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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 1	
Date 24/10/2019 11:35 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	

Cascade Summary of Results for Swale 1.SRCX


Upstream Outflow To Overflow To
Structures

(None) Basin 1.SRCX Basin 1.SRCX

Half Drain Time : 81 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	72.861	0.461	38.5	25.6	0.0	64.0	389.9	O K
30 min Summer	72.925	0.525	43.1	27.6	3.4	74.1	490.5	O K
60 min Summer	72.960	0.560	45.5	28.6	12.4	86.6	549.1	O K
120 min Summer	72.966	0.566	45.9	28.8	14.4	89.1	558.9	O K
180 min Summer	72.957	0.557	45.3	28.5	11.5	85.4	543.5	O K
240 min Summer	72.943	0.543	44.3	28.1	7.7	80.1	520.8	O K
360 min Summer	72.915	0.515	42.3	27.3	1.5	71.1	473.3	O K
480 min Summer	72.885	0.485	40.2	26.4	0.0	66.6	427.1	O K
600 min Summer	72.858	0.458	38.2	25.5	0.0	63.7	385.7	O K
720 min Summer	72.832	0.432	36.4	24.6	0.0	61.0	349.7	O K
960 min Summer	72.788	0.388	33.3	23.1	0.0	56.4	290.7	O K
1440 min Summer	72.719	0.319	28.4	20.4	0.0	48.8	209.4	O K
2160 min Summer	72.648	0.248	23.3	17.3	0.0	40.6	139.1	O K
2880 min Summer	72.602	0.202	20.0	14.9	0.0	34.9	100.9	O K
4320 min Summer	72.553	0.153	16.5	10.0	0.0	26.6	66.2	O K
5760 min Summer	72.523	0.123	14.4	7.0	0.0	21.4	48.1	O K
7200 min Summer	72.501	0.101	12.8	5.2	0.0	18.0	36.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	454.9	0.0	26
30 min Summer	91.145	0.0	594.6	2.4	37
60 min Summer	56.713	0.0	740.0	19.9	60
120 min Summer	34.093	0.0	889.7	32.3	92
180 min Summer	24.982	0.0	977.9	25.9	126
240 min Summer	19.920	0.0	1039.7	16.1	160
360 min Summer	14.430	0.0	1129.8	2.1	230
480 min Summer	11.481	0.0	1198.5	0.0	296
600 min Summer	9.608	0.0	1253.7	0.0	360
720 min Summer	8.303	0.0	1300.2	0.0	424
960 min Summer	6.590	0.0	1376.0	0.0	548
1440 min Summer	4.752	0.0	1488.3	0.0	788
2160 min Summer	3.421	0.0	1607.1	0.0	1144
2880 min Summer	2.707	0.0	1695.6	0.0	1500
4320 min Summer	1.944	0.0	1826.1	0.0	2212
5760 min Summer	1.535	0.0	1923.1	0.0	2944
7200 min Summer	1.278	0.0	2000.7	0.0	3672

