

48 West End
Westbury
Wiltshire, BA13 3JG

LSHTM
Blue Roof 1



Date 05/10/2021
File Cascade.CASX

Designed by Peter White
Checked by

Innovyze

Source Control 2020.1.3

Cascade Summary of Results for Bluerroof 1.SRCX

Upstream Outflow To Overflow To Structures

(None) Tank.SRCX (None)

Half Drain Time : 211 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
15 min Summer	99.845	0.045	0.0	0.5	0.5	8.1	O K
30 min Summer	99.857	0.057	0.0	0.6	0.6	10.2	O K
60 min Summer	99.866	0.066	0.0	0.7	0.7	11.9	O K
120 min Summer	99.871	0.071	0.0	0.8	0.8	12.9	O K
180 min Summer	99.873	0.073	0.0	0.8	0.8	13.1	O K
240 min Summer	99.873	0.073	0.0	0.8	0.8	13.1	O K
360 min Summer	99.872	0.072	0.0	0.8	0.8	13.0	O K
480 min Summer	99.871	0.071	0.0	0.8	0.8	12.8	O K
600 min Summer	99.869	0.069	0.0	0.7	0.7	12.5	O K
720 min Summer	99.867	0.067	0.0	0.7	0.7	12.1	O K
960 min Summer	99.864	0.064	0.0	0.7	0.7	11.5	O K
1440 min Summer	99.857	0.057	0.0	0.6	0.6	10.3	O K
2160 min Summer	99.850	0.050	0.0	0.5	0.5	9.1	O K
2880 min Summer	99.846	0.046	0.0	0.5	0.5	8.2	O K
4320 min Summer	99.839	0.039	0.0	0.4	0.4	7.1	O K
5760 min Summer	99.835	0.035	0.0	0.3	0.3	6.3	O K
7200 min Summer	99.832	0.032	0.0	0.3	0.3	5.7	O K
8640 min Summer	99.829	0.029	0.0	0.2	0.2	5.2	O K
10080 min Summer	99.827	0.027	0.0	0.2	0.2	4.9	O K
15 min Winter	99.850	0.050	0.0	0.5	0.5	9.1	O K
30 min Winter	99.863	0.063	0.0	0.7	0.7	11.4	O K
60 min Winter	99.874	0.074	0.0	0.8	0.8	13.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	148.305	0.0	7.2	18
30 min Summer	95.717	0.0	9.6	33
60 min Summer	58.745	0.0	12.6	62
120 min Summer	34.828	0.0	15.1	116
180 min Summer	25.326	0.0	16.5	142
240 min Summer	20.093	0.0	17.5	174
360 min Summer	14.471	0.0	18.9	242
480 min Summer	11.463	0.0	20.0	310
600 min Summer	9.561	0.0	20.8	376
720 min Summer	8.240	0.0	21.5	442
960 min Summer	6.513	0.0	22.7	570
1440 min Summer	4.670	0.0	24.3	822
2160 min Summer	3.343	0.0	26.7	1192
2880 min Summer	2.635	0.0	28.0	1560
4320 min Summer	1.882	0.0	29.7	2292
5760 min Summer	1.481	0.0	31.8	3048
7200 min Summer	1.230	0.0	32.9	3752
8640 min Summer	1.056	0.0	33.8	4496
10080 min Summer	0.928	0.0	34.4	5240
15 min Winter	148.305	0.0	8.2	18
30 min Winter	95.717	0.0	10.9	32
60 min Winter	58.745	0.0	14.2	60

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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 (m³)	Status
120 min Winter	99.881	0.081	0.0	0.8	0.8	14.6	O K
180 min Winter	99.881	0.081	0.0	0.8	0.8	14.7	O K
240 min Winter	99.881	0.081	0.0	0.8	0.8	14.6	O K
360 min Winter	99.879	0.079	0.0	0.8	0.8	14.3	O K
480 min Winter	99.876	0.076	0.0	0.8	0.8	13.8	O K
600 min Winter	99.873	0.073	0.0	0.8	0.8	13.2	O K
720 min Winter	99.870	0.070	0.0	0.7	0.7	12.6	O K
960 min Winter	99.864	0.064	0.0	0.7	0.7	11.6	O K
1440 min Winter	99.856	0.056	0.0	0.6	0.6	10.0	O K
2160 min Winter	99.847	0.047	0.0	0.5	0.5	8.6	O K
2880 min Winter	99.842	0.042	0.0	0.4	0.4	7.6	O K
4320 min Winter	99.835	0.035	0.0	0.3	0.3	6.3	O K
5760 min Winter	99.831	0.031	0.0	0.2	0.2	5.5	O K
7200 min Winter	99.827	0.027	0.0	0.2	0.2	4.9	O K
8640 min Winter	99.825	0.025	0.0	0.2	0.2	4.5	O K
10080 min Winter	99.823	0.023	0.0	0.2	0.2	4.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
120 min Winter	34.828	0.0	16.9	116
180 min Winter	25.326	0.0	18.5	148
240 min Winter	20.093	0.0	19.6	184
360 min Winter	14.471	0.0	21.2	260
480 min Winter	11.463	0.0	22.4	334
600 min Winter	9.561	0.0	23.4	404
720 min Winter	8.240	0.0	24.2	472
960 min Winter	6.513	0.0	25.5	606
1440 min Winter	4.670	0.0	27.3	852
2160 min Winter	3.343	0.0	29.9	1236
2880 min Winter	2.635	0.0	31.4	1612
4320 min Winter	1.882	0.0	33.4	2336
5760 min Winter	1.481	0.0	35.6	3112
7200 min Winter	1.230	0.0	36.9	3816
8640 min Winter	1.056	0.0	37.9	4504
10080 min Winter	0.928	0.0	38.7	5128

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Cascade Rainfall Details for Bluerroof 1.SRCX

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)	20.700	Shortest Storm (mins)	15
Ratio R	0.440	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.030

Time (mins)	Area
From: To:	(ha)
0	4 0.030

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Cascade Model Details for Bluerroof 1.SRCX

Storage is Online Cover Level (m) 100.000

Cellular Storage Structure

Invert Level (m) 99.800 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)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	190.0	0.0	0.100	190.0	0.0	0.101	0.0	0.0

Orifice Outflow Control

Diameter (m) 0.040 Discharge Coefficient 0.600 Invert Level (m) 99.800