

Camden Mill
Lower Bristol Road
Bath



Date 25/03/2024 14:19
File Catchment 2.SRCX

Designed by dwright
Checked by

Innovyze Source Control 2020.1.3

Summary of Results for 2 year Return Period

Half Drain Time : 34 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	8.330	0.330	126.2	6.4	132.6	405.7	O K
60 min Summer	8.338	0.338	126.9	6.5	133.4	417.3	O K
120 min Summer	8.365	0.365	129.5	6.5	136.0	452.7	O K
180 min Summer	8.355	0.355	128.5	6.5	135.0	438.8	O K
240 min Summer	8.332	0.332	126.4	6.4	132.8	409.1	O K
360 min Summer	8.276	0.276	121.2	6.3	127.4	335.7	O K
480 min Summer	8.220	0.220	116.0	6.0	122.0	264.5	O K
600 min Summer	8.171	0.171	111.6	5.6	117.1	203.9	O K
720 min Summer	8.131	0.131	107.9	5.0	112.9	155.1	O K
960 min Summer	8.076	0.076	102.9	2.7	105.6	89.2	O K
1440 min Summer	8.044	0.044	87.7	1.0	88.7	50.6	O K
2160 min Summer	8.032	0.032	64.3	0.6	64.9	37.1	O K
2880 min Summer	8.026	0.026	52.2	0.4	52.6	30.1	O K
4320 min Summer	8.020	0.020	39.1	0.2	39.4	22.6	O K
5760 min Summer	8.016	0.016	32.1	0.2	32.3	18.6	O K
7200 min Summer	8.014	0.014	28.2	0.1	28.3	16.2	O K
8640 min Summer	8.013	0.013	25.2	0.1	25.3	14.5	O K
10080 min Summer	8.012	0.012	23.2	0.1	23.3	13.4	O K
30 min Winter	8.376	0.376	130.5	6.5	137.0	467.7	O K
60 min Winter	8.387	0.387	131.5	6.5	138.0	482.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	22.544	0.0	601.3	34
60 min Summer	13.912	0.0	742.3	52
120 min Summer	9.465	0.0	1010.3	86
180 min Summer	7.351	0.0	1177.2	120
240 min Summer	6.071	0.0	1296.2	154
360 min Summer	4.554	0.0	1458.5	218
480 min Summer	3.668	0.0	1566.3	280
600 min Summer	3.087	0.0	1648.0	340
720 min Summer	2.676	0.0	1714.0	398
960 min Summer	2.130	0.0	1819.1	510
1440 min Summer	1.537	0.0	1970.0	736
2160 min Summer	1.116	0.0	2144.8	1104
2880 min Summer	0.895	0.0	2294.5	1456
4320 min Summer	0.667	0.0	2565.5	2200
5760 min Summer	0.549	0.0	2813.0	2904
7200 min Summer	0.476	0.0	3051.8	3584
8640 min Summer	0.427	0.0	3282.3	4320
10080 min Summer	0.391	0.0	3508.5	5048
30 min Winter	22.544	0.0	675.8	35
60 min Winter	13.912	0.0	834.2	56

