Summary of Results for 2 year Return Period

Half Drain Time : 33 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	8.304	0.304	216.3	10.6	226.9	683.8	O K
60 min Summer	8.311	0.311	217.3	10.6	227.9	701.8	O K
120 min Summer	8.336	0.336	220.3	10.8	231.1	759.5	O K
180 min Summer	8.324	0.324	218.9	10.7	229.6	732.8	O K
240 min Summer	8.302	0.302	216.1	10.6	226.7	679.1	O K
360 min Summer	8.246	0.246	209.2	10.1	219.4	548.0	O K
480 min Summer	8.191	0.191	202.6	9.4	212.0	421.9	O K
600 min Summer	8.145	0.145	197.0	8.0	205.0	318.0	O K
720 min Summer	8.108	0.108	192.6	5.7	198.3	236.2	O K
960 min Summer	8.061	0.061	186.8	2.2	189.0	131.9	O K
1440 min Summer	8.040	0.040	148.9	1.0	149.9	87.3	O K
2160 min Summer	8.030	0.030	109.6	0.6	110.2	64.0	O K
2880 min Summer	8.024	0.024	89.2	0.4	89.6	51.8	O K
4320 min Summer	8.018	0.018	67.0	0.2	67.2	38.9	O K
5760 min Summer	8.015	0.015	54.1	0.1	54.2	31.7	O K
7200 min Summer	8.013	0.013	48.5	0.1	48.7	28.2	O K
8640 min Summer	8.012	0.012	43.0	0.1	43.1	24.6	O K
10080 min Summer	8.011	0.011	39.4	0.1	39.4	22.9	O K
30 min Winter	8.348	0.348	221.8	10.9	232.7	789.6	O K
60 min Winter	8.358	0.358	223.0	10.9	233.9	811.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	22.544	0.0	1022.2	34
60 min Summer	13.912	0.0	1261.9	52
120 min Summer	9.465	0.0	1717.5	86
180 min Summer	7.351	0.0	2001.1	120
240 min Summer	6.071	0.0	2203.7	154
360 min Summer	4.554	0.0	2479.3	218
480 min Summer	3.668	0.0	2662.5	278
600 min Summer	3.087	0.0	2801.5	338
720 min Summer	2.676	0.0	2913.5	394
960 min Summer	2.130	0.0	3092.4	504
1440 min Summer	1.537	0.0	3348.6	736
2160 min Summer	1.116	0.0	3645.9	1100
2880 min Summer	0.895	0.0	3900.4	1460
4320 min Summer	0.667	0.0	4360.8	2196
5760 min Summer	0.549	0.0	4781.3	2936
7200 min Summer	0.476	0.0	5187.8	3616
8640 min Summer	0.427	0.0	5579.9	4400
10080 min Summer	0.391	0.0	5964.8	5112
30 min Winter	22.544	0.0	1148.7	35
60 min Winter	13.912	0.0	1418.1	56

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	8.376	0.376	225.2	11.0	236.2	854.6	O K
180 min Winter	8.349	0.349	221.9	10.9	232.7	790.4	O K
240 min Winter	8.309	0.309	217.0	10.6	227.6	695.4	O K
360 min Winter	8.221	0.221	206.3	9.8	216.1	491.9	O K
480 min Winter	8.144	0.144	196.9	8.0	204.9	317.0	O K
600 min Winter	8.086	0.086	189.9	4.0	193.9	188.2	O K
720 min Winter	8.052	0.052	185.7	1.6	187.4	111.6	O K
960 min Winter	8.041	0.041	150.7	1.1	151.8	88.0	O K
1440 min Winter	8.030	0.030	109.6	0.8	110.2	63.8	O K
2160 min Winter	8.022	0.022	79.9	0.8	80.2	46.6	O K
2880 min Winter	8.018	0.018	65.1	0.8	65.3	37.8	O K
4320 min Winter	8.013	0.013	48.5	0.7	48.7	28.1	O K
5760 min Winter	8.011	0.011	39.4	2.0	39.4	23.2	O K
7200 min Winter	8.010	0.010	35.7	1.7	35.7	20.7	O K
8640 min Winter	8.009	0.009	32.0	2.5	32.1	18.5	O K
10080 min Winter	8.008	0.008	28.3	2.3	28.4	16.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	9.465	0.0	1929.8	92
180 min Winter	7.351	0.0	2248.6	130
240 min Winter	6.071	0.0	2476.1	164
360 min Winter	4.554	0.0	2785.7	230
480 min Winter	3.668	0.0	2991.8	288
600 min Winter	3.087	0.0	3147.7	342
720 min Winter	2.676	0.0	3273.8	382
960 min Winter	2.130	0.0	3474.7	496
1440 min Winter	1.537	0.0	3762.6	724
2160 min Winter	1.116	0.0	4096.9	1088
2880 min Winter	0.895	0.0	4382.9	1472
4320 min Winter	0.667	0.0	4900.4	2156
5760 min Winter	0.549	0.0	5373.1	2912
7200 min Winter	0.476	0.0	5828.6	3608
8640 min Winter	0.427	0.0	6270.0	4384
10080 min Winter	0.391	0.0	6702.2	5128

