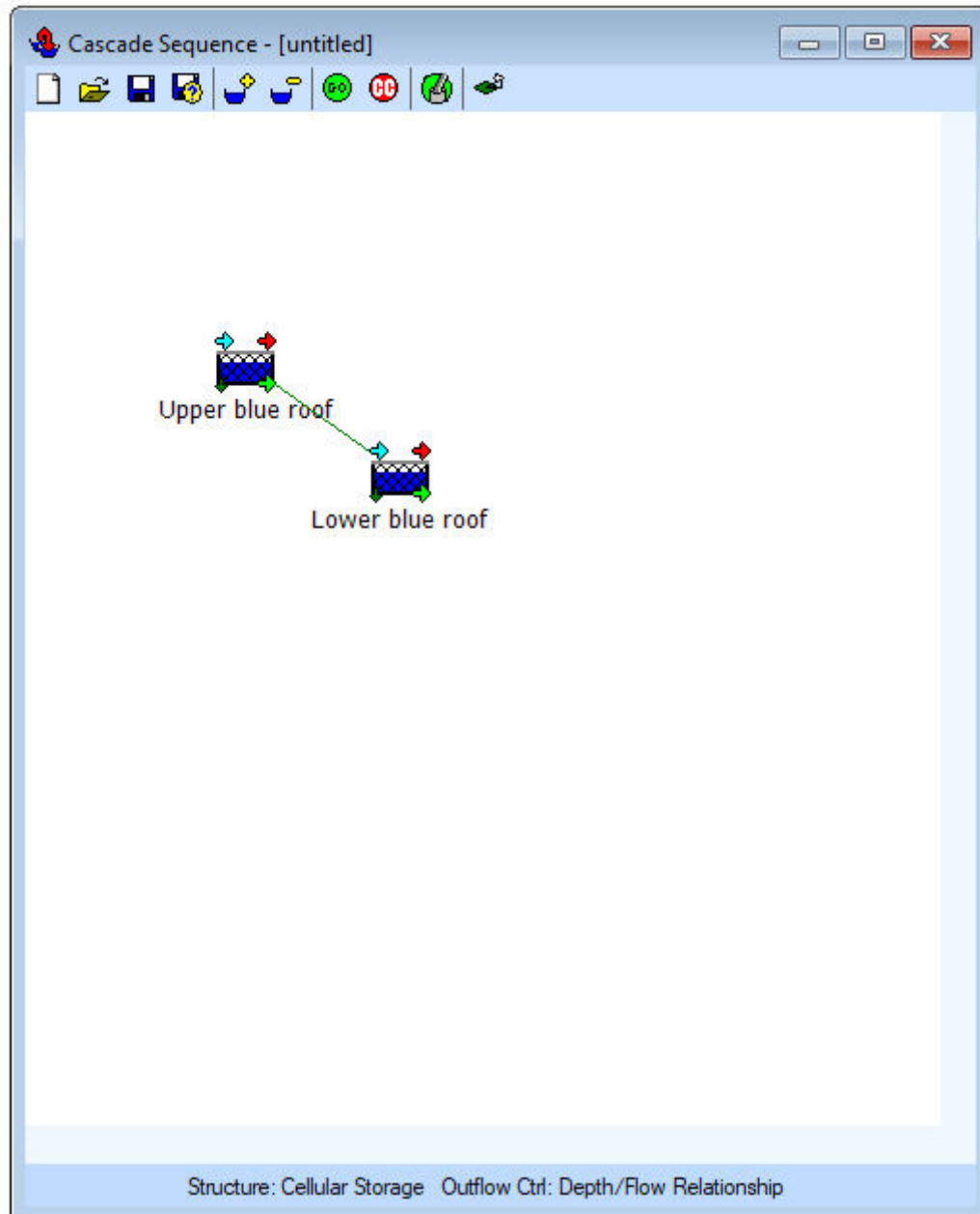


New Build House at Tiltwood East, Hophurst Lane, Crawley Down.

Blue Roof Design



Schematic Cascade

- Each roof has two outlets, limited to a maximum flow rate of 0.25l/s i.e. 0.5l/s per roof.
- The upper roof discharges onto the lower roof at 0.5l/s.
- The lower roof discharges to the below ground gravity drainage system.
- Total discharge from roofs to the below ground gravity drainage system is 0.5l/s.

