


Polypipe Building Products Ltd		Page 1
Broomhouse Lane Edlington Doncaster DN12 1ES	79030 119 Bristol Road Frampton (15m x 15m x 0.8m)	
Date 30/05/2023 File	Designed by SHH Checked by	

Micro Drainage Source Control 2016.1

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 743 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
15 min Summer	98.493	0.293	0.0	2.0	2.0	62.6	O K
30 min Summer	98.590	0.390	0.0	2.0	2.0	83.3	O K
60 min Summer	98.691	0.491	0.0	2.0	2.0	104.9	O K
120 min Summer	98.788	0.588	0.0	2.0	2.0	125.7	O K
180 min Summer	98.835	0.635	0.0	2.0	2.0	135.6	O K
240 min Summer	98.860	0.660	0.0	2.0	2.0	141.0	O K
360 min Summer	98.886	0.686	0.0	2.0	2.0	146.7	O K
480 min Summer	98.894	0.694	0.0	2.0	2.0	148.4	O K
600 min Summer	98.891	0.691	0.0	2.0	2.0	147.7	O K
720 min Summer	98.885	0.685	0.0	2.0	2.0	146.5	O K
960 min Summer	98.871	0.671	0.0	2.0	2.0	143.4	O K
1440 min Summer	98.837	0.637	0.0	2.0	2.0	136.2	O K
2160 min Summer	98.783	0.583	0.0	2.0	2.0	124.6	O K
2880 min Summer	98.727	0.527	0.0	2.0	2.0	112.6	O K
4320 min Summer	98.605	0.405	0.0	2.0	2.0	86.5	O K
5760 min Summer	98.510	0.310	0.0	2.0	2.0	66.2	O K
7200 min Summer	98.438	0.238	0.0	2.0	2.0	50.9	O K
8640 min Summer	98.387	0.187	0.0	2.0	2.0	39.9	O K
10080 min Summer	98.350	0.150	0.0	1.9	1.9	32.0	O K
15 min Winter	98.528	0.328	0.0	2.0	2.0	70.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	136.560	0.0	62.5	19
30 min Summer	91.729	0.0	84.1	34
60 min Summer	58.739	0.0	109.4	64
120 min Summer	36.254	0.0	135.1	122
180 min Summer	26.900	0.0	150.3	182
240 min Summer	21.623	0.0	161.1	242
360 min Summer	15.914	0.0	177.8	362
480 min Summer	12.782	0.0	190.4	480
600 min Summer	10.774	0.0	200.6	584
720 min Summer	9.365	0.0	209.1	630
960 min Summer	7.499	0.0	223.0	760
1440 min Summer	5.473	0.0	243.1	1024
2160 min Summer	3.985	0.0	268.5	1444
2880 min Summer	3.178	0.0	285.4	1848
4320 min Summer	2.306	0.0	310.3	2596
5760 min Summer	1.834	0.0	329.8	3336
7200 min Summer	1.536	0.0	345.3	4032
8640 min Summer	1.330	0.0	358.6	4672
10080 min Summer	1.178	0.0	370.0	5344
15 min Winter	136.560	0.0	70.0	19

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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
30 min Winter	98.638	0.438	0.0	2.0	2.0	93.6	O K
60 min Winter	98.753	0.553	0.0	2.0	2.0	118.2	O K
120 min Winter	98.863	0.663	0.0	2.0	2.0	141.7	O K
180 min Winter	98.917	0.717	0.0	2.0	2.0	153.3	O K
240 min Winter	98.947	0.747	0.0	2.0	2.0	159.8	O K
360 min Winter	98.982	0.782	0.0	2.0	2.0	167.3	O K
480 min Winter	98.996	0.796	0.0	2.0	2.0	170.2	O K
600 min Winter	98.998	0.798	0.0	2.0	2.0	170.6	O K
720 min Winter	98.993	0.793	0.0	2.0	2.0	169.4	O K
960 min Winter	98.971	0.771	0.0	2.0	2.0	164.9	O K
1440 min Winter	98.928	0.728	0.0	2.0	2.0	155.6	O K
2160 min Winter	98.851	0.651	0.0	2.0	2.0	139.1	O K
2880 min Winter	98.769	0.569	0.0	2.0	2.0	121.6	O K
4320 min Winter	98.581	0.381	0.0	2.0	2.0	81.5	O K
5760 min Winter	98.447	0.247	0.0	2.0	2.0	52.8	O K
7200 min Winter	98.363	0.163	0.0	1.9	1.9	34.9	O K
8640 min Winter	98.315	0.115	0.0	1.8	1.8	24.7	O K
10080 min Winter	98.291	0.091	0.0	1.7	1.7	19.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
30 min Winter	91.729	0.0	94.2	33
60 min Winter	58.739	0.0	122.5	62
120 min Winter	36.254	0.0	151.3	120
180 min Winter	26.900	0.0	168.4	180
240 min Winter	21.623	0.0	180.4	238
360 min Winter	15.914	0.0	199.2	352
480 min Winter	12.782	0.0	213.2	466
600 min Winter	10.774	0.0	224.5	576
720 min Winter	9.365	0.0	234.0	682
960 min Winter	7.499	0.0	249.4	798
1440 min Winter	5.473	0.0	270.9	1094
2160 min Winter	3.985	0.0	300.7	1556
2880 min Winter	3.178	0.0	319.6	2016
4320 min Winter	2.306	0.0	347.6	2768
5760 min Winter	1.834	0.0	369.4	3456
7200 min Winter	1.536	0.0	386.8	4040
8640 min Winter	1.330	0.0	401.8	4672
10080 min Winter	1.178	0.0	414.6	5240

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Micro Drainage	Source Control 2016.1
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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	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.250

Time (mins)	Area
From: To:	(ha)
0	4 0.250

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Model Details

Storage is Online Cover Level (m) 100.000

Cellular Storage Structure

Invert Level (m) 98.200 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	225.0	225.0	0.900	0.0	273.0
0.800	225.0	273.0			

Hydro-Brake Optimum® Outflow Control

Unit Reference MD-SHE-0070-2000-0800-2000
 Design Head (m) 0.800
 Design Flow (l/s) 2.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 70
 Invert Level (m) 98.200
 Minimum Outlet Pipe Diameter (mm) 100
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.0
Flush-Flo™	0.240	2.0
Kick-Flo®	0.504	1.6
Mean Flow over Head Range	-	1.7

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	1.8	1.200	2.4	3.000	3.7	7.000	5.5
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	6.0
0.500	1.6	2.000	3.0	5.000	4.7	9.000	6.2
0.600	1.8	2.200	3.2	5.500	4.9	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.1		
1.000	2.2	2.600	3.4	6.500	5.3		