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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	8.407	0.407	133.4	6.6	139.9	509.4	O K
180 min Winter	8.381	0.381	130.9	6.5	137.5	474.6	O K
240 min Winter	8.342	0.342	127.3	6.5	133.7	422.1	O K
360 min Winter	8.255	0.255	119.2	6.2	125.4	308.9	O K
480 min Winter	8.175	0.175	111.9	5.6	117.5	209.1	O K
600 min Winter	8.113	0.113	106.2	4.4	110.6	132.8	O K
720 min Winter	8.068	0.068	102.2	2.2	104.4	79.9	O K
960 min Winter	8.044	0.044	88.7	1.0	89.8	51.1	O K
1440 min Winter	8.032	0.032	64.3	0.6	64.9	37.1	O K
2160 min Winter	8.024	0.024	47.1	0.5	47.5	27.2	O K
2880 min Winter	8.019	0.019	38.1	0.5	38.3	22.0	O K
4320 min Winter	8.014	0.014	28.2	0.4	28.3	16.3	O K
5760 min Winter	8.012	0.012	23.2	1.2	23.3	13.5	O K
7200 min Winter	8.010	0.010	20.2	1.0	20.3	11.7	O K
8640 min Winter	8.009	0.009	18.2	0.9	18.3	10.6	O K
10080 min Winter	8.009	0.009	17.2	1.4	17.3	9.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	9.465	0.0	1135.3	92
180 min Winter	7.351	0.0	1322.7	130
240 min Winter	6.071	0.0	1456.6	164
360 min Winter	4.554	0.0	1638.8	230
480 min Winter	3.668	0.0	1759.9	290
600 min Winter	3.087	0.0	1851.8	348
720 min Winter	2.676	0.0	1926.0	398
960 min Winter	2.130	0.0	2044.0	496
1440 min Winter	1.537	0.0	2213.4	724
2160 min Winter	1.116	0.0	2410.1	1084
2880 min Winter	0.895	0.0	2578.2	1480
4320 min Winter	0.667	0.0	2882.6	2164
5760 min Winter	0.549	0.0	3160.7	2920
7200 min Winter	0.476	0.0	3428.8	3568
8640 min Winter	0.427	0.0	3688.4	4280
10080 min Winter	0.391	0.0	3942.6	4984

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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) 6.000

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To: (ha)	From:	To: (ha)	From:	To: (ha)
0	5 2.000	5	10 2.000	10	15 2.000

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Innovyze	Source Control 2020.1.3	

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	1150.0	2.000	2312.8

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0111-7100-1900-7100
 Design Head (m) 1.900
 Design Flow (l/s) 7.1
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 111
 Invert Level (m) 8.000
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	7.1
Flush-Flo™	0.482	6.6
Kick-Flo®	0.991	5.2
Mean Flow over Head Range	-	5.9

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	3.8	1.200	5.7	3.000	8.8	7.000	13.2
0.200	5.8	1.400	6.2	3.500	9.5	7.500	13.6
0.300	6.4	1.600	6.5	4.000	10.1	8.000	14.0
0.400	6.6	1.800	6.9	4.500	10.7	8.500	14.4
0.500	6.6	2.000	7.3	5.000	11.2	9.000	14.8
0.600	6.5	2.200	7.6	5.500	11.7	9.500	15.2
0.800	6.2	2.400	7.9	6.000	12.2		
1.000	5.3	2.600	8.2	6.500	12.7		

