.0	2.1	2.1	27.6	O K
600 min Winter	9.415	0.365	0.0	2.1	2.1	25.5	O K
720 min Winter	9.392	0.342	0.0	2.0	2.0	23.5	O K
960 min Winter	9.349	0.299	0.0	1.9	1.9	19.8	O K
1440 min Winter	9.279	0.229	0.0	1.7	1.7	13.8	O K
2160 min Winter	9.194	0.144	0.0	1.5	1.5	6.6	O K
2880 min Winter	9.155	0.105	0.0	1.3	1.3	3.2	O K
4320 min Winter	9.122	0.072	0.0	1.0	1.0	2.0	O K
5760 min Winter	9.106	0.056	0.0	0.8	0.8	1.6	O K
7200 min Winter	9.096	0.046	0.0	0.7	0.7	1.3	O K
8640 min Winter	9.089	0.039	0.0	0.6	0.6	1.1	O K
10080 min Winter	9.084	0.034	0.0	0.5	0.5	1.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	20.812	0.0	52.4	186
360 min Winter	15.404	0.0	58.2	264
480 min Winter	12.420	0.0	62.6	338
600 min Winter	10.499	0.0	66.1	410
720 min Winter	9.148	0.0	69.1	480
960 min Winter	7.352	0.0	74.1	618
1440 min Winter	5.392	0.0	81.5	880
2160 min Winter	3.944	0.0	89.4	1236
2880 min Winter	3.155	0.0	95.4	1528
4320 min Winter	2.299	0.0	104.3	2204
5760 min Winter	1.835	0.0	111.0	2912
7200 min Winter	1.543	0.0	116.6	3672
8640 min Winter	1.339	0.0	121.4	4296
10080 min Winter	1.188	0.0	125.7	5008

Martin J Harvey		Page 3
3 Marden Way Petersfield Hampshire GU31 4PW	97 Barnham Road Barnham Attenuation	
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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)	19.500	Shortest Storm (mins)	15
Ratio R	0.329	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.075

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To: (ha)		From: To: (ha)		From: To: (ha)	
0 4	0.025	4 8	0.025	8 12	0.025

Martin J Harvey		Page 4
3 Marden Way Petersfield Hampshire GU31 4PW	97 Barnham Road Barnham Attenuation	
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Model Details

Storage is Online Cover Level (m) 10.000

Complex Structure

Cellular Storage

Invert Level (m) 9.050 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	30.0	30.0	0.400	30.0	40.4	0.500	0.0	40.4

Cellular Storage

Invert Level (m) 9.150 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	60.0	60.0	0.400	60.0	78.4	0.500	0.0	78.4

Crown Vortex Valve® Outflow Control

Design Head (m) 0.510 Vortex Valve® Type R1 SW Only Invert Level (m) 9.030
Design Flow (l/s) 2.4 Diameter (mm) 75

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	1.1	0.800	3.0	2.000	4.7	4.000	6.7	7.000	8.8
0.200	1.5	1.000	3.3	2.200	4.9	4.500	7.1	7.500	9.1
0.300	1.8	1.200	3.6	2.400	5.2	5.000	7.4	8.000	9.4
0.400	2.1	1.400	3.9	2.600	5.4	5.500	7.8	8.500	9.7
0.500	2.4	1.600	4.2	3.000	5.8	6.000	8.1	9.000	10.0
0.600	2.6	1.800	4.5	3.500	6.2	6.500	8.5	9.500	10.3