Tiltwood



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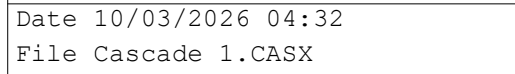
Source Control 2020.1.3

Cascade Summary of Results for Upper blue roof.SRCX

	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
8640 min	Summer	16.200	0.000	0.0	0.2	0.2	0.0	O K
10080 min	Summer	16.200	0.000	0.0	0.2	0.2	0.0	O K
15 min	Winter	16.218	0.018	0.0	0.5	0.5	1.9	O K
30 min	Winter	16.230	0.030	0.0	0.5	0.5	3.1	O K
60 min	Winter	16.242	0.042	0.0	0.5	0.5	4.4	O K
120 min	Winter	16.250	0.050	0.0	0.5	0.5	5.3	O K
180 min	Winter	16.250	0.050	0.0	0.5	0.5	5.2	O K
240 min	Winter	16.247	0.047	0.0	0.5	0.5	4.9	O K
360 min	Winter	16.241	0.041	0.0	0.5	0.5	4.3	O K
480 min	Winter	16.235	0.035	0.0	0.5	0.5	3.6	O K
600 min	Winter	16.228	0.028	0.0	0.5	0.5	3.0	O K
720 min	Winter	16.222	0.022	0.0	0.5	0.5	2.3	O K
960 min	Winter	16.211	0.011	0.0	0.5	0.5	1.2	O K
1440 min	Winter	16.200	0.000	0.0	0.5	0.5	0.0	O K
2160 min	Winter	16.200	0.000	0.0	0.4	0.4	0.0	O K
2880 min	Winter	16.200	0.000	0.0	0.3	0.3	0.0	O K
4320 min	Winter	16.200	0.000	0.0	0.2	0.2	0.0	O K
5760 min	Winter	16.200	0.000	0.0	0.2	0.2	0.0	O K
7200 min	Winter	16.200	0.000	0.0	0.1	0.1	0.0	O K
8640 min	Winter	16.200	0.000	0.0	0.1	0.1	0.0	O K
10080 min	Winter	16.200	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)
8640 min Summer	1.361	0.0	22.6	0
10080 min Summer	1.207	0.0	23.2	0
15 min Winter	129.164	0.0	3.5	47
30 min Winter	87.637	0.0	5.0	61
60 min Winter	56.713	0.0	6.7	84
120 min Winter	35.339	0.0	8.5	128
180 min Winter	26.336	0.0	9.5	174
240 min Winter	21.253	0.0	10.3	208
360 min Winter	15.720	0.0	11.5	276
480 min Winter	12.669	0.0	12.4	346
600 min Winter	10.706	0.0	13.1	414
720 min Winter	9.325	0.0	13.7	476
960 min Winter	7.491	0.0	14.7	594
1440 min Winter	5.490	0.0	16.2	0
2160 min Winter	4.013	0.0	17.7	0
2880 min Winter	3.209	0.0	18.7	0
4320 min Winter	2.336	0.0	20.2	0
5760 min Winter	1.866	0.0	21.3	0
7200 min Winter	1.568	0.0	22.1	0
8640 min Winter	1.361	0.0	22.7	0
10080 min Winter	1.207	0.0	23.2	0

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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	0.330	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Area (m ³)	131	Evaporation (mm/day)	3
Depression Storage (mm)	5	Decay Coefficient	0.050

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.002381	32 36	0.000481	64 68	0.000097	96 100	0.000020
4 8	0.001949	36 40	0.000393	68 72	0.000079	100 104	0.000016
8 12	0.001596	40 44	0.000322	72 76	0.000065	104 108	0.000013
12 16	0.001306	44 48	0.000264	76 80	0.000053	108 112	0.000011
16 20	0.001070	48 52	0.000216	80 84	0.000044	112 116	0.000009
20 24	0.000876	52 56	0.000177	84 88	0.000036	116 120	0.000007
24 28	0.000717	56 60	0.000145	88 92	0.000029		
28 32	0.000587	60 64	0.000119	92 96	0.000024		

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Cascade Model Details for Upper blue roof.SRCX

Storage is Online Cover Level (m) 16.350

Cellular Storage Structure

Invert Level (m) 16.200 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	110.0	110.0	0.150	110.0	110.0

Depth/Flow Relationship Outflow Control

Invert Level (m) 13.200

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	0.5000	0.150	0.5000

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Cascade Summary of Results for Lower blue roof.SRCX

