

11 Broomhead Road
Wombell
Barnsley S73 0SA



Date 04/08/2025 11:53
File Attenuation calc.SRCX

Designed by shaun
Checked by

CADS Source Control 2020.1.3

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

Half Drain Time : 6 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E (l/s)	Max Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	70.703	0.353	0.0	3.5		3.5	1.7	O K
30 min Summer	70.704	0.354	0.0	3.5		3.5	1.7	O K
60 min Summer	70.617	0.267	0.0	3.5		3.5	1.3	O K
120 min Summer	70.410	0.060	0.0	3.5		3.5	0.3	O K
180 min Summer	70.350	0.000	0.0	3.4		3.4	0.0	O K
240 min Summer	70.350	0.000	0.0	2.7		2.7	0.0	O K
360 min Summer	70.350	0.000	0.0	2.0		2.0	0.0	O K
480 min Summer	70.350	0.000	0.0	1.6		1.6	0.0	O K
600 min Summer	70.350	0.000	0.0	1.4		1.4	0.0	O K
720 min Summer	70.350	0.000	0.0	1.2		1.2	0.0	O K
960 min Summer	70.350	0.000	0.0	0.9		0.9	0.0	O K
1440 min Summer	70.350	0.000	0.0	0.7		0.7	0.0	O K
2160 min Summer	70.350	0.000	0.0	0.5		0.5	0.0	O K
2880 min Summer	70.350	0.000	0.0	0.4		0.4	0.0	O K
4320 min Summer	70.350	0.000	0.0	0.3		0.3	0.0	O K
5760 min Summer	70.350	0.000	0.0	0.2		0.2	0.0	O K
7200 min Summer	70.350	0.000	0.0	0.2		0.2	0.0	O K
8640 min Summer	70.350	0.000	0.0	0.2		0.2	0.0	O K
10080 min Summer	70.350	0.000	0.0	0.1		0.1	0.0	O K
15 min Winter	70.763	0.413	0.0	3.5		3.5	2.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	126.478	0.0	3.9	13
30 min Summer	84.424	0.0	5.3	21
60 min Summer	53.779	0.0	7.0	38
120 min Summer	33.103	0.0	8.4	66
180 min Summer	24.574	0.0	9.4	0
240 min Summer	19.761	0.0	10.1	0
360 min Summer	14.466	0.0	11.1	0
480 min Summer	11.596	0.0	11.8	0
600 min Summer	9.760	0.0	12.4	0
720 min Summer	8.474	0.0	13.0	0
960 min Summer	6.774	0.0	13.8	0
1440 min Summer	4.933	0.0	15.1	0
2160 min Summer	3.584	0.0	16.5	0
2880 min Summer	2.854	0.0	17.5	0
4320 min Summer	2.067	0.0	19.0	0
5760 min Summer	1.642	0.0	20.1	0
7200 min Summer	1.373	0.0	21.0	0
8640 min Summer	1.186	0.0	21.8	0
10080 min Summer	1.048	0.0	22.4	0
15 min Winter	126.478	0.0	4.5	14

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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 Winter	70.739	0.389	0.0	3.5	3.5	1.8	O K
60 min Winter	70.571	0.221	0.0	3.5	3.5	1.0	O K
120 min Winter	70.350	0.000	0.0	3.3	3.3	0.0	O K
180 min Winter	70.350	0.000	0.0	2.5	2.5	0.0	O K
240 min Winter	70.350	0.000	0.0	2.0	2.0	0.0	O K
360 min Winter	70.350	0.000	0.0	1.5	1.5	0.0	O K
480 min Winter	70.350	0.000	0.0	1.2	1.2	0.0	O K
600 min Winter	70.350	0.000	0.0	1.0	1.0	0.0	O K
720 min Winter	70.350	0.000	0.0	0.9	0.9	0.0	O K
960 min Winter	70.350	0.000	0.0	0.7	0.7	0.0	O K
1440 min Winter	70.350	0.000	0.0	0.5	0.5	0.0	O K
2160 min Winter	70.350	0.000	0.0	0.4	0.4	0.0	O K
2880 min Winter	70.350	0.000	0.0	0.3	0.3	0.0	O K
4320 min Winter	70.350	0.000	0.0	0.2	0.2	0.0	O K
5760 min Winter	70.350	0.000	0.0	0.2	0.2	0.0	O K
7200 min Winter	70.350	0.000	0.0	0.1	0.1	0.0	O K
8640 min Winter	70.350	0.000	0.0	0.1	0.1	0.0	O K
10080 min Winter	70.350	0.000	0.0	0.1	0.1	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
30 min Winter	84.424	0.0	6.0	23
60 min Winter	53.779	0.0	7.6	40
120 min Winter	33.103	0.0	9.5	0
180 min Winter	24.574	0.0	10.5	0
240 min Winter	19.761	0.0	11.3	0
360 min Winter	14.466	0.0	12.4	0
480 min Winter	11.596	0.0	13.2	0
600 min Winter	9.760	0.0	13.9	0
720 min Winter	8.474	0.0	14.5	0
960 min Winter	6.774	0.0	15.5	0
1440 min Winter	4.933	0.0	16.9	0
2160 min Winter	3.584	0.0	18.4	0
2880 min Winter	2.854	0.0	19.6	0
4320 min Winter	2.067	0.0	21.3	0
5760 min Winter	1.642	0.0	22.5	0
7200 min Winter	1.373	0.0	23.5	0
8640 min Winter	1.186	0.0	24.4	0
10080 min Winter	1.048	0.0	25.1	0

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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)	19.000	Shortest Storm (mins)	15
Ratio R	0.365	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.017

Time (mins)	Area
From:	To: (ha)
0	4 0.017

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Model Details

Storage is Online Cover Level (m) 71.250

Cellular Storage Structure

Invert Level (m) 70.350
 Infiltration Coefficient Base (m/hr) 0.00000
 Infiltration Coefficient Side (m/hr) 0.00000
 Safety Factor 1.0
 Porosity 0.95

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	5.0	5.0	0.500	0.0	8.6
0.400	5.0	8.6			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0095-3500-0550-3500
 Design Head (m) 0.550
 Design Flow (l/s) 3.5
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 95
 Invert Level (m) 70.200
 Minimum Outlet Pipe Diameter (mm) 150
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.550	3.5
Flush-Flo™	0.172	3.5
Kick-Flo®	0.388	3.0
Mean Flow over Head Range	-	3.0

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)						
0.100	3.1	1.200	5.0	3.000	7.7	7.000	11.6
0.200	3.5	1.400	5.4	3.500	8.3	7.500	12.0
0.300	3.3	1.600	5.7	4.000	8.8	8.000	12.4
0.400	3.0	1.800	6.1	4.500	9.3	8.500	12.7
0.500	3.3	2.000	6.4	5.000	9.8	9.000	13.1
0.600	3.6	2.200	6.7	5.500	10.3	9.500	13.5
0.800	4.2	2.400	6.9	6.000	10.7		
1.000	4.6	2.600	7.2	6.500	11.1		