

Camden Mill
Lower Bristol Road
Bath



Date 25/03/2024 15:47
File Catchment 4.SRCX

Designed by dwright
Checked by

Innovyze Source Control 2020.1.3

Summary of Results for 2 year Return Period

Half Drain Time : 30 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
30 min Summer	8.275	0.275	493.3	49.1	542.4	1496.6	O K
60 min Summer	8.280	0.280	494.2	50.2	544.4	1524.1	O K
120 min Summer	8.300	0.300	498.0	54.1	552.1	1638.1	O K
180 min Summer	8.287	0.287	495.6	51.6	547.2	1566.4	O K
240 min Summer	8.265	0.265	491.4	47.1	538.5	1439.0	O K
360 min Summer	8.211	0.211	481.5	34.3	515.8	1141.8	O K
480 min Summer	8.160	0.160	472.1	21.8	493.9	863.2	O K
600 min Summer	8.118	0.118	464.3	12.7	477.0	634.3	O K
720 min Summer	8.086	0.086	458.3	7.0	465.3	457.4	O K
960 min Summer	8.050	0.050	451.8	2.5	454.3	267.2	O K
1440 min Summer	8.037	0.037	335.6	1.4	337.0	196.8	O K
2160 min Summer	8.027	0.027	245.0	0.8	245.8	144.6	O K
2880 min Summer	8.022	0.022	199.9	0.5	200.4	116.9	O K
4320 min Summer	8.017	0.017	150.3	0.3	150.6	87.9	O K
5760 min Summer	8.014	0.014	123.3	0.2	123.5	71.6	O K
7200 min Summer	8.012	0.012	105.3	0.1	105.4	62.1	O K
8640 min Summer	8.011	0.011	96.3	0.1	96.4	56.3	O K
10080 min Summer	8.010	0.010	87.3	0.1	87.4	51.4	O K
30 min Winter	8.316	0.316	500.9	56.0	556.9	1726.7	O K
60 min Winter	8.322	0.322	502.0	56.2	558.3	1758.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	22.544	0.0	2284.6	33
60 min Summer	13.912	0.0	2820.4	52
120 min Summer	9.465	0.0	3838.5	86
180 min Summer	7.351	0.0	4472.7	120
240 min Summer	6.071	0.0	4925.0	152
360 min Summer	4.554	0.0	5541.4	216
480 min Summer	3.668	0.0	5951.3	276
600 min Summer	3.087	0.0	6261.6	334
720 min Summer	2.676	0.0	6512.9	390
960 min Summer	2.130	0.0	6912.2	496
1440 min Summer	1.537	0.0	7485.4	736
2160 min Summer	1.116	0.0	8150.0	1100
2880 min Summer	0.895	0.0	8719.2	1460
4320 min Summer	0.667	0.0	9748.0	2172
5760 min Summer	0.549	0.0	10687.6	2936
7200 min Summer	0.476	0.0	11594.0	3560
8640 min Summer	0.427	0.0	12474.1	4296
10080 min Summer	0.391	0.0	13333.1	5040
30 min Winter	22.544	0.0	2567.3	35
60 min Winter	13.912	0.0	3169.3	54

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Summary of Results for 2 year Return Period

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
120 min Winter	8.334	0.334	504.3	56.6	560.9	1828.4	O K
180 min Winter	8.305	0.305	498.9	55.0	554.0	1666.0	O K
240 min Winter	8.266	0.266	491.6	47.3	538.9	1444.4	O K
360 min Winter	8.184	0.184	476.4	27.5	503.9	990.7	O K
480 min Winter	8.112	0.112	463.2	11.5	474.7	602.4	O K
600 min Winter	8.062	0.062	454.0	3.8	457.8	330.8	O K
720 min Winter	8.047	0.047	422.1	2.2	424.3	248.2	O K
960 min Winter	8.038	0.038	340.2	1.8	341.6	199.6	O K
1440 min Winter	8.027	0.027	245.0	2.1	245.8	144.0	O K
2160 min Winter	8.020	0.020	181.8	2.3	182.2	106.4	O K
2880 min Winter	8.016	0.016	145.8	1.9	146.0	85.1	O K
4320 min Winter	8.012	0.012	109.8	4.6	110.0	63.9	O K
5760 min Winter	8.010	0.010	91.8	4.5	91.9	53.4	O K
7200 min Winter	8.009	0.009	78.4	3.9	78.4	45.6	O K
8640 min Winter	8.008	0.008	69.4	5.6	69.5	40.9	O K
10080 min Winter	8.007	0.007	64.9	5.1	65.0	37.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	9.465	0.0	4313.2	92
180 min Winter	7.351	0.0	5026.1	128
240 min Winter	6.071	0.0	5534.6	162
360 min Winter	4.554	0.0	6226.9	226
480 min Winter	3.668	0.0	6687.7	284
600 min Winter	3.087	0.0	7036.1	332
720 min Winter	2.676	0.0	7318.3	376
960 min Winter	2.130	0.0	7766.5	496
1440 min Winter	1.537	0.0	8410.5	736
2160 min Winter	1.116	0.0	9157.3	1104
2880 min Winter	0.895	0.0	9797.1	1460
4320 min Winter	0.667	0.0	10953.0	2204
5760 min Winter	0.549	0.0	12010.7	2912
7200 min Winter	0.476	0.0	13028.6	3568
8640 min Winter	0.427	0.0	14015.4	4280
10080 min Winter	0.391	0.0	14981.5	5064