Upstream Structures

Outflow To Overflow To

Upper blue roof.SRCX	(None)	(None)
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Half Drain Time : 154 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	13.238	0.038	0.0	0.5	0.5	2.7	O K
	30 min	Summer	13.255	0.055	0.0	0.5	0.5	3.9	O K
	60 min	Summer	13.273	0.073	0.0	0.5	0.5	5.2	O K
	120 min	Summer	13.293	0.093	0.0	0.5	0.5	6.6	O K
	180 min	Summer	13.304	0.104	0.0	0.5	0.5	7.4	O K
	240 min	Summer	13.311	0.111	0.0	0.5	0.5	7.9	O K
	360 min	Summer	13.318	0.118	0.0	0.5	0.5	8.4	O K
	480 min	Summer	13.323	0.123	0.0	0.5	0.5	8.7	O K
	600 min	Summer	13.326	0.126	0.0	0.5	0.5	9.0	O K
	720 min	Summer	13.323	0.123	0.0	0.5	0.5	8.8	O K
	960 min	Summer	13.318	0.118	0.0	0.5	0.5	8.4	O K
	1440 min	Summer	13.305	0.105	0.0	0.5	0.5	7.5	O K
	2160 min	Summer	13.272	0.072	0.0	0.5	0.5	5.1	O K
	2880 min	Summer	13.243	0.043	0.0	0.5	0.5	3.1	O K
	4320 min	Summer	13.209	0.009	0.0	0.5	0.5	0.6	O K
	5760 min	Summer	13.202	0.002	0.0	0.5	0.5	0.1	O K
	7200 min	Summer	13.201	0.001	0.0	0.5	0.5	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	129.164	0.0	6.2	128
30 min Summer	87.637	0.0	8.9	137
60 min Summer	56.713	0.0	11.8	160
120 min Summer	35.339	0.0	15.0	210
180 min Summer	26.336	0.0	17.0	264
240 min Summer	21.253	0.0	18.3	320
360 min Summer	15.720	0.0	20.4	434
480 min Summer	12.669	0.0	22.0	548
600 min Summer	10.706	0.0	23.3	610
720 min Summer	9.325	0.0	24.3	656
960 min Summer	7.491	0.0	26.1	750
1440 min Summer	5.490	0.0	28.6	944
2160 min Summer	4.013	0.0	31.2	1276
2880 min Summer	3.209	0.0	33.1	1624
4320 min Summer	2.336	0.0	35.7	2272
5760 min Summer	1.866	0.0	37.9	2904
7200 min Summer	1.568	0.0	39.4	3632

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Cascade Summary of Results for Lower blue roof.SRCX

	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
8640 min	Summer	13.201	0.001	0.0	0.5	0.5	0.1	O K
10080 min	Summer	13.201	0.001	0.0	0.4	0.4	0.1	O K
15 min	Winter	13.238	0.038	0.0	0.5	0.5	2.7	O K
30 min	Winter	13.255	0.055	0.0	0.5	0.5	3.9	O K
60 min	Winter	13.273	0.073	0.0	0.5	0.5	5.2	O K
120 min	Winter	13.293	0.093	0.0	0.5	0.5	6.6	O K
180 min	Winter	13.305	0.105	0.0	0.5	0.5	7.5	O K
240 min	Winter	13.312	0.112	0.0	0.5	0.5	8.0	O K
360 min	Winter	13.320	0.120	0.0	0.5	0.5	8.6	O K
480 min	Winter	13.326	0.126	0.0	0.5	0.5	9.0	O K
600 min	Winter	13.328	0.128	0.0	0.5	0.5	9.1	O K
720 min	Winter	13.324	0.124	0.0	0.5	0.5	8.8	O K
960 min	Winter	13.314	0.114	0.0	0.5	0.5	8.1	O K
1440 min	Winter	13.277	0.077	0.0	0.5	0.5	5.5	O K
2160 min	Winter	13.229	0.029	0.0	0.5	0.5	2.0	O K
2880 min	Winter	13.202	0.002	0.0	0.5	0.5	0.2	O K
4320 min	Winter	13.201	0.001	0.0	0.4	0.4	0.1	O K
5760 min	Winter	13.201	0.001	0.0	0.4	0.4	0.1	O K
7200 min	Winter	13.201	0.001	0.0	0.4	0.4	0.1	O K
8640 min	Winter	13.201	0.001	0.0	0.4	0.4	0.1	O K
10080 min	Winter	13.201	0.001	0.0	0.4	0.4	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
8640 min Summer	1.361	0.0	40.6	4298
10080 min Summer	1.207	0.0	41.7	5024
15 min Winter	129.164	0.0	6.2	128
30 min Winter	87.637	0.0	8.9	138
60 min Winter	56.713	0.0	11.8	160
120 min Winter	35.339	0.0	15.1	210
180 min Winter	26.336	0.0	16.9	262
240 min Winter	21.253	0.0	18.3	318
360 min Winter	15.720	0.0	20.5	428
480 min Winter	12.669	0.0	22.0	536
600 min Winter	10.706	0.0	23.3	594
720 min Winter	9.325	0.0	24.3	632
960 min Winter	7.491	0.0	26.1	714
1440 min Winter	5.490	0.0	28.7	940
2160 min Winter	4.013	0.0	31.3	1284
2880 min Winter	3.209	0.0	33.2	1528
4320 min Winter	2.336	0.0	35.8	2268
5760 min Winter	1.866	0.0	38.1	2968
7200 min Winter	1.568	0.0	39.9	4336
8640 min Winter	1.361	0.0	41.5	3480
10080 min Winter	1.207	0.0	42.7	5936

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Cascade Model Details for Lower blue roof.SRCX

Storage is Online Cover Level (m) 13.350

Cellular Storage Structure

Invert Level (m) 13.200 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	75.0	75.0	0.150	75.0	75.0

Depth/Flow Relationship Outflow Control

Invert Level (m) 13.200

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	0.5000	0.150	0.5000

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