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XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 1.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
8640 min Summer	72.484	0.084	11.6	4.0	0.0	15.5	28.4	O K
10080 min Summer	72.473	0.073	10.8	3.0	0.0	13.8	23.4	O K
15 min Winter	72.894	0.494	40.8	26.6	0.0	67.4	440.5	O K
30 min Winter	72.961	0.561	45.6	28.7	12.9	87.2	551.6	O K
60 min Winter	72.998	0.598	48.2	29.7	26.0	104.0	616.4	O K
120 min Winter	72.999	0.599	48.3	29.8	26.6	104.7	620.0	O K
180 min Winter	72.986	0.586	47.4	29.4	21.4	98.1	594.8	O K
240 min Winter	72.968	0.568	46.1	28.9	15.0	90.0	562.6	O K
360 min Winter	72.930	0.530	43.4	27.8	4.5	75.6	498.8	O K
480 min Winter	72.891	0.491	40.6	26.6	0.0	67.2	436.1	O K
600 min Winter	72.853	0.453	37.9	25.3	0.0	63.2	378.5	O K
720 min Winter	72.818	0.418	35.4	24.1	0.0	59.6	330.0	O K
960 min Winter	72.759	0.359	31.2	22.0	0.0	53.2	254.7	O K
1440 min Winter	72.672	0.272	25.0	18.4	0.0	43.4	161.4	O K
2160 min Winter	72.596	0.196	19.6	14.3	0.0	33.9	95.7	O K
2880 min Winter	72.557	0.157	16.8	10.4	0.0	27.2	68.9	O K
4320 min Winter	72.513	0.113	13.7	6.1	0.0	19.8	42.9	O K
5760 min Winter	72.485	0.085	11.7	4.1	0.0	15.8	28.9	O K
7200 min Winter	72.469	0.069	10.5	2.6	0.0	13.1	21.8	O K
8640 min Winter	72.456	0.056	9.6	1.7	0.0	11.3	16.7	O K
10080 min Winter	72.447	0.047	8.7	1.3	0.0	9.9	13.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
8640 min Summer	1.099	0.0	2065.8	0.0	4408
10080 min Summer	0.968	0.0	2122.0	0.0	5128
15 min Winter	139.469	0.0	509.5	0.0	27
30 min Winter	91.145	0.0	666.0	13.9	38
60 min Winter	56.713	0.0	828.8	47.9	60
120 min Winter	34.093	0.0	996.5	70.5	96
180 min Winter	24.982	0.0	1095.3	62.4	134
240 min Winter	19.920	0.0	1164.5	43.4	170
360 min Winter	14.430	0.0	1265.4	10.8	244
480 min Winter	11.481	0.0	1342.3	0.0	314
600 min Winter	9.608	0.0	1404.2	0.0	380
720 min Winter	8.303	0.0	1456.2	0.0	444
960 min Winter	6.590	0.0	1541.1	0.0	568
1440 min Winter	4.752	0.0	1666.8	0.0	806
2160 min Winter	3.421	0.0	1800.0	0.0	1148
2880 min Winter	2.707	0.0	1899.0	0.0	1504
4320 min Winter	1.944	0.0	2045.3	0.0	2212
5760 min Winter	1.535	0.0	2153.8	0.0	2944
7200 min Winter	1.278	0.0	2240.8	0.0	3672
8640 min Winter	1.099	0.0	2313.7	0.0	4392
10080 min Winter	0.968	0.0	2376.7	0.0	5136

The Cowyards
 Blenheim Park, Oxford Road
 Woodstock OX20 1QR

F.A.S.T.
 Swale 1



Date 24/10/2019 11:35
 File Cascade 1 (Swale 1 & Ba...

Designed by MG
 Checked by SW

XP Solutions

Source Control 2018.1


Cascade Rainfall Details for Swale 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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 1.740

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:	From:	To:	From:	To:
0	4	4	8	8	12	12	16
	0.435		0.435		0.435		0.435

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XP Solutions	Source Control 2018.1	

Cascade Model Details for Swale 1.SRCX

Storage is Online Cover Level (m) 73.000

Swale Structure


Infiltration Coefficient Base (m/hr)	0.18000	Length (m)	450.0
Infiltration Coefficient Side (m/hr)	0.18000	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	72.400	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.5		

Orifice Outflow Control

Diameter (m) 0.140 Discharge Coefficient 0.600 Invert Level (m) 72.400

Weir Overflow Control

Discharge Coef 0.544 Width (m) 0.500 Invert Level (m) 72.900

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Date 24/10/2019 11:39 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 2.SRCX


Upstream Outflow To Overflow To
Structures

(None) Swale 3.SRCX (None)