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

Half Drain Time : 62 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	8.686	0.686	159.7	6.6	166.2	907.3	O K
60 min Summer	8.734	0.734	164.3	6.6	170.7	980.2	O K
120 min Summer	8.752	0.752	166.1	6.6	172.4	1008.5	O K
180 min Summer	8.730	0.730	164.0	6.6	170.4	974.2	O K
240 min Summer	8.697	0.697	160.8	6.6	167.2	923.9	O K
360 min Summer	8.620	0.620	153.5	6.6	160.0	809.9	O K
480 min Summer	8.542	0.542	146.0	6.6	152.6	696.5	O K
600 min Summer	8.469	0.469	139.1	6.6	145.7	593.7	O K
720 min Summer	8.402	0.402	132.9	6.6	139.5	502.7	O K
960 min Summer	8.290	0.290	122.4	6.3	128.8	354.1	O K
1440 min Summer	8.138	0.138	108.5	5.2	113.8	163.8	O K
2160 min Summer	8.049	0.049	99.0	1.3	100.3	57.1	O K
2880 min Summer	8.039	0.039	78.5	0.8	79.3	45.4	O K
4320 min Summer	8.029	0.029	58.2	0.5	58.7	33.6	O K
5760 min Summer	8.024	0.024	47.1	0.3	47.5	27.2	O K
7200 min Summer	8.020	0.020	40.1	0.2	40.4	23.2	O K
8640 min Summer	8.018	0.018	36.1	0.2	36.3	20.9	O K
10080 min Summer	8.016	0.016	32.1	0.2	32.3	18.7	O K
30 min Winter	8.772	0.772	168.1	6.6	174.3	1039.1	O K
60 min Winter	8.835	0.835	174.1	6.6	180.2	1137.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	43.927	0.0	1172.3	36
60 min Summer	27.024	0.0	1442.5	58
120 min Summer	16.992	0.0	1814.2	92
180 min Summer	12.754	0.0	2042.8	126
240 min Summer	10.327	0.0	2205.2	160
360 min Summer	7.576	0.0	2426.8	228
480 min Summer	6.028	0.0	2574.8	294
600 min Summer	5.030	0.0	2685.5	356
720 min Summer	4.329	0.0	2773.5	418
960 min Summer	3.405	0.0	2908.3	538
1440 min Summer	2.420	0.0	3101.3	770
2160 min Summer	1.727	0.0	3319.5	1100
2880 min Summer	1.367	0.0	3502.5	1468
4320 min Summer	0.996	0.0	3829.0	2188
5760 min Summer	0.805	0.0	4124.0	2880
7200 min Summer	0.688	0.0	4407.8	3600
8640 min Summer	0.609	0.0	4682.4	4376
10080 min Summer	0.552	0.0	4951.5	5008
30 min Winter	43.927	0.0	1317.3	37
60 min Winter	27.024	0.0	1620.9	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	8.852	0.852	175.8	6.6	181.8	1164.9	O K
180 min Winter	8.815	0.815	172.2	6.6	178.4	1106.4	O K
240 min Winter	8.763	0.763	167.2	6.6	173.5	1025.6	O K
360 min Winter	8.649	0.649	156.2	6.6	162.7	851.8	O K
480 min Winter	8.536	0.536	145.5	6.6	152.1	688.5	O K
600 min Winter	8.434	0.434	135.9	6.6	142.5	546.4	O K
720 min Winter	8.345	0.345	127.5	6.5	134.0	425.5	O K
960 min Winter	8.200	0.200	114.2	5.8	120.0	239.6	O K
1440 min Winter	8.050	0.050	100.6	1.3	101.9	58.2	O K
2160 min Winter	8.036	0.036	72.4	0.7	73.1	41.8	O K
2880 min Winter	8.029	0.029	57.2	0.5	57.7	33.1	O K
4320 min Winter	8.021	0.021	42.1	0.5	42.4	24.3	O K
5760 min Winter	8.017	0.017	34.1	0.4	34.3	19.8	O K
7200 min Winter	8.015	0.015	29.2	0.4	29.3	16.9	O K
8640 min Winter	8.013	0.013	26.2	1.3	26.3	15.1	O K
10080 min Winter	8.012	0.012	23.2	1.2	23.3	13.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	16.992	0.0	2038.5	98
180 min Winter	12.754	0.0	2295.3	136
240 min Winter	10.327	0.0	2477.8	172
360 min Winter	7.576	0.0	2726.9	244
480 min Winter	6.028	0.0	2893.1	310
600 min Winter	5.030	0.0	3017.3	376
720 min Winter	4.329	0.0	3116.3	438
960 min Winter	3.405	0.0	3267.9	554
1440 min Winter	2.420	0.0	3484.6	736
2160 min Winter	1.727	0.0	3729.8	1096
2880 min Winter	1.367	0.0	3935.7	1428
4320 min Winter	0.996	0.0	4302.3	2152
5760 min Winter	0.805	0.0	4633.9	2912
7200 min Winter	0.688	0.0	4952.7	3552
8640 min Winter	0.609	0.0	5261.4	4384
10080 min Winter	0.552	0.0	5563.5	4960

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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) 6.000

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:	From:	To:
0	5	2.000	5	10	2.000
				10	15
					2.000

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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	1150.0	2.000	2312.8

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0111-7100-1900-7100
 Design Head (m) 1.900
 Design Flow (l/s) 7.1
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 111
 Invert Level (m) 8.000
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	7.1
Flush-Flo™	0.482	6.6
Kick-Flo®	0.991	5.2
Mean Flow over Head Range	-	5.9

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	3.8	1.200	5.7	3.000	8.8	7.000	13.2
0.200	5.8	1.400	6.2	3.500	9.5	7.500	13.6
0.300	6.4	1.600	6.5	4.000	10.1	8.000	14.0
0.400	6.6	1.800	6.9	4.500	10.7	8.500	14.4
0.500	6.6	2.000	7.3	5.000	11.2	9.000	14.8
0.600	6.5	2.200	7.6	5.500	11.7	9.500	15.2
0.800	6.2	2.400	7.9	6.000	12.2		
1.000	5.3	2.600	8.2	6.500	12.7		