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) 10.200

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	5	3.400	5	10	3.400	10	15	3.400

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 (m²)	Depth (m)	Area (m²)
0.000	2150.0	2.000	3666.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0141-1130-1900-1130
Design Head (m)	1.900
Design Flow (l/s)	11.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	11.3
Flush-Flo™	0.556	11.3
Kick-Flo®	1.152	8.9
Mean Flow over Head Range	-	9.9

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	5.1	1.200	9.1	3.000	14.0	7.000	21.0
0.200	9.6	1.400	9.8	3.500	15.1	7.500	21.7
0.300	10.6	1.600	10.4	4.000	16.1	8.000	22.4
0.400	11.1	1.800	11.0	4.500	17.0	8.500	23.1
0.500	11.3	2.000	11.6	5.000	17.9	9.000	23.7
0.600	11.3	2.200	12.1	5.500	18.7	9.500	24.4
0.800	11.0	2.400	12.6	6.000	19.5		
1.000	10.2	2.600	13.1	6.500	20.3		

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

Half Drain Time : 66 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	8.652	0.652	259.5	11.3	270.7	1545.6	O K
60 min Summer	8.701	0.701	265.7	11.3	276.8	1673.2	O K
120 min Summer	8.718	0.718	267.8	11.3	278.9	1719.2	O K
180 min Summer	8.696	0.696	265.1	11.3	276.3	1661.7	O K
240 min Summer	8.663	0.663	260.9	11.3	272.2	1575.7	O K
360 min Summer	8.586	0.586	251.3	11.3	262.6	1376.2	O K
480 min Summer	8.507	0.507	241.4	11.3	252.6	1175.8	O K
600 min Summer	8.432	0.432	232.2	11.2	243.3	992.1	O K
720 min Summer	8.365	0.365	223.8	10.9	234.8	828.9	O K
960 min Summer	8.252	0.252	210.0	10.2	220.2	563.4	O K
1440 min Summer	8.109	0.109	192.7	5.8	198.5	238.9	O K
2160 min Summer	8.046	0.046	169.5	1.3	170.8	98.5	O K
2880 min Summer	8.036	0.036	133.9	0.8	134.7	78.4	O K
4320 min Summer	8.027	0.027	98.5	0.5	98.9	57.4	O K
5760 min Summer	8.022	0.022	79.9	0.3	80.2	46.7	O K
7200 min Summer	8.019	0.019	68.8	0.2	69.1	40.0	O K
8640 min Summer	8.017	0.017	61.4	0.2	61.6	35.7	O K
10080 min Summer	8.015	0.015	55.9	0.2	56.1	32.5	O K
30 min Winter	8.738	0.738	270.4	11.3	281.5	1772.7	O K
60 min Winter	8.802	0.802	278.5	11.3	289.5	1945.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	43.927	0.0	1992.8	36
60 min Summer	27.024	0.0	2452.2	60
120 min Summer	16.992	0.0	3084.1	94
180 min Summer	12.754	0.0	3472.5	128
240 min Summer	10.327	0.0	3748.8	162
360 min Summer	7.576	0.0	4125.6	230
480 min Summer	6.028	0.0	4377.1	294
600 min Summer	5.030	0.0	4565.2	358
720 min Summer	4.329	0.0	4714.8	420
960 min Summer	3.405	0.0	4944.1	538
1440 min Summer	2.420	0.0	5272.1	764
2160 min Summer	1.727	0.0	5643.2	1096
2880 min Summer	1.367	0.0	5954.3	1468
4320 min Summer	0.996	0.0	6509.0	2164
5760 min Summer	0.805	0.0	7010.6	2912
7200 min Summer	0.688	0.0	7493.3	3640
8640 min Summer	0.609	0.0	7960.5	4336
10080 min Summer	0.552	0.0	8417.9	5024
30 min Winter	43.927	0.0	2239.3	37
60 min Winter	27.024	0.0	2755.5	60