Half Drain Time : 54 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	75.770	0.270	3.9	1.9	5.8	24.7	O K
30 min Summer	75.801	0.301	4.2	2.0	6.2	29.6	O K
60 min Summer	75.814	0.314	4.4	2.0	6.4	31.6	O K
120 min Summer	75.809	0.309	4.3	2.0	6.3	30.8	O K
180 min Summer	75.796	0.296	4.2	1.9	6.1	28.7	O K
240 min Summer	75.781	0.281	4.0	1.9	5.9	26.4	O K
360 min Summer	75.754	0.254	3.7	1.8	5.5	22.4	O K
480 min Summer	75.730	0.230	3.4	1.8	5.2	19.2	O K
600 min Summer	75.709	0.209	3.2	1.7	4.9	16.5	O K
720 min Summer	75.690	0.190	3.0	1.7	4.6	14.3	O K
960 min Summer	75.659	0.159	2.6	1.6	4.2	10.8	O K
1440 min Summer	75.611	0.111	2.1	1.4	3.5	6.5	O K
2160 min Summer	75.566	0.066	1.6	1.2	2.8	3.2	O K
2880 min Summer	75.545	0.045	1.3	1.1	2.4	2.0	O K
4320 min Summer	75.525	0.025	0.7	1.0	1.7	1.0	O K
5760 min Summer	75.514	0.014	0.4	1.0	1.4	0.5	O K
7200 min Summer	75.507	0.007	0.2	0.9	1.1	0.3	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	28.7	17
30 min Summer	91.145	0.0	37.6	31
60 min Summer	56.713	0.0	46.8	48
120 min Summer	34.093	0.0	56.2	82
180 min Summer	24.982	0.0	61.8	116
240 min Summer	19.920	0.0	65.7	150
360 min Summer	14.430	0.0	71.5	216
480 min Summer	11.481	0.0	75.8	280
600 min Summer	9.608	0.0	79.2	342
720 min Summer	8.303	0.0	82.2	404
960 min Summer	6.590	0.0	87.0	522
1440 min Summer	4.752	0.0	94.1	764
2160 min Summer	3.421	0.0	101.6	1108
2880 min Summer	2.707	0.0	107.2	1468
4320 min Summer	1.944	0.0	115.4	2200
5760 min Summer	1.535	0.0	121.6	2904
7200 min Summer	1.278	0.0	126.5	3672

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XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 2.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
8640 min Summer	75.503	0.003	0.1	0.9	1.0	0.1	O K
10080 min Summer	75.500	0.000	0.0	0.9	0.9	0.0	O K
15 min Winter	75.791	0.291	4.1	1.9	6.1	28.0	O K
30 min Winter	75.827	0.327	4.5	2.0	6.5	33.8	O K
60 min Winter	75.840	0.340	4.7	2.1	6.7	36.2	O K
120 min Winter	75.833	0.333	4.6	2.0	6.6	34.9	O K
180 min Winter	75.814	0.314	4.4	2.0	6.4	31.7	O K
240 min Winter	75.793	0.293	4.1	1.9	6.1	28.4	O K
360 min Winter	75.755	0.255	3.7	1.8	5.6	22.6	O K
480 min Winter	75.722	0.222	3.3	1.7	5.1	18.2	O K
600 min Winter	75.694	0.194	3.0	1.7	4.7	14.7	O K
720 min Winter	75.669	0.169	2.8	1.6	4.3	11.9	O K
960 min Winter	75.628	0.128	2.3	1.5	3.8	8.0	O K
1440 min Winter	75.573	0.073	1.7	1.2	2.9	3.7	O K
2160 min Winter	75.539	0.039	1.1	1.1	2.2	1.7	O K
2880 min Winter	75.525	0.025	0.7	1.0	1.8	1.0	O K
4320 min Winter	75.511	0.011	0.3	1.0	1.3	0.4	O K
5760 min Winter	75.503	0.003	0.1	0.9	1.0	0.1	O K
7200 min Winter	75.500	0.000	0.0	0.8	0.8	0.0	O K
8640 min Winter	75.500	0.000	0.0	0.7	0.7	0.0	O K
10080 min Winter	75.500	0.000	0.0	0.6	0.6	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Summer	1.099	0.0	130.6	4312
10080 min Summer	0.968	0.0	134.2	0
15 min Winter	139.469	0.0	32.2	17
30 min Winter	91.145	0.0	42.1	31
60 min Winter	56.713	0.0	52.4	52
120 min Winter	34.093	0.0	63.0	90
180 min Winter	24.982	0.0	69.2	126
240 min Winter	19.920	0.0	73.6	162
360 min Winter	14.430	0.0	80.0	230
480 min Winter	11.481	0.0	84.9	294
600 min Winter	9.608	0.0	88.8	356
720 min Winter	8.303	0.0	92.1	420
960 min Winter	6.590	0.0	97.4	538
1440 min Winter	4.752	0.0	105.4	766
2160 min Winter	3.421	0.0	113.8	1104
2880 min Winter	2.707	0.0	120.0	1468
4320 min Winter	1.944	0.0	129.3	2172
5760 min Winter	1.535	0.0	136.2	2936
7200 min Winter	1.278	0.0	141.7	0
8640 min Winter	1.099	0.0	146.3	0
10080 min Winter	0.968	0.0	150.3	0