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 Lower Bristol Road
 Bath

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 447876 213399 SP 47876 13399
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.890
Cv (Winter)	1.000
Shortest Storm (mins)	30
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 22.800

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	5 7.600	5	10 7.600	10	15 7.600

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Model Details

Storage is Online Cover Level (m) 10.000

Infiltration Basin Structure

Invert Level (m) 8.000 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.60120 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.60120

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	5300.0	2.000	7565.6

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0307-5990-1900-5990
Design Head (m)	1.900
Design Flow (l/s)	59.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	307
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	59.9
Flush-Flo™	0.595	59.9
Kick-Flo®	1.299	49.8
Mean Flow over Head Range	-	51.2

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	9.3	1.200	53.6	3.000	74.7	7.000	112.8
0.200	31.5	1.400	51.7	3.500	80.5	7.500	116.6
0.300	54.1	1.600	55.1	4.000	85.9	8.000	120.4
0.400	58.3	1.800	58.3	4.500	90.9	8.500	124.0
0.500	59.5	2.000	61.4	5.000	95.7	9.000	127.5
0.600	59.9	2.200	64.3	5.500	100.3	9.500	130.9
0.800	59.0	2.400	67.0	6.000	104.6		
1.000	57.3	2.600	69.7	6.500	108.8		

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Bath



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Innovyze Source Control 2020.1.3

Summary of Results for 10 year Return Period (+10%)

Half Drain Time : 65 minutes.

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 Summer	8.609	0.609	555.8	59.9	615.7	3422.1	O K
60 min Summer	8.654	0.654	564.4	59.9	624.2	3692.9	O K
120 min Summer	8.668	0.668	567.1	59.9	626.8	3778.4	O K
180 min Summer	8.645	0.645	562.6	59.9	622.4	3637.2	O K
240 min Summer	8.610	0.610	556.1	59.9	616.0	3430.4	O K
360 min Summer	8.530	0.530	540.9	59.7	600.7	2954.1	O K
480 min Summer	8.448	0.448	525.6	59.0	584.6	2479.3	O K
600 min Summer	8.373	0.373	511.6	57.7	569.3	2051.5	O K
720 min Summer	8.308	0.308	499.5	55.8	555.3	1682.4	O K
960 min Summer	8.207	0.207	480.7	33.2	513.8	1118.1	O K
1440 min Summer	8.081	0.081	457.5	6.3	463.8	433.3	O K
2160 min Summer	8.042	0.042	381.1	1.8	382.9	223.8	O K
2880 min Summer	8.034	0.034	303.9	1.2	305.0	178.1	O K
4320 min Summer	8.025	0.025	222.4	0.6	223.0	130.4	O K
5760 min Summer	8.020	0.020	177.3	0.4	177.7	105.3	O K
7200 min Summer	8.017	0.017	154.8	0.3	155.1	90.8	O K
8640 min Summer	8.015	0.015	136.8	0.2	137.0	80.1	O K
10080 min Summer	8.014	0.014	123.3	0.2	123.5	72.1	O K
30 min Winter	8.694	0.694	572.0	59.9	631.6	3932.4	O K
60 min Winter	8.756	0.756	583.7	59.9	643.0	4307.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
30 min Summer	43.927	0.0	4454.3	36
60 min Summer	27.024	0.0	5481.2	60
120 min Summer	16.992	0.0	6893.6	94
180 min Summer	12.754	0.0	7761.7	128
240 min Summer	10.327	0.0	8379.6	162
360 min Summer	7.576	0.0	9221.4	228
480 min Summer	6.028	0.0	9784.1	292
600 min Summer	5.030	0.0	10204.3	354
720 min Summer	4.329	0.0	10538.7	414
960 min Summer	3.405	0.0	11051.1	532
1440 min Summer	2.420	0.0	11784.7	758
2160 min Summer	1.727	0.0	12612.9	1100
2880 min Summer	1.367	0.0	13309.9	1464
4320 min Summer	0.996	0.0	14549.7	2192
5760 min Summer	0.805	0.0	15670.8	2936
7200 min Summer	0.688	0.0	16750.3	3640
8640 min Summer	0.609	0.0	17794.9	4376
10080 min Summer	0.552	0.0	18816.7	4984
30 min Winter	43.927	0.0	5005.2	37
60 min Winter	27.024	0.0	6158.9	60