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	8.821	0.821	280.8	11.3	291.8	1994.9	O K
180 min Winter	8.785	0.785	276.3	11.3	287.3	1897.7	O K
240 min Winter	8.733	0.733	269.8	11.3	280.9	1759.6	O K
360 min Winter	8.616	0.616	255.0	11.3	266.3	1453.6	O K
480 min Winter	8.500	0.500	240.6	11.3	251.8	1160.5	O K
600 min Winter	8.395	0.395	227.6	11.1	238.6	902.7	O K
720 min Winter	8.303	0.303	216.3	10.6	226.9	682.6	O K
960 min Winter	8.159	0.159	198.7	8.8	207.5	350.7	O K
1440 min Winter	8.046	0.046	171.4	1.3	172.7	100.3	O K
2160 min Winter	8.033	0.033	122.7	0.9	123.4	72.3	O K
2880 min Winter	8.027	0.027	98.5	1.3	98.9	57.3	O K
4320 min Winter	8.020	0.020	72.5	0.9	72.8	42.1	O K
5760 min Winter	8.016	0.016	57.8	0.7	57.9	33.9	O K
7200 min Winter	8.014	0.014	50.4	1.5	50.5	29.2	O K
8640 min Winter	8.012	0.012	44.9	2.2	45.0	26.1	O K
10080 min Winter	8.011	0.011	41.2	2.0	41.3	23.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	16.992	0.0	3465.3	100
180 min Winter	12.754	0.0	3901.9	138
240 min Winter	10.327	0.0	4212.3	174
360 min Winter	7.576	0.0	4635.6	246
480 min Winter	6.028	0.0	4918.2	312
600 min Winter	5.030	0.0	5129.5	376
720 min Winter	4.329	0.0	5297.6	438
960 min Winter	3.405	0.0	5555.3	550
1440 min Winter	2.420	0.0	5923.7	738
2160 min Winter	1.727	0.0	6340.7	1104
2880 min Winter	1.367	0.0	6690.7	1464
4320 min Winter	0.996	0.0	7313.9	2192
5760 min Winter	0.805	0.0	7877.9	2888
7200 min Winter	0.688	0.0	8419.7	3656
8640 min Winter	0.609	0.0	8944.2	4376
10080 min Winter	0.552	0.0	9457.8	5112

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) 10.200

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	5	3.400	5	10	3.400	10	15	3.400

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 (m²)	Depth (m)	Area (m²)
0.000	2150.0	2.000	3666.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0141-1130-1900-1130
Design Head (m)	1.900
Design Flow (l/s)	11.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	11.3
Flush-Flo™	0.556	11.3
Kick-Flo®	1.152	8.9
Mean Flow over Head Range	-	9.9

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	5.1	1.200	9.1	3.000	14.0	7.000	21.0
0.200	9.6	1.400	9.8	3.500	15.1	7.500	21.7
0.300	10.6	1.600	10.4	4.000	16.1	8.000	22.4
0.400	11.1	1.800	11.0	4.500	17.0	8.500	23.1
0.500	11.3	2.000	11.6	5.000	17.9	9.000	23.7
0.600	11.3	2.200	12.1	5.500	18.7	9.500	24.4
0.800	11.0	2.400	12.6	6.000	19.5		
1.000	10.2	2.600	13.1	6.500	20.3		