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XP Solutions	Source Control 2018.1	


Cascade Rainfall Details for Swale 2.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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.110

Time (mins) Area		
From:	To:	(ha)
0	4	0.110

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XP Solutions	Source Control 2018.1	

Cascade Model Details for Swale 2.SRCX


Storage is Online Cover Level (m) 76.000

Swale Structure

Infiltration Coefficient Base (m/hr)	0.18000	Length (m)	70.0
Infiltration Coefficient Side (m/hr)	0.18000	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	75.500	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.5		

Orifice Outflow Control

Diameter (m) 0.039 Discharge Coefficient 0.600 Invert Level (m) 75.400

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Date 24/10/2019 11:40 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 3.SRCX


Upstream Outflow To Overflow To
Structures

Swale 2.SRCX Swale 4.SRCX (None)

Half Drain Time : 120 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ (l/s)	Max Outflow Volume (m³)	Status
15 min Summer	73.938	0.436	16.6	1.7	18.2	159.9	O K
30 min Summer	74.000	0.498	18.6	1.8	20.4	201.7	O K
60 min Summer	74.043	0.541	20.0	1.9	21.8	233.3	O K
120 min Summer	74.058	0.556	20.5	1.9	22.3	244.7	O K
180 min Summer	74.056	0.554	20.4	1.9	22.3	243.3	O K
240 min Summer	74.049	0.547	20.2	1.9	22.0	237.8	O K
360 min Summer	74.030	0.528	19.5	1.8	21.4	223.5	O K
480 min Summer	74.010	0.508	18.9	1.8	20.7	209.1	O K
600 min Summer	73.991	0.489	18.3	1.8	20.0	195.4	O K
720 min Summer	73.973	0.471	17.7	1.7	19.4	182.7	O K
960 min Summer	73.939	0.437	16.6	1.7	18.3	160.7	O K
1440 min Summer	73.883	0.381	14.8	1.5	16.3	127.0	O K
2160 min Summer	73.819	0.317	12.7	1.4	14.1	93.2	O K
2880 min Summer	73.771	0.269	11.2	1.3	12.5	71.3	O K
4320 min Summer	73.705	0.203	9.1	1.1	10.2	45.6	O K
5760 min Summer	73.660	0.158	7.6	1.0	8.6	31.3	O K
7200 min Summer	73.630	0.128	6.7	0.9	7.5	23.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	183.7	21
30 min Summer	91.145	0.0	239.6	35
60 min Summer	56.713	0.0	298.0	62
120 min Summer	34.093	0.0	358.5	102
180 min Summer	24.982	0.0	394.6	134
240 min Summer	19.920	0.0	420.3	168
360 min Summer	14.430	0.0	458.9	236
480 min Summer	11.481	0.0	490.0	304
600 min Summer	9.608	0.0	515.8	372
720 min Summer	8.303	0.0	537.6	438
960 min Summer	6.590	0.0	573.1	568
1440 min Summer	4.752	0.0	626.1	814
2160 min Summer	3.421	0.0	683.5	1176
2880 min Summer	2.707	0.0	727.6	1532
4320 min Summer	1.944	0.0	794.1	2252
5760 min Summer	1.535	0.0	843.5	2952
7200 min Summer	1.278	0.0	882.1	3680