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Summary of Results for 10 year Return Period (+10%)

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
120 min Winter	8.770	0.770	586.3	59.9	645.6	4393.8	O K
180 min Winter	8.731	0.731	578.9	59.9	638.4	4155.7	O K
240 min Winter	8.676	0.676	568.5	59.9	628.2	3822.2	O K
360 min Winter	8.552	0.552	545.2	59.8	605.0	3086.1	O K
480 min Winter	8.432	0.432	522.7	58.8	581.5	2388.6	O K
600 min Winter	8.328	0.328	503.1	56.4	559.6	1793.3	O K
720 min Winter	8.244	0.244	487.6	42.5	530.1	1324.6	O K
960 min Winter	8.117	0.117	464.0	12.4	476.4	625.1	O K
1440 min Winter	8.043	0.043	385.6	2.0	387.5	226.4	O K
2160 min Winter	8.031	0.031	276.7	1.9	277.7	162.6	O K
2880 min Winter	8.024	0.024	217.9	2.8	218.5	129.3	O K
4320 min Winter	8.018	0.018	159.3	2.1	159.6	93.7	O K
5760 min Winter	8.015	0.015	132.3	1.7	132.5	77.3	O K
7200 min Winter	8.012	0.012	109.8	5.6	110.0	65.2	O K
8640 min Winter	8.011	0.011	100.8	5.0	100.9	58.9	O K
10080 min Winter	8.010	0.010	91.8	4.5	91.9	53.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	16.992	0.0	7745.6	100
180 min Winter	12.754	0.0	8721.4	138
240 min Winter	10.327	0.0	9415.1	174
360 min Winter	7.576	0.0	10361.9	244
480 min Winter	6.028	0.0	10993.3	310
600 min Winter	5.030	0.0	11465.7	372
720 min Winter	4.329	0.0	11841.1	432
960 min Winter	3.405	0.0	12417.4	544
1440 min Winter	2.420	0.0	13241.4	734
2160 min Winter	1.727	0.0	14172.8	1100
2880 min Winter	1.367	0.0	14955.0	1472
4320 min Winter	0.996	0.0	16348.9	2176
5760 min Winter	0.805	0.0	17608.8	2888
7200 min Winter	0.688	0.0	18820.2	3672
8640 min Winter	0.609	0.0	19993.5	4424
10080 min Winter	0.552	0.0	21140.9	5032

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	10
FEH Rainfall Version	2013
Site Location	GB 447876 213399 SP 47876 13399
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.890
Cv (Winter)	1.000
Shortest Storm (mins)	30
Longest Storm (mins)	10080
Climate Change %	+10

Time Area Diagram

Total Area (ha) 22.800

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	5 7.600	5	10 7.600	10	15 7.600

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Model Details

Storage is Online Cover Level (m) 10.000

Infiltration Basin Structure

Invert Level (m) 8.000 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.60120 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.60120

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	5300.0	2.000	7565.6

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0307-5990-1900-5990
Design Head (m)	1.900
Design Flow (l/s)	59.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	307
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	59.9
Flush-Flo™	0.595	59.9
Kick-Flo®	1.299	49.8
Mean Flow over Head Range	-	51.2

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	9.3	1.200	53.6	3.000	74.7	7.000	112.8
0.200	31.5	1.400	51.7	3.500	80.5	7.500	116.6
0.300	54.1	1.600	55.1	4.000	85.9	8.000	120.4
0.400	58.3	1.800	58.3	4.500	90.9	8.500	124.0
0.500	59.5	2.000	61.4	5.000	95.7	9.000	127.5
0.600	59.9	2.200	64.3	5.500	100.3	9.500	130.9
0.800	59.0	2.400	67.0	6.000	104.6		
1.000	57.3	2.600	69.7	6.500	108.8		