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

Half Drain Time : 92 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	8.965	0.965	299.2	11.3	309.6	2395.5	O K
60 min Summer	9.067	1.067	312.4	11.3	322.1	2689.1	O K
120 min Summer	9.087	1.087	314.9	11.3	324.5	2746.2	O K
180 min Summer	9.059	1.059	311.4	11.3	321.2	2666.4	O K
240 min Summer	9.020	1.020	306.3	11.3	316.4	2551.8	O K
360 min Summer	8.930	0.930	294.8	11.3	305.4	2298.3	O K
480 min Summer	8.839	0.839	283.1	11.3	294.0	2044.6	O K
600 min Summer	8.751	0.751	272.0	11.3	283.1	1807.5	O K
720 min Summer	8.669	0.669	261.6	11.3	272.8	1590.4	O K
960 min Summer	8.523	0.523	243.4	11.3	254.7	1217.2	O K
1440 min Summer	8.303	0.303	216.2	10.6	226.8	682.0	O K
2160 min Summer	8.115	0.115	193.3	6.2	199.5	250.6	O K
2880 min Summer	8.049	0.049	180.8	1.5	182.3	105.1	O K
4320 min Summer	8.035	0.035	130.1	0.8	130.9	75.6	O K
5760 min Summer	8.028	0.028	104.0	0.5	104.6	60.7	O K
7200 min Summer	8.024	0.024	87.3	0.4	87.7	51.2	O K
8640 min Summer	8.021	0.021	78.1	0.3	78.4	45.5	O K
10080 min Summer	8.019	0.019	70.7	0.2	70.9	41.1	O K
30 min Winter	9.083	1.083	314.5	11.3	324.1	2735.8	O K
60 min Winter	9.207	1.207	330.5	11.3	339.6	3102.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	64.350	0.0	2919.8	38
60 min Summer	39.805	0.0	3612.5	62
120 min Summer	24.311	0.0	4414.0	98
180 min Summer	18.051	0.0	4916.0	132
240 min Summer	14.526	0.0	5273.6	166
360 min Summer	10.577	0.0	5760.0	236
480 min Summer	8.380	0.0	6085.0	302
600 min Summer	6.971	0.0	6327.0	368
720 min Summer	5.985	0.0	6518.6	432
960 min Summer	4.690	0.0	6810.3	556
1440 min Summer	3.312	0.0	7213.9	794
2160 min Summer	2.338	0.0	7640.5	1132
2880 min Summer	1.833	0.0	7987.6	1460
4320 min Summer	1.315	0.0	8595.6	2200
5760 min Summer	1.049	0.0	9141.8	2928
7200 min Summer	0.888	0.0	9673.3	3672
8640 min Summer	0.780	0.0	10189.9	4376
10080 min Summer	0.701	0.0	10696.5	5096
30 min Winter	64.350	0.0	3280.8	38
60 min Winter	39.805	0.0	4060.0	64

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	9.236	1.236	334.3	11.3	343.6	3192.5	O K
180 min Winter	9.201	1.201	329.8	11.3	338.9	3086.5	O K
240 min Winter	9.144	1.144	322.3	11.3	331.3	2913.5	O K
360 min Winter	9.014	1.014	305.5	11.3	315.6	2534.4	O K
480 min Winter	8.882	0.882	288.7	11.3	299.4	2163.6	O K
600 min Winter	8.758	0.758	272.9	11.3	283.9	1825.5	O K
720 min Winter	8.644	0.644	258.5	11.3	269.7	1524.5	O K
960 min Winter	8.447	0.447	233.9	11.2	245.1	1027.9	O K
1440 min Winter	8.172	0.172	200.2	9.1	209.4	378.6	O K
2160 min Winter	8.045	0.045	165.8	1.3	167.0	97.4	O K
2880 min Winter	8.035	0.035	130.1	0.9	130.9	76.8	O K
4320 min Winter	8.026	0.026	94.8	1.2	95.2	55.1	O K
5760 min Winter	8.021	0.021	76.2	1.0	76.5	44.4	O K
7200 min Winter	8.018	0.018	65.1	0.8	65.3	37.9	O K
8640 min Winter	8.015	0.015	55.9	0.7	56.1	32.9	O K
10080 min Winter	8.014	0.014	50.4	1.9	50.5	29.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	24.311	0.0	4959.6	104
180 min Winter	18.051	0.0	5523.6	142
240 min Winter	14.526	0.0	5926.6	180
360 min Winter	10.577	0.0	6471.9	254
480 min Winter	8.380	0.0	6837.0	324
600 min Winter	6.971	0.0	7109.1	392
720 min Winter	5.985	0.0	7324.5	456
960 min Winter	4.690	0.0	7652.5	582
1440 min Winter	3.312	0.0	8105.4	808
2160 min Winter	2.338	0.0	8585.4	1104
2880 min Winter	1.833	0.0	8975.1	1472
4320 min Winter	1.315	0.0	9658.3	2216
5760 min Winter	1.049	0.0	10271.1	2888
7200 min Winter	0.888	0.0	10869.1	3632
8640 min Winter	0.780	0.0	11449.2	4320
10080 min Winter	0.701	0.0	12018.8	5088

