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20 Milton Park Abingdon Oxfordshire OX14 4SH	Land North of Green Lane Chesterton Basin 2	
Date 09/10/2015 File Basin 2 Cascade + Hydro...	Designed by HSS Checked by JR	
Causeway		Source Control 2014.1.1

Cascade Summary of Results for Basin 2 + Hydrobreak.srcx

Upstream Structures		Outflow To Overflow To			
Basin 1 + Hydrobreak.srcx		(None)	(None)		
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m <sup>3</sup> )	Status
15 min Summer	74.409	0.109	4.9	71.2	Flood Risk
30 min Summer	74.442	0.142	4.9	92.8	Flood Risk
60 min Summer	74.473	0.173	4.9	114.5	Flood Risk
120 min Summer	74.503	0.203	4.9	134.8	Flood Risk
180 min Summer	74.517	0.217	4.9	144.8	Flood Risk
240 min Summer	74.525	0.225	4.9	150.2	Flood Risk
360 min Summer	74.532	0.232	4.9	155.1	Flood Risk
480 min Summer	74.533	0.233	4.9	156.0	Flood Risk
600 min Summer	74.532	0.232	4.9	155.0	Flood Risk
720 min Summer	74.530	0.230	4.9	153.7	Flood Risk
960 min Summer	74.524	0.224	4.9	149.1	Flood Risk
1440 min Summer	74.507	0.207	4.9	137.5	Flood Risk
2160 min Summer	74.482	0.182	4.9	120.3	Flood Risk
2880 min Summer	74.460	0.160	4.9	105.1	Flood Risk
4320 min Summer	74.424	0.124	4.9	81.3	Flood Risk
5760 min Summer	74.403	0.103	4.9	67.1	Flood Risk
7200 min Summer	74.388	0.088	4.9	57.1	O K
8640 min Summer	74.377	0.077	4.8	50.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m <sup>3</sup> )	Discharge Volume (m <sup>3</sup> )	Time-Peak (mins)
15 min Summer	128.285	0.0	132.0	19
30 min Summer	84.226	0.0	165.6	33
60 min Summer	52.662	0.0	200.1	64
120 min Summer	31.800	0.0	237.0	122
180 min Summer	23.353	0.0	260.4	182
240 min Summer	18.644	0.0	277.7	242
360 min Summer	13.543	0.0	305.8	360
480 min Summer	10.792	0.0	330.1	480
600 min Summer	9.043	0.0	351.4	528
720 min Summer	7.823	0.0	371.3	586
960 min Summer	6.219	0.0	405.0	704
1440 min Summer	4.493	0.0	461.0	968
2160 min Summer	3.241	0.0	531.6	1364
2880 min Summer	2.568	0.0	587.3	1752
4320 min Summer	1.847	0.0	676.8	2464
5760 min Summer	1.461	0.0	752.2	3176
7200 min Summer	1.217	0.0	814.5	3888
8640 min Summer	1.048	0.0	866.0	4504

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Cascade Summary of Results for Basin 2 + Hydrobreak.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m <sup>3</sup> )	Status
10080 min Summer	74.371	0.071	4.7	46.1	O K
15 min Winter	74.422	0.122	4.9	79.8	Flood Risk
30 min Winter	74.458	0.158	4.9	104.1	Flood Risk
60 min Winter	74.494	0.194	4.9	128.5	Flood Risk
120 min Winter	74.527	0.227	4.9	151.5	Flood Risk
180 min Winter	74.544	0.244	4.9	163.2	Flood Risk
240 min Winter	74.553	0.253	4.9	169.8	Flood Risk
360 min Winter	74.562	0.262	4.9	176.5	Flood Risk
480 min Winter	74.566	0.266	4.9	178.8	Flood Risk
600 min Winter	74.565	0.265	4.9	178.3	Flood Risk
720 min Winter	74.561	0.261	4.9	175.9	Flood Risk
960 min Winter	74.552	0.252	4.9	169.4	Flood Risk
1440 min Winter	74.530	0.230	4.9	153.9	Flood Risk
2160 min Winter	74.493	0.193	4.9	127.9	Flood Risk
2880 min Winter	74.459	0.159	4.9	104.7	Flood Risk
4320 min Winter	74.413	0.113	4.9	73.8	Flood Risk
5760 min Winter	74.387	0.087	4.9	56.2	O K
7200 min Winter	74.373	0.073	4.8	46.9	O K
8640 min Winter	74.367	0.067	4.6	42.9	O K
10080 min Winter	74.359	0.059	4.2	37.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m <sup>3</sup> )	Discharge Volume (m <sup>3</sup> )	Time-Peak (mins)
10080 min Summer	0.923	0.0	908.0	5248
15 min Winter	128.285	0.0	144.6	19
30 min Winter	84.226	0.0	181.4	33
60 min Winter	52.662	0.0	219.5	62
120 min Winter	31.800	0.0	259.6	122
180 min Winter	23.353	0.0	284.2	180
240 min Winter	18.644	0.0	303.0	238
360 min Winter	13.543	0.0	333.0	354
480 min Winter	10.792	0.0	358.4	466
600 min Winter	9.043	0.0	380.4	576
720 min Winter	7.823	0.0	400.6	678
960 min Winter	6.219	0.0	437.5	768
1440 min Winter	4.493	0.0	500.2	1054
2160 min Winter	3.241	0.0	581.2	1472
2880 min Winter	2.568	0.0	650.1	1872
4320 min Winter	1.847	0.0	769.1	2592
5760 min Winter	1.461	0.0	867.8	3232
7200 min Winter	1.217	0.0	946.5	3824
8640 min Winter	1.048	0.0	1005.4	4576
10080 min Winter	0.923	0.0	1041.9	5248

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Cascade Rainfall Details for Basin 2 + Hydrobreak.srcx

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) 0.300

Time (mins)		Area
From:	To:	(ha)
0	4	0.300

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Cascade Model Details for Basin 2 + Hydrobreak.srcx

Storage is Online Cover Level (m) 74.700

Tank or Pond Structure

Invert Level (m) 74.300

Depth (m)	Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )
0.000	635.0	0.350	738.0

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0112-5000-0520-5000
Design Head (m)	0.520
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	112
Invert Level (m)	74.250
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.520	5.0
Flush-Flo™	0.179	4.9
Kick-Flo®	0.380	4.3
Mean Flow over Head Range	-	4.1

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)
0.100	3.9	1.200	7.3	3.000	11.3	7.000	17.0
0.200	4.9	1.400	7.9	3.500	12.1	7.500	17.6
0.300	4.7	1.600	8.4	4.000	12.9	8.000	18.1
0.400	4.4	1.800	8.9	4.500	13.7	8.500	18.7
0.500	4.9	2.000	9.3	5.000	14.4	9.000	19.3
0.600	5.3	2.200	9.7	5.500	15.0	9.500	19.8
0.800	6.1	2.400	10.2	6.000	15.7		
1.000	6.7	2.600	10.5	6.500	16.3		