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Summary of Results for 30 year Return Period (+20%)

Half Drain Time : 96 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
30 min Summer	8.922	0.922	615.4	59.9	673.5	5340.7	O K
60 min Summer	9.026	1.026	635.4	59.9	692.4	6000.6	O K
120 min Summer	9.044	1.044	638.7	59.9	695.5	6113.0	O K
180 min Summer	9.014	1.014	633.0	59.9	690.1	5920.1	O K
240 min Summer	8.972	0.972	625.0	59.9	682.6	5657.8	O K
360 min Summer	8.879	0.879	607.1	59.9	665.6	5066.0	O K
480 min Summer	8.782	0.782	588.6	59.9	647.8	4466.3	O K
600 min Summer	8.689	0.689	571.0	59.9	630.7	3902.9	O K
720 min Summer	8.603	0.603	554.7	59.9	614.5	3385.9	O K
960 min Summer	8.452	0.452	526.4	59.1	585.5	2504.6	O K
1440 min Summer	8.244	0.244	487.6	42.5	530.1	1325.4	O K
2160 min Summer	8.081	0.081	457.5	6.3	463.8	435.1	O K
2880 min Summer	8.045	0.045	403.9	2.0	405.9	237.4	O K
4320 min Summer	8.032	0.032	290.3	1.1	291.3	170.6	O K
5760 min Summer	8.026	0.026	231.5	0.7	232.1	136.8	O K
7200 min Summer	8.022	0.022	199.9	0.5	200.4	117.2	O K
8640 min Summer	8.019	0.019	172.8	0.4	173.2	102.0	O K
10080 min Summer	8.017	0.017	154.8	0.3	155.1	91.4	O K
30 min Winter	9.043	1.043	638.6	59.9	695.4	6110.2	O K
60 min Winter	9.172	1.172	663.4	59.9	717.8	6945.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	64.350	0.0	6526.3	38
60 min Summer	39.805	0.0	8074.9	62
120 min Summer	24.311	0.0	9866.7	100
180 min Summer	18.051	0.0	10986.1	134
240 min Summer	14.526	0.0	11788.0	168
360 min Summer	10.577	0.0	12874.4	236
480 min Summer	8.380	0.0	13601.5	302
600 min Summer	6.971	0.0	14142.2	368
720 min Summer	5.985	0.0	14570.8	432
960 min Summer	4.690	0.0	15223.2	552
1440 min Summer	3.312	0.0	16125.1	786
2160 min Summer	2.338	0.0	17079.0	1128
2880 min Summer	1.833	0.0	17854.1	1456
4320 min Summer	1.315	0.0	19213.4	2180
5760 min Summer	1.049	0.0	20433.3	2864
7200 min Summer	0.888	0.0	21622.2	3648
8640 min Summer	0.780	0.0	22777.6	4296
10080 min Summer	0.701	0.0	23911.2	4976
30 min Winter	64.350	0.0	7333.3	38
60 min Winter	39.805	0.0	9075.5	64

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Summary of Results for 30 year Return Period (+20%)

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
120 min Winter	9.202	1.202	669.2	59.9	722.8	7142.7	O K
180 min Winter	9.162	1.162	661.6	59.9	716.2	6882.5	O K
240 min Winter	9.102	1.102	649.9	59.9	705.8	6488.4	O K
360 min Winter	8.964	0.964	623.4	59.9	681.1	5600.9	O K
480 min Winter	8.822	0.822	596.2	59.9	655.1	4713.6	O K
600 min Winter	8.688	0.688	570.9	59.9	630.5	3897.2	O K
720 min Winter	8.566	0.566	547.8	59.8	607.6	3170.3	O K
960 min Winter	8.364	0.364	509.9	57.5	567.4	1999.3	O K
1440 min Winter	8.121	0.121	464.9	13.3	478.1	649.8	O K
2160 min Winter	8.041	0.041	372.0	1.7	373.7	220.2	O K
2880 min Winter	8.033	0.033	294.8	2.8	295.9	173.0	O K
4320 min Winter	8.024	0.024	213.4	2.7	214.0	125.1	O K
5760 min Winter	8.019	0.019	168.3	2.2	168.6	99.5	O K
7200 min Winter	8.016	0.016	145.8	1.9	146.0	85.3	O K
8640 min Winter	8.014	0.014	127.8	2.1	128.0	74.8	O K
10080 min Winter	8.013	0.013	114.3	5.7	114.5	66.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	24.311	0.0	11086.1	108
180 min Winter	18.051	0.0	12347.0	144
240 min Winter	14.526	0.0	13247.7	182
360 min Winter	10.577	0.0	14466.5	254
480 min Winter	8.380	0.0	15283.0	326
600 min Winter	6.971	0.0	15890.6	392
720 min Winter	5.985	0.0	16371.9	456
960 min Winter	4.690	0.0	17107.7	576
1440 min Winter	3.312	0.0	18118.2	800
2160 min Winter	2.338	0.0	19190.3	1104
2880 min Winter	1.833	0.0	20061.8	1468
4320 min Winter	1.315	0.0	21589.5	2196
5760 min Winter	1.049	0.0	22959.6	2920
7200 min Winter	0.888	0.0	24295.6	3608
8640 min Winter	0.780	0.0	25591.7	4304
10080 min Winter	0.701	0.0	26865.9	4992