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) 10.200

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	5	3.400	5	10	3.400	10	15	3.400

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 (m²)	Depth (m)	Area (m²)
0.000	2150.0	2.000	3666.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0141-1130-1900-1130
Design Head (m)	1.900
Design Flow (l/s)	11.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	11.3
Flush-Flo™	0.556	11.3
Kick-Flo®	1.152	8.9
Mean Flow over Head Range	-	9.9

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	5.1	1.200	9.1	3.000	14.0	7.000	21.0
0.200	9.6	1.400	9.8	3.500	15.1	7.500	21.7
0.300	10.6	1.600	10.4	4.000	16.1	8.000	22.4
0.400	11.1	1.800	11.0	4.500	17.0	8.500	23.1
0.500	11.3	2.000	11.6	5.000	17.9	9.000	23.7
0.600	11.3	2.200	12.1	5.500	18.7	9.500	24.4
0.800	11.0	2.400	12.6	6.000	19.5		
1.000	10.2	2.600	13.1	6.500	20.3		

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

Half Drain Time : 125 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	9.433	1.433	360.2	11.3	370.1	3805.3	O K
60 min Summer	9.613	1.613	384.1	11.3	394.6	4393.6	O K
120 min Summer	9.661	1.661	390.6	11.3	401.2	4554.6	O K
180 min Summer	9.645	1.645	388.4	11.3	399.0	4499.5	O K
240 min Summer	9.606	1.606	383.3	11.3	393.7	4371.0	O K
360 min Summer	9.508	1.508	370.2	11.3	380.3	4047.8	O K
480 min Summer	9.407	1.407	356.8	11.3	366.6	3723.0	O K
600 min Summer	9.308	1.308	343.8	11.3	353.2	3413.5	O K
720 min Summer	9.213	1.213	331.3	11.3	340.5	3122.4	O K
960 min Summer	9.036	1.036	308.3	11.3	318.3	2597.7	O K
1440 min Summer	8.741	0.741	270.8	11.3	281.9	1781.1	O K
2160 min Summer	8.426	0.426	231.3	11.1	242.5	975.8	O K
2880 min Summer	8.223	0.223	206.4	9.9	216.3	495.9	O K
4320 min Summer	8.050	0.050	184.6	1.5	186.1	107.4	O K
5760 min Summer	8.039	0.039	145.1	1.0	146.1	84.7	O K
7200 min Summer	8.033	0.033	122.7	0.7	123.4	71.5	O K
8640 min Summer	8.029	0.029	105.9	0.5	106.4	61.8	O K
10080 min Summer	8.026	0.026	94.8	0.4	95.2	55.3	O K
30 min Winter	9.593	1.593	381.5	11.3	391.9	4328.2	O K
60 min Winter	9.800	1.800	409.4	11.3	420.4	5033.8	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Summer	97.695	0.0	4434.4	39
60 min Summer	60.761	0.0	5515.9	64
120 min Summer	36.541	0.0	6634.4	106
180 min Summer	27.028	0.0	7360.8	138
240 min Summer	21.730	0.0	7890.6	172
360 min Summer	15.828	0.0	8621.4	242
480 min Summer	12.545	0.0	9110.5	310
600 min Summer	10.431	0.0	9469.1	378
720 min Summer	8.949	0.0	9748.2	444
960 min Summer	6.994	0.0	10157.6	572
1440 min Summer	4.908	0.0	10692.3	822
2160 min Summer	3.428	0.0	11202.8	1176
2880 min Summer	2.661	0.0	11594.7	1528
4320 min Summer	1.875	0.0	12252.8	2180
5760 min Summer	1.473	0.0	12832.3	2912
7200 min Summer	1.231	0.0	13412.5	3656
8640 min Summer	1.070	0.0	13980.7	4312
10080 min Summer	0.954	0.0	14544.9	4984
30 min Winter	97.695	0.0	4982.5	39
60 min Winter	60.761	0.0	6197.7	64

