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20 Milton Park Abingdon Oxfordshire OX14 4SH	Land North of Green Lane Chesterton Basin 1 (Partial Infiltration)	
Date 14/04/2016 File Basin 1 + Hydrobreak.srcx	Designed by HSS Checked by SF	
Causeway		Source Control 2014.1.1

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

Half Drain Time : 101 minutes.

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
15 min Summer	75.278	0.349	11.9	3.0	14.9	110.7	O K
30 min Summer	75.344	0.415	14.3	3.0	17.2	138.0	O K
60 min Summer	75.384	0.455	15.8	3.0	18.6	155.9	O K
120 min Summer	75.399	0.470	16.3	3.0	19.1	162.3	O K
180 min Summer	75.395	0.466	16.1	3.0	19.0	160.7	O K
240 min Summer	75.385	0.456	15.8	3.0	18.6	156.0	O K
360 min Summer	75.360	0.431	14.9	3.0	17.8	145.0	O K
480 min Summer	75.335	0.406	14.0	3.0	17.0	134.4	O K
600 min Summer	75.312	0.383	13.2	3.0	16.2	124.8	O K
720 min Summer	75.292	0.363	12.5	3.0	15.4	116.3	O K
960 min Summer	75.256	0.327	11.1	3.0	14.1	102.2	O K
1440 min Summer	75.201	0.272	9.0	3.0	12.0	81.6	O K
2160 min Summer	75.143	0.214	7.0	3.0	9.9	61.6	O K
2880 min Summer	75.103	0.174	5.6	2.9	8.5	48.6	O K
4320 min Summer	75.051	0.122	3.8	2.8	6.7	32.7	O K
5760 min Summer	75.018	0.089	2.8	2.7	5.5	23.3	O K
7200 min Summer	74.997	0.068	2.1	2.6	4.7	17.3	O K
8640 min Summer	74.981	0.052	1.6	2.5	4.1	13.1	O K
10080 min Summer	74.969	0.040	1.2	2.5	3.7	10.0	O K
15 min Winter	75.312	0.383	13.2	3.0	16.2	124.5	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	128.285	0.0	120.2	18
30 min Summer	84.226	0.0	157.8	32
60 min Summer	52.662	0.0	197.3	60
120 min Summer	31.800	0.0	238.4	90
180 min Summer	23.353	0.0	262.6	124
240 min Summer	18.644	0.0	279.5	158
360 min Summer	13.543	0.0	304.6	226
480 min Summer	10.792	0.0	323.7	292
600 min Summer	9.043	0.0	338.9	358
720 min Summer	7.823	0.0	352.0	422
960 min Summer	6.219	0.0	373.1	550
1440 min Summer	4.493	0.0	404.3	794
2160 min Summer	3.241	0.0	437.4	1168
2880 min Summer	2.568	0.0	462.1	1528
4320 min Summer	1.847	0.0	498.7	2248
5760 min Summer	1.461	0.0	525.7	2952
7200 min Summer	1.217	0.0	547.6	3680
8640 min Summer	1.048	0.0	565.7	4408
10080 min Summer	0.923	0.0	581.5	5144
15 min Winter	128.285	0.0	134.5	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
30 min Winter	75.384	0.455	15.8	3.0	18.6	155.9	O K
60 min Winter	75.431	0.502	17.4	3.0	20.3	177.4	O K
120 min Winter	75.444	0.515	17.9	3.0	20.7	183.3	O K
180 min Winter	75.436	0.507	17.6	3.0	20.4	179.4	O K
240 min Winter	75.419	0.490	17.0	3.0	19.8	171.9	O K
360 min Winter	75.383	0.454	15.7	3.0	18.6	155.3	O K
480 min Winter	75.348	0.419	14.5	3.0	17.4	140.0	O K
600 min Winter	75.317	0.388	13.4	3.0	16.3	126.7	O K
720 min Winter	75.289	0.360	12.4	3.0	15.3	115.3	O K
960 min Winter	75.242	0.313	10.6	3.0	13.5	97.0	O K
1440 min Winter	75.173	0.244	8.0	3.0	11.0	71.8	O K
2160 min Winter	75.106	0.177	5.7	2.9	8.6	49.6	O K
2880 min Winter	75.063	0.134	4.2	2.9	7.1	36.3	O K
4320 min Winter	75.012	0.083	2.6	2.7	5.3	21.7	O K
5760 min Winter	74.984	0.055	1.7	2.6	4.2	13.9	O K
7200 min Winter	74.965	0.036	1.1	2.4	3.5	9.1	O K
8640 min Winter	74.954	0.025	0.8	2.3	3.1	6.2	O K
10080 min Winter	74.947	0.018	0.6	2.2	2.7	4.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
30 min Winter	84.226	0.0	176.7	31
60 min Winter	52.662	0.0	221.0	58
120 min Winter	31.800	0.0	267.0	94
180 min Winter	23.353	0.0	294.0	132
240 min Winter	18.644	0.0	313.2	170
360 min Winter	13.543	0.0	341.1	242
480 min Winter	10.792	0.0	362.4	312
600 min Winter	9.043	0.0	379.6	380
720 min Winter	7.823	0.0	394.1	446
960 min Winter	6.219	0.0	417.7	576
1440 min Winter	4.493	0.0	452.8	824
2160 min Winter	3.241	0.0	490.0	1192
2880 min Winter	2.568	0.0	517.6	1556
4320 min Winter	1.847	0.0	558.5	2252
5760 min Winter	1.461	0.0	588.9	2992
7200 min Winter	1.217	0.0	613.3	3680
8640 min Winter	1.048	0.0	633.7	4408
10080 min Winter	0.923	0.0	651.3	5120

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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)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.500

Time (mins)		Area
From:	To:	(ha)
0	4	0.500

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Model Details

Storage is Online Cover Level (m) 76.450

Infiltration Basin Structure

Invert Level (m) 74.929 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.54720

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	243.0	0.382	415.0	0.764	602.0	1.146	803.0

Hydro-Brake Optimum® Outflow Control

Unit Reference MD-SHE-0080-3000-1146-3000
 Design Head (m) 1.146
 Design Flow (l/s) 3.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Diameter (mm) 80
 Invert Level (m) 74.854
 Minimum Outlet Pipe Diameter (mm) 100
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.146	3.0
Flush-Flo™	0.348	3.0
Kick-Flo®	0.709	2.4
Mean Flow over Head Range	-	2.6

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	2.3	1.200	3.1	3.000	4.7	7.000	7.0
0.200	2.8	1.400	3.3	3.500	5.0	7.500	7.2
0.300	3.0	1.600	3.5	4.000	5.3	8.000	7.4
0.400	3.0	1.800	3.7	4.500	5.6	8.500	7.6
0.500	2.9	2.000	3.9	5.000	5.9	9.000	7.8
0.600	2.8	2.200	4.0	5.500	6.2	9.500	8.0
0.800	2.5	2.400	4.2	6.000	6.5		
1.000	2.8	2.600	4.4	6.500	6.7		