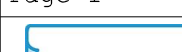




**1 in 100 Year + 40% CC Surface Water
Attenuation Calculations
Morello Avenue, Uxbridge
Landmark Builders Ltd
20th April 2021**

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Unit 6 Neepsend Triangle Business 1 Burton Road Sheffield S3 8BW	Morello Avenue, Uxbridge Surface Water Attenuation Calculations	
Date 20/04/2021 File SW Attenuation.SRCX	Designed by S. Griffiths Checked by S. Griffiths	
XP Solutions	Source Control 2017.1.2	

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

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
15 min Summer	9.324	0.324	0.0	1.0	1.0	2.8	O K
30 min Summer	9.378	0.378	0.0	1.1	1.1	3.3	O K
60 min Summer	9.400	0.400	0.0	1.2	1.2	3.5	O K
120 min Summer	9.377	0.377	0.0	1.1	1.1	3.3	O K
180 min Summer	9.341	0.341	0.0	1.1	1.1	3.0	O K
240 min Summer	9.306	0.306	0.0	1.0	1.0	2.7	O K
360 min Summer	9.250	0.250	0.0	0.9	0.9	2.2	O K
480 min Summer	9.209	0.209	0.0	0.8	0.8	1.8	O K
600 min Summer	9.178	0.178	0.0	0.8	0.8	1.6	O K
720 min Summer	9.154	0.154	0.0	0.7	0.7	1.3	O K
960 min Summer	9.119	0.119	0.0	0.6	0.6	1.0	O K
1440 min Summer	9.080	0.080	0.0	0.5	0.5	0.7	O K
2160 min Summer	9.053	0.053	0.0	0.4	0.4	0.5	O K
2880 min Summer	9.042	0.042	0.0	0.3	0.3	0.4	O K
4320 min Summer	9.033	0.033	0.0	0.2	0.2	0.3	O K
5760 min Summer	9.029	0.029	0.0	0.2	0.2	0.2	O K
7200 min Summer	9.026	0.026	0.0	0.1	0.1	0.2	O K
8640 min Summer	9.024	0.024	0.0	0.1	0.1	0.2	O K
10080 min Summer	9.022	0.022	0.0	0.1	0.1	0.2	O K
15 min Winter	9.324	0.324	0.0	1.0	1.0	2.8	O K
30 min Winter	9.379	0.379	0.0	1.1	1.1	3.3	O K
60 min Winter	9.392	0.392	0.0	1.2	1.2	3.4	O K
120 min Winter	9.353	0.353	0.0	1.1	1.1	3.1	O K
180 min Winter	9.302	0.302	0.0	1.0	1.0	2.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.274	0.0	3.5	17
30 min Summer	90.745	0.0	4.5	27
60 min Summer	56.713	0.0	5.7	44
120 min Summer	34.232	0.0	6.8	78
180 min Summer	25.134	0.0	7.5	112
240 min Summer	20.064	0.0	8.0	144
360 min Summer	14.571	0.0	8.7	206
480 min Summer	11.609	0.0	9.3	268
600 min Summer	9.726	0.0	9.7	328
720 min Summer	8.413	0.0	10.1	388
960 min Summer	6.687	0.0	10.7	508
1440 min Summer	4.831	0.0	11.6	748
2160 min Summer	3.484	0.0	12.5	1104
2880 min Summer	2.760	0.0	13.2	1468
4320 min Summer	1.985	0.0	14.3	2164
5760 min Summer	1.570	0.0	15.1	2936
7200 min Summer	1.308	0.0	15.7	3568
8640 min Summer	1.126	0.0	16.2	4408
10080 min Summer	0.992	0.0	16.7	5048
15 min Winter	138.274	0.0	3.5	17
30 min Winter	90.745	0.0	4.5	28
60 min Winter	56.713	0.0	5.7	46
120 min Winter	34.232	0.0	6.8	84
180 min Winter	25.134	0.0	7.5	118

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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 E Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	9.258	0.258	0.0	0.9	0.9	2.3	O K
360 min Winter	9.193	0.193	0.0	0.8	0.8	1.7	O K
480 min Winter	9.150	0.150	0.0	0.7	0.7	1.3	O K
600 min Winter	9.121	0.121	0.0	0.6	0.6	1.1	O K
720 min Winter	9.099	0.099	0.0	0.5	0.5	0.9	O K
960 min Winter	9.073	0.073	0.0	0.5	0.5	0.6	O K
1440 min Winter	9.047	0.047	0.0	0.3	0.3	0.4	O K
2160 min Winter	9.036	0.036	0.0	0.2	0.2	0.3	O K
2880 min Winter	9.031	0.031	0.0	0.2	0.2	0.3	O K
4320 min Winter	9.025	0.025	0.0	0.1	0.1	0.2	O K
5760 min Winter	9.022	0.022	0.0	0.1	0.1	0.2	O K
7200 min Winter	9.019	0.019	0.0	0.1	0.1	0.2	O K
8640 min Winter	9.018	0.018	0.0	0.1	0.1	0.2	O K
10080 min Winter	9.017	0.017	0.0	0.1	0.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	20.064	0.0	8.0	150
360 min Winter	14.571	0.0	8.7	214
480 min Winter	11.609	0.0	9.3	274
600 min Winter	9.726	0.0	9.7	334
720 min Winter	8.413	0.0	10.1	394
960 min Winter	6.687	0.0	10.7	510
1440 min Winter	4.831	0.0	11.6	748
2160 min Winter	3.484	0.0	12.5	1100
2880 min Winter	2.760	0.0	13.2	1468
4320 min Winter	1.985	0.0	14.3	2204
5760 min Winter	1.570	0.0	15.1	2840
7200 min Winter	1.308	0.0	15.7	3632
8640 min Winter	1.126	0.0	16.2	4376
10080 min Winter	0.992	0.0	16.7	5080

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.401	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.010

Time (mins)	Area
From:	To: (ha)

0	5	0.010
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Model Details

Storage is Online Cover Level (m) 10.000

Cellular Storage Structure

Invert Level (m) 9.000 Safety Factor 1.0
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)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	9.2	9.2	0.400	9.2	23.9	0.401	0.0	23.9

Orifice Outflow Control

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 9.000