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XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 3.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
8640 min Summer	73.607	0.105	5.9	0.8	6.7	17.5	O K
10080 min Summer	73.589	0.087	5.3	0.7	6.0	13.4	O K
15 min Winter	73.969	0.467	17.6	1.7	19.3	180.0	O K
30 min Winter	74.036	0.534	19.7	1.8	21.6	227.7	O K
60 min Winter	74.084	0.582	21.3	1.9	23.2	265.1	O K
120 min Winter	74.101	0.599	21.8	2.0	23.8	279.4	O K
180 min Winter	74.097	0.595	21.7	1.9	23.7	276.2	O K
240 min Winter	74.087	0.585	21.4	1.9	23.3	268.1	O K
360 min Winter	74.061	0.559	20.5	1.9	22.4	247.1	O K
480 min Winter	74.033	0.531	19.6	1.8	21.5	226.0	O K
600 min Winter	74.006	0.504	18.8	1.8	20.6	206.2	O K
720 min Winter	73.981	0.479	18.0	1.7	19.7	188.2	O K
960 min Winter	73.934	0.432	16.5	1.6	18.1	157.7	O K
1440 min Winter	73.859	0.357	14.0	1.5	15.5	113.7	O K
2160 min Winter	73.778	0.276	11.4	1.3	12.7	74.4	O K
2880 min Winter	73.722	0.220	9.6	1.2	10.8	51.9	O K
4320 min Winter	73.652	0.150	7.4	0.9	8.3	28.9	O K
5760 min Winter	73.611	0.109	6.0	0.8	6.8	18.3	O K
7200 min Winter	73.583	0.081	5.1	0.6	5.8	12.1	O K
8640 min Winter	73.562	0.060	4.5	0.5	5.0	8.2	O K
10080 min Winter	73.550	0.048	4.0	0.4	4.4	6.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Summer	1.099	0.0	913.4	4408
10080 min Summer	0.968	0.0	939.0	5136
15 min Winter	139.469	0.0	205.5	21
30 min Winter	91.145	0.0	268.1	35
60 min Winter	56.713	0.0	333.3	62
120 min Winter	34.093	0.0	400.9	114
180 min Winter	24.982	0.0	441.2	142
240 min Winter	19.920	0.0	469.8	180
360 min Winter	14.430	0.0	512.3	256
480 min Winter	11.481	0.0	545.8	328
600 min Winter	9.608	0.0	574.4	398
720 min Winter	8.303	0.0	599.2	466
960 min Winter	6.590	0.0	639.4	598
1440 min Winter	4.752	0.0	699.6	852
2160 min Winter	3.421	0.0	766.6	1212
2880 min Winter	2.707	0.0	818.2	1560
4320 min Winter	1.944	0.0	895.4	2256
5760 min Winter	1.535	0.0	951.5	2992
7200 min Winter	1.278	0.0	991.6	3672
8640 min Winter	1.099	0.0	1023.9	4408
10080 min Winter	0.968	0.0	1051.7	5136

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 3	
Date 24/10/2019 11:40 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	


Cascade Rainfall Details for Swale 3.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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.660

Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)
0	4	0.330	4	8	0.330

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 3	
Date 24/10/2019 11:40 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	

Cascade Model Details for Swale 3.SRCX


Storage is Online Cover Level (m) 74.102

Swale Structure

Infiltration Coefficient Base (m/hr)	0.18000	Length (m)	203.0
Infiltration Coefficient Side (m/hr)	0.18000	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	73.502	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.5		

Orifice Outflow Control

Diameter (m) 0.035 Discharge Coefficient 0.600 Invert Level (m) 73.502

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 4	
Date 24/10/2019 11:41 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	