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	9.869	1.869	418.7	11.3	429.9	5275.8	Flood Risk
180 min Winter	9.849	1.849	416.0	11.3	427.2	5206.1	Flood Risk
240 min Winter	9.803	1.803	409.7	11.3	420.7	5042.7	Flood Risk
360 min Winter	9.667	1.667	391.4	11.3	402.0	4574.8	O K
480 min Winter	9.524	1.524	372.3	11.3	382.5	4099.9	O K
600 min Winter	9.387	1.387	354.1	11.3	363.8	3658.5	O K
720 min Winter	9.256	1.256	336.9	11.3	346.2	3250.7	O K
960 min Winter	9.014	1.014	305.5	11.3	315.6	2534.6	O K
1440 min Winter	8.627	0.627	256.4	11.3	267.6	1480.3	O K
2160 min Winter	8.242	0.242	208.8	10.1	218.8	539.4	O K
2880 min Winter	8.055	0.055	186.2	1.8	188.0	120.0	O K
4320 min Winter	8.036	0.036	133.9	1.7	134.7	78.0	O K
5760 min Winter	8.029	0.029	105.9	1.4	106.4	61.6	O K
7200 min Winter	8.024	0.024	89.2	1.1	89.6	52.0	O K
8640 min Winter	8.021	0.021	78.1	1.0	78.4	45.5	O K
10080 min Winter	8.019	0.019	68.8	0.9	69.1	40.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	36.541	0.0	7454.3	116
180 min Winter	27.028	0.0	8270.6	146
240 min Winter	21.730	0.0	8865.8	186
360 min Winter	15.828	0.0	9687.0	260
480 min Winter	12.545	0.0	10236.5	334
600 min Winter	10.431	0.0	10639.4	404
720 min Winter	8.949	0.0	10953.0	474
960 min Winter	6.994	0.0	11413.0	606
1440 min Winter	4.908	0.0	12014.1	858
2160 min Winter	3.428	0.0	12587.8	1200
2880 min Winter	2.661	0.0	13027.7	1496
4320 min Winter	1.875	0.0	13767.5	2192
5760 min Winter	1.473	0.0	14418.7	2936
7200 min Winter	1.231	0.0	15070.5	3616
8640 min Winter	1.070	0.0	15708.9	4360
10080 min Winter	0.954	0.0	16341.8	5056

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) 10.200

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	5	3.400	5	10	3.400	10	15	3.400

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 (m²)	Depth (m)	Area (m²)
0.000	2150.0	2.000	3666.0

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Unit Reference	MD-SHE-0141-1130-1900-1130
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Design Flow (l/s)	11.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	8.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
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Mean Flow over Head Range	-	9.9

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Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	1.200	9.1	3.000	14.0	7.000	21.0
0.200	9.6	1.400	9.8	3.500	15.1	7.500	21.7
0.300	10.6	1.600	10.4	4.000	16.1	8.000	22.4
0.400	11.1	1.800	11.0	4.500	17.0	8.500	23.1
0.500	11.3	2.000	11.6	5.000	17.9	9.000	23.7
0.600	11.3	2.200	12.1	5.500	18.7	9.500	24.4
0.800	11.0	2.400	12.6	6.000	19.5		
1.000	10.2	2.600	13.1	6.500	20.3		