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

Half Drain Time : 82 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	8.996	0.996	189.9	6.6	195.2	1400.7	O K
60 min Summer	9.093	1.093	199.5	6.6	204.9	1565.5	O K
120 min Summer	9.111	1.111	201.3	6.6	206.8	1598.1	O K
180 min Summer	9.084	1.084	198.6	6.6	204.1	1551.1	O K
240 min Summer	9.044	1.044	194.7	6.6	200.0	1482.2	O K
360 min Summer	8.955	0.955	185.9	6.6	191.4	1332.2	O K
480 min Summer	8.865	0.865	177.0	6.6	183.0	1185.3	O K
600 min Summer	8.779	0.779	168.7	6.6	175.0	1050.1	O K
720 min Summer	8.700	0.700	161.1	6.6	167.5	928.0	O K
960 min Summer	8.559	0.559	147.7	6.6	154.3	721.0	O K
1440 min Summer	8.345	0.345	127.5	6.5	134.0	425.9	O K
2160 min Summer	8.148	0.148	109.5	5.3	114.8	176.1	O K
2880 min Summer	8.059	0.059	101.4	1.8	103.1	69.1	O K
4320 min Summer	8.038	0.038	76.5	0.8	77.3	44.1	O K
5760 min Summer	8.031	0.031	61.3	0.5	61.8	35.4	O K
7200 min Summer	8.026	0.026	52.2	0.4	52.6	30.1	O K
8640 min Summer	8.023	0.023	45.1	0.3	45.4	26.3	O K
10080 min Summer	8.021	0.021	41.1	0.3	41.4	23.8	O K
30 min Winter	9.112	1.112	201.4	6.6	206.9	1598.4	O K
60 min Winter	9.227	1.227	212.9	6.6	218.6	1803.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	64.350	0.0	1717.6	37
60 min Summer	39.805	0.0	2125.1	62
120 min Summer	24.311	0.0	2596.5	96
180 min Summer	18.051	0.0	2891.8	130
240 min Summer	14.526	0.0	3102.7	164
360 min Summer	10.577	0.0	3388.3	234
480 min Summer	8.380	0.0	3579.5	300
600 min Summer	6.971	0.0	3721.9	364
720 min Summer	5.985	0.0	3834.6	428
960 min Summer	4.690	0.0	4006.2	552
1440 min Summer	3.312	0.0	4243.5	794
2160 min Summer	2.338	0.0	4494.6	1136
2880 min Summer	1.833	0.0	4698.7	1476
4320 min Summer	1.315	0.0	5056.4	2192
5760 min Summer	1.049	0.0	5377.0	2880
7200 min Summer	0.888	0.0	5690.3	3632
8640 min Summer	0.780	0.0	5993.9	4336
10080 min Summer	0.701	0.0	6292.1	5008
30 min Winter	64.350	0.0	1930.5	38
60 min Winter	39.805	0.0	2388.3	62

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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	9.251	1.251	215.3	6.6	221.1	1847.0	O K
180 min Winter	9.215	1.215	211.7	6.6	217.4	1782.2	O K
240 min Winter	9.157	1.157	205.8	6.6	211.5	1677.7	O K
360 min Winter	9.028	1.028	193.0	6.6	198.4	1454.3	O K
480 min Winter	8.900	0.900	180.4	6.6	186.3	1241.9	O K
600 min Winter	8.781	0.781	168.9	6.6	175.1	1052.2	O K
720 min Winter	8.672	0.672	158.4	6.6	164.9	886.5	O K
960 min Winter	8.485	0.485	140.7	6.6	147.3	616.8	O K
1440 min Winter	8.218	0.218	115.9	6.0	121.8	262.7	O K
2160 min Winter	8.049	0.049	98.0	1.2	99.2	56.3	O K
2880 min Winter	8.038	0.038	76.5	0.8	77.3	44.1	O K
4320 min Winter	8.028	0.028	55.2	0.7	55.6	31.9	O K
5760 min Winter	8.022	0.022	44.1	0.6	44.4	25.7	O K
7200 min Winter	8.019	0.019	38.1	0.5	38.3	22.0	O K
8640 min Winter	8.017	0.017	33.1	0.4	33.3	19.2	O K
10080 min Winter	8.015	0.015	30.1	0.4	30.3	17.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	24.311	0.0	2917.4	102
180 min Winter	18.051	0.0	3249.2	140
240 min Winter	14.526	0.0	3486.2	178
360 min Winter	10.577	0.0	3807.1	250
480 min Winter	8.380	0.0	4022.0	320
600 min Winter	6.971	0.0	4181.9	386
720 min Winter	5.985	0.0	4308.6	452
960 min Winter	4.690	0.0	4501.5	578
1440 min Winter	3.312	0.0	4768.0	812
2160 min Winter	2.338	0.0	5050.2	1108
2880 min Winter	1.833	0.0	5279.5	1476
4320 min Winter	1.315	0.0	5681.4	2164
5760 min Winter	1.049	0.0	6042.1	2904
7200 min Winter	0.888	0.0	6393.5	3664
8640 min Winter	0.780	0.0	6734.9	4264
10080 min Winter	0.701	0.0	7070.0	5120