Cascade Summary of Results for Swale 4.SRCX


Upstream Outflow To Overflow To
Structures

Swale 3.SRCX Basin 2.SRCX (None)
Swale 2.SRCX

Half Drain Time : 141 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	73.029	0.529	13.1	3.6	16.7	164.0	O K
30 min Summer	73.111	0.611	14.7	3.8	18.5	207.6	O K
60 min Summer	73.170	0.670	15.8	4.0	19.8	241.9	O K
120 min Summer	73.193	0.693	16.3	4.1	20.4	256.2	O K
180 min Summer	73.192	0.692	16.2	4.1	20.3	255.4	O K
240 min Summer	73.184	0.684	16.1	4.1	20.2	250.7	O K
360 min Summer	73.163	0.663	15.7	4.0	19.7	237.6	O K
480 min Summer	73.140	0.640	15.2	3.9	19.2	224.0	O K
600 min Summer	73.116	0.616	14.8	3.9	18.6	210.8	O K
720 min Summer	73.094	0.594	14.4	3.8	18.1	198.4	O K
960 min Summer	73.053	0.553	13.6	3.6	17.2	176.5	O K
1440 min Summer	72.983	0.483	12.2	3.4	15.6	142.0	O K
2160 min Summer	72.901	0.401	10.7	3.1	13.7	106.0	O K
2880 min Summer	72.838	0.338	9.4	2.8	12.2	81.6	O K
4320 min Summer	72.746	0.246	7.7	2.4	10.1	51.4	O K
5760 min Summer	72.685	0.185	6.5	2.0	8.5	34.6	O K
7200 min Summer	72.642	0.142	5.7	1.7	7.4	24.4	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	194.5	21
30 min Summer	91.145	0.0	253.6	35
60 min Summer	56.713	0.0	315.0	62
120 min Summer	34.093	0.0	378.3	108
180 min Summer	24.982	0.0	415.9	140
240 min Summer	19.920	0.0	442.4	172
360 min Summer	14.430	0.0	481.4	242
480 min Summer	11.481	0.0	511.4	310
600 min Summer	9.608	0.0	535.8	378
720 min Summer	8.303	0.0	556.4	444
960 min Summer	6.590	0.0	589.9	576
1440 min Summer	4.752	0.0	638.4	828
2160 min Summer	3.421	0.0	688.9	1192
2880 min Summer	2.707	0.0	725.9	1560
4320 min Summer	1.944	0.0	779.1	2256
5760 min Summer	1.535	0.0	817.1	2992
7200 min Summer	1.278	0.0	846.4	3680

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 4	
Date 24/10/2019 11:41 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Swale 4.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
8640 min Summer	72.611	0.111	5.1	1.5	6.6	17.7	O K
10080 min Summer	72.586	0.086	4.6	1.2	5.9	13.1	O K
15 min Winter	73.069	0.569	13.9	3.7	17.6	184.6	O K
30 min Winter	73.157	0.657	15.6	4.0	19.6	234.4	O K
60 min Winter	73.223	0.723	16.8	4.2	21.0	274.8	O K
120 min Winter	73.252	0.752	17.4	4.3	21.7	293.9	O K
180 min Winter	73.248	0.748	17.3	4.3	21.6	291.2	O K
240 min Winter	73.238	0.738	17.1	4.2	21.4	284.6	O K
360 min Winter	73.209	0.709	16.6	4.1	20.7	266.0	O K
480 min Winter	73.177	0.677	15.9	4.0	20.0	246.2	O K
600 min Winter	73.145	0.645	15.3	3.9	19.3	227.1	O K
720 min Winter	73.114	0.614	14.7	3.8	18.6	209.3	O K
960 min Winter	73.057	0.557	13.6	3.7	17.3	178.4	O K
1440 min Winter	72.962	0.462	11.8	3.3	15.1	132.2	O K
2160 min Winter	72.855	0.355	9.8	2.9	12.6	87.9	O K
2880 min Winter	72.777	0.277	8.3	2.5	10.8	61.0	O K
4320 min Winter	72.677	0.177	6.4	2.0	8.3	32.5	O K
5760 min Winter	72.617	0.117	5.2	1.5	6.8	19.0	O K
7200 min Winter	72.579	0.079	4.5	1.2	5.7	11.7	O K
8640 min Winter	72.557	0.057	4.1	0.8	4.9	8.0	O K
10080 min Winter	72.547	0.047	3.7	0.6	4.3	6.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Summer	1.099	0.0	870.0	4408
10080 min Summer	0.968	0.0	889.6	5144
15 min Winter	139.469	0.0	217.6	21
30 min Winter	91.145	0.0	283.6	35
60 min Winter	56.713	0.0	352.2	62
120 min Winter	34.093	0.0	423.1	116
180 min Winter	24.982	0.0	465.0	146
240 min Winter	19.920	0.0	494.6	184
360 min Winter	14.430	0.0	538.1	260
480 min Winter	11.481	0.0	571.7	334
600 min Winter	9.608	0.0	599.1	406
720 min Winter	8.303	0.0	622.3	476
960 min Winter	6.590	0.0	660.4	610
1440 min Winter	4.752	0.0	716.5	868
2160 min Winter	3.421	0.0	774.7	1236
2880 min Winter	2.707	0.0	817.5	1588
4320 min Winter	1.944	0.0	878.1	2292
5760 min Winter	1.535	0.0	920.0	3000
7200 min Winter	1.278	0.0	951.0	3680
8640 min Winter	1.099	0.0	975.4	4408
10080 min Winter	0.968	0.0	996.7	5136