Camden Mill
 Lower Bristol Road
 Bath

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
FEH Rainfall Version	2013
Site Location	GB 447876 213399 SP 47876 13399
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.890
Cv (Winter)	1.000
Shortest Storm (mins)	30
Longest Storm (mins)	10080
Climate Change %	+20

Time Area Diagram

Total Area (ha) 22.800

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 5	7.600	5 10	7.600	10 15	7.600

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Model Details

Storage is Online Cover Level (m) 10.000

Infiltration Basin Structure

Invert Level (m) 8.000 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.60120 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.60120

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	5300.0	2.000	7565.6

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0307-5990-1900-5990
Design Head (m)	1.900
Design Flow (l/s)	59.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	307
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	59.9
Flush-Flo™	0.595	59.9
Kick-Flo®	1.299	49.8
Mean Flow over Head Range	-	51.2

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	9.3	1.200	53.6	3.000	74.7	7.000	112.8
0.200	31.5	1.400	51.7	3.500	80.5	7.500	116.6
0.300	54.1	1.600	55.1	4.000	85.9	8.000	120.4
0.400	58.3	1.800	58.3	4.500	90.9	8.500	124.0
0.500	59.5	2.000	61.4	5.000	95.7	9.000	127.5
0.600	59.9	2.200	64.3	5.500	100.3	9.500	130.9
0.800	59.0	2.400	67.0	6.000	104.6		
1.000	57.3	2.600	69.7	6.500	108.8		

Camden Mill
Lower Bristol Road
Bath



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

Half Drain Time : 140 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
30 min Summer	9.408	1.408	709.5	59.9	761.3	8535.2	O K
60 min Summer	9.604	1.604	747.9	59.9	803.0	9898.2	O K
120 min Summer	9.660	1.660	758.9	59.9	815.0	10296.1	O K
180 min Summer	9.639	1.639	754.9	59.9	810.6	10149.0	O K
240 min Summer	9.597	1.597	746.6	59.9	801.6	9850.4	O K
360 min Summer	9.495	1.495	726.4	59.9	779.7	9131.1	O K
480 min Summer	9.388	1.388	705.5	59.9	757.0	8396.2	O K
600 min Summer	9.282	1.282	684.8	59.9	735.5	7674.9	O K
720 min Summer	9.178	1.178	664.6	59.9	718.8	6984.4	O K
960 min Summer	8.985	0.985	627.4	59.9	684.9	5735.2	O K
1440 min Summer	8.666	0.666	566.6	59.9	626.3	3763.5	O K
2160 min Summer	8.343	0.343	505.9	56.9	562.8	1877.5	O K
2880 min Summer	8.168	0.168	473.4	23.6	497.0	905.1	O K
4320 min Summer	8.046	0.046	413.0	2.1	415.1	242.8	O K
5760 min Summer	8.036	0.036	326.6	1.3	327.9	192.0	O K
7200 min Summer	8.030	0.030	272.2	0.9	273.1	160.4	O K
8640 min Summer	8.026	0.026	236.0	0.7	236.7	139.6	O K
10080 min Summer	8.024	0.024	213.4	0.6	214.0	125.3	O K
30 min Winter	9.579	1.579	742.9	59.9	797.7	9719.5	O K
60 min Winter	9.806	1.806	788.0	59.9	846.4	11356.4	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	97.695	0.0	9912.1	39
60 min Summer	60.761	0.0	12329.6	66
120 min Summer	36.541	0.0	14829.7	112
180 min Summer	27.028	0.0	16453.6	144
240 min Summer	21.730	0.0	17637.6	176
360 min Summer	15.828	0.0	19271.4	246
480 min Summer	12.545	0.0	20364.7	314
600 min Summer	10.431	0.0	21166.2	382
720 min Summer	8.949	0.0	21790.0	448
960 min Summer	6.994	0.0	22704.7	578
1440 min Summer	4.908	0.0	23900.3	822
2160 min Summer	3.428	0.0	25040.7	1172
2880 min Summer	2.661	0.0	25916.6	1512
4320 min Summer	1.875	0.0	27387.8	2172
5760 min Summer	1.473	0.0	28682.6	2896
7200 min Summer	1.231	0.0	29980.3	3600
8640 min Summer	1.070	0.0	31250.3	4352
10080 min Summer	0.954	0.0	32509.3	5128
30 min Winter	97.695	0.0	11137.2	40
60 min Winter	60.761	0.0	13853.5	66