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) 6.000

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 5	2.000	5 10	2.000	10 15	2.000

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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	1150.0	2.000	2312.8

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0111-7100-1900-7100
 Design Head (m) 1.900
 Design Flow (l/s) 7.1
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 111
 Invert Level (m) 8.000
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	7.1
Flush-Flo™	0.482	6.6
Kick-Flo®	0.991	5.2
Mean Flow over Head Range	-	5.9

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	3.8	1.200	5.7	3.000	8.8	7.000	13.2
0.200	5.8	1.400	6.2	3.500	9.5	7.500	13.6
0.300	6.4	1.600	6.5	4.000	10.1	8.000	14.0
0.400	6.6	1.800	6.9	4.500	10.7	8.500	14.4
0.500	6.6	2.000	7.3	5.000	11.2	9.000	14.8
0.600	6.5	2.200	7.6	5.500	11.7	9.500	15.2
0.800	6.2	2.400	7.9	6.000	12.2		
1.000	5.3	2.600	8.2	6.500	12.7		

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 Lower Bristol Road
 Bath



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

Half Drain Time : 108 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
30 min Summer	9.447	1.447	235.2	6.6	241.5	2218.3	O K
60 min Summer	9.611	1.611	252.2	6.6	258.7	2546.8	O K
120 min Summer	9.649	1.649	256.1	6.6	262.8	2625.8	O K
180 min Summer	9.633	1.633	254.4	6.6	261.1	2593.1	O K
240 min Summer	9.596	1.596	250.6	6.6	257.1	2516.0	O K
360 min Summer	9.498	1.498	240.5	6.6	246.8	2318.9	O K
480 min Summer	9.398	1.398	230.2	6.6	236.4	2123.6	O K
600 min Summer	9.302	1.302	220.4	6.6	226.4	1941.4	O K
720 min Summer	9.210	1.210	211.2	6.6	217.0	1773.5	O K
960 min Summer	9.042	1.042	194.4	6.6	199.8	1478.1	O K
1440 min Summer	8.764	0.764	167.2	6.6	173.5	1026.3	O K
2160 min Summer	8.467	0.467	138.9	6.6	145.5	591.0	O K
2880 min Summer	8.270	0.270	120.6	6.2	126.8	328.2	O K
4320 min Summer	8.072	0.072	102.5	2.4	104.9	83.8	O K
5760 min Summer	8.042	0.042	84.6	1.0	85.6	48.8	O K
7200 min Summer	8.036	0.036	71.4	0.7	72.1	41.2	O K
8640 min Summer	8.031	0.031	62.3	0.5	62.8	36.0	O K
10080 min Summer	8.028	0.028	55.2	0.4	55.6	32.1	O K
30 min Winter	9.599	1.599	250.9	6.6	257.5	2522.2	O K
60 min Winter	9.786	1.786	270.5	6.9	277.4	2916.3	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	97.695	0.0	2608.5	38
60 min Summer	60.761	0.0	3244.7	64
120 min Summer	36.541	0.0	3902.5	102
180 min Summer	27.028	0.0	4329.9	134
240 min Summer	21.730	0.0	4641.5	170
360 min Summer	15.828	0.0	5071.4	238
480 min Summer	12.545	0.0	5359.1	306
600 min Summer	10.431	0.0	5570.1	372
720 min Summer	8.949	0.0	5734.2	438
960 min Summer	6.994	0.0	5975.1	568
1440 min Summer	4.908	0.0	6289.6	814
2160 min Summer	3.428	0.0	6589.9	1176
2880 min Summer	2.661	0.0	6820.5	1528
4320 min Summer	1.875	0.0	7207.5	2208
5760 min Summer	1.473	0.0	7548.6	2936
7200 min Summer	1.231	0.0	7889.4	3672
8640 min Summer	1.070	0.0	8224.0	4392
10080 min Summer	0.954	0.0	8555.2	5016
30 min Winter	97.695	0.0	2930.9	39
60 min Winter	60.761	0.0	3645.7	64

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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	9.835	1.835	275.6	7.0	282.6	3024.0	Flood Risk
180 min Winter	9.815	1.815	273.5	6.9	280.5	2979.8	Flood Risk
240 min Winter	9.767	1.767	268.4	6.9	275.3	2874.2	Flood Risk
360 min Winter	9.632	1.632	254.3	6.6	261.0	2590.3	O K
480 min Winter	9.490	1.490	239.7	6.6	246.0	2303.2	O K
600 min Winter	9.358	1.358	226.1	6.6	232.2	2046.8	O K
720 min Winter	9.233	1.233	213.5	6.6	219.3	1815.2	O K
960 min Winter	9.008	1.008	191.1	6.6	196.4	1421.2	O K
1440 min Winter	8.650	0.650	156.3	6.6	162.8	853.5	O K
2160 min Winter	8.293	0.293	122.8	6.3	129.1	358.1	O K
2880 min Winter	8.094	0.094	104.5	3.6	108.1	110.6	O K
4320 min Winter	8.039	0.039	78.5	1.0	79.3	45.3	O K
5760 min Winter	8.031	0.031	62.3	0.8	62.8	36.0	O K
7200 min Winter	8.026	0.026	52.2	0.7	52.6	30.2	O K
8640 min Winter	8.023	0.023	45.1	0.6	45.4	26.2	O K
10080 min Winter	8.020	0.020	40.1	0.5	40.4	23.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	36.541	0.0	4384.9	108
180 min Winter	27.028	0.0	4865.0	144
240 min Winter	21.730	0.0	5215.2	182
360 min Winter	15.828	0.0	5698.2	256
480 min Winter	12.545	0.0	6021.4	328
600 min Winter	10.431	0.0	6258.5	398
720 min Winter	8.949	0.0	6442.9	466
960 min Winter	6.994	0.0	6713.6	598
1440 min Winter	4.908	0.0	7067.6	848
2160 min Winter	3.428	0.0	7404.6	1200
2880 min Winter	2.661	0.0	7663.5	1528
4320 min Winter	1.875	0.0	8098.4	2152
5760 min Winter	1.473	0.0	8481.6	2872
7200 min Winter	1.231	0.0	8864.8	3568
8640 min Winter	1.070	0.0	9240.9	4352
10080 min Winter	0.954	0.0	9612.8	5136

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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) 6.000

Time (mins) Area			Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)	From:	To:	(ha)
0	5	2.000	5	10	2.000	10	15	2.000

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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	1150.0	2.000	2312.8

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0111-7100-1900-7100
 Design Head (m) 1.900
 Design Flow (l/s) 7.1
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 111
 Invert Level (m) 8.000
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	7.1
Flush-Flo™	0.482	6.6
Kick-Flo®	0.991	5.2
Mean Flow over Head Range	-	5.9

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	3.8	1.200	5.7	3.000	8.8	7.000	13.2
0.200	5.8	1.400	6.2	3.500	9.5	7.500	13.6
0.300	6.4	1.600	6.5	4.000	10.1	8.000	14.0
0.400	6.6	1.800	6.9	4.500	10.7	8.500	14.4
0.500	6.6	2.000	7.3	5.000	11.2	9.000	14.8
0.600	6.5	2.200	7.6	5.500	11.7	9.500	15.2
0.800	6.2	2.400	7.9	6.000	12.2		
1.000	5.3	2.600	8.2	6.500	12.7		