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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
120 min Winter	9.893	1.893	805.4	59.9	865.1	11998.0	Flood Risk
180 min Winter	9.869	1.869	800.6	59.9	860.0	11818.4	Flood Risk
240 min Winter	9.820	1.820	790.8	59.9	849.4	11458.3	Flood Risk
360 min Winter	9.676	1.676	762.1	59.9	818.4	10411.2	O K
480 min Winter	9.526	1.526	732.5	59.9	786.4	9348.2	O K
600 min Winter	9.376	1.376	703.2	59.9	754.5	8314.1	O K
720 min Winter	9.229	1.229	674.6	59.9	727.2	7326.4	O K
960 min Winter	8.959	0.959	622.5	59.9	680.3	5574.6	O K
1440 min Winter	8.533	0.533	541.5	59.7	601.2	2971.6	O K
2160 min Winter	8.174	0.174	474.6	25.0	499.6	936.8	O K
2880 min Winter	8.047	0.047	426.6	2.2	428.9	250.4	O K
4320 min Winter	8.033	0.033	299.3	3.9	300.5	176.2	O K
5760 min Winter	8.026	0.026	236.0	3.1	236.7	139.3	O K
7200 min Winter	8.022	0.022	199.9	2.6	200.4	117.3	O K
8640 min Winter	8.019	0.019	172.8	2.2	173.2	101.5	O K
10080 min Winter	8.017	0.017	154.8	2.0	155.1	90.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	36.541	0.0	16662.6	118
180 min Winter	27.028	0.0	18487.1	150
240 min Winter	21.730	0.0	19817.6	188
360 min Winter	15.828	0.0	21653.2	266
480 min Winter	12.545	0.0	22881.5	340
600 min Winter	10.431	0.0	23782.3	410
720 min Winter	8.949	0.0	24483.2	480
960 min Winter	6.994	0.0	25511.5	612
1440 min Winter	4.908	0.0	26857.0	856
2160 min Winter	3.428	0.0	28137.2	1192
2880 min Winter	2.661	0.0	29120.4	1456
4320 min Winter	1.875	0.0	30773.9	2164
5760 min Winter	1.473	0.0	32229.5	2856
7200 min Winter	1.231	0.0	33685.8	3584
8640 min Winter	1.070	0.0	35113.1	4376
10080 min Winter	0.954	0.0	36530.1	4960

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 447876 213399 SP 47876 13399
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.890
Cv (Winter)	1.000
Shortest Storm (mins)	30
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 22.800

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	5 7.600	5	10 7.600	10	15 7.600

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Model Details

Storage is Online Cover Level (m) 10.000

Infiltration Basin Structure

Invert Level (m) 8.000 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.60120 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.60120

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	5300.0	2.000	7565.6

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0307-5990-1900-5990
Design Head (m)	1.900
Design Flow (l/s)	59.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	307
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	59.9
Flush-Flo™	0.595	59.9
Kick-Flo®	1.299	49.8
Mean Flow over Head Range	-	51.2

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	9.3	1.200	53.6	3.000	74.7	7.000	112.8
0.200	31.5	1.400	51.7	3.500	80.5	7.500	116.6
0.300	54.1	1.600	55.1	4.000	85.9	8.000	120.4
0.400	58.3	1.800	58.3	4.500	90.9	8.500	124.0
0.500	59.5	2.000	61.4	5.000	95.7	9.000	127.5
0.600	59.9	2.200	64.3	5.500	100.3	9.500	130.9
0.800	59.0	2.400	67.0	6.000	104.6		
1.000	57.3	2.600	69.7	6.500	108.8		