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 4	
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XP Solutions	Source Control 2018.1	


Cascade Rainfall Details for Swale 4.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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.674

Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)
0	4	0.337	4	8	0.337

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Swale 4	
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XP Solutions	Source Control 2018.1	

Cascade Model Details for Swale 4.SRCX


Storage is Online Cover Level (m) 73.500

Swale Structure

Infiltration Coefficient Base (m/hr)	0.18000	Length (m)	120.0
Infiltration Coefficient Side (m/hr)	0.18000	Side Slope (1:X)	3.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	72.500	Cap Infiltration Depth (m)	0.000
Base Width (m)	1.0		

Orifice Outflow Control

Diameter (m) 0.049 Discharge Coefficient 0.600 Invert Level (m) 72.500

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 1	
Date 24/10/2019 11:36 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Basin 1.SRCX


Upstream Outflow To Overflow To
Structures

Swale 1.SRCX (None) (None)
Basin 2.SRCX
Swale 4.SRCX
Swale 3.SRCX
Swale 2.SRCX

Half Drain Time : 126 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	71.982	0.382	11.5	93.1	O K
30 min Summer	72.068	0.468	13.2	121.1	O K
60 min Summer	72.160	0.560	15.1	154.3	O K
120 min Summer	72.234	0.634	16.6	183.5	O K
180 min Summer	72.254	0.654	17.0	191.6	O K
240 min Summer	72.257	0.657	17.1	192.8	O K
360 min Summer	72.250	0.650	16.9	190.0	O K
480 min Summer	72.239	0.639	16.7	185.7	O K
600 min Summer	72.227	0.627	16.4	180.5	O K
720 min Summer	72.215	0.615	16.2	175.6	O K
960 min Summer	72.190	0.590	15.7	165.7	O K
1440 min Summer	72.138	0.538	14.6	146.0	O K
2160 min Summer	72.054	0.454	13.0	116.5	O K
2880 min Summer	71.965	0.365	11.2	87.9	O K
4320 min Summer	71.805	0.205	8.2	44.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	138
30 min Summer	91.145	0.0	169
60 min Summer	56.713	0.0	200
120 min Summer	34.093	0.0	240
180 min Summer	24.982	0.0	280
240 min Summer	19.920	0.0	320
360 min Summer	14.430	0.0	396
480 min Summer	11.481	0.0	468
600 min Summer	9.608	0.0	524
720 min Summer	8.303	0.0	582
960 min Summer	6.590	0.0	698
1440 min Summer	4.752	0.0	936
2160 min Summer	3.421	0.0	1284
2880 min Summer	2.707	0.0	1624
4320 min Summer	1.944	0.0	2332

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 1	
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XP Solutions		Source Control 2018.1

Cascade Summary of Results for Basin 1.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
5760 min Summer	71.699	0.099	6.3	19.6	O K
7200 min Summer	71.648	0.048	5.3	9.3	O K
8640 min Summer	71.638	0.038	4.1	7.2	O K
10080 min Summer	71.629	0.029	3.0	5.4	O K
15 min Winter	72.017	0.417	12.2	104.1	O K
30 min Winter	72.119	0.519	14.3	139.3	O K
60 min Winter	72.233	0.633	16.6	182.9	O K
120 min Winter	72.322	0.722	18.4	221.1	O K
180 min Winter	72.343	0.743	18.9	230.4	O K
240 min Winter	72.337	0.737	18.7	227.8	O K
360 min Winter	72.314	0.714	18.3	217.3	O K
480 min Winter	72.297	0.697	17.9	210.1	O K
600 min Winter	72.281	0.681	17.6	203.0	O K
720 min Winter	72.263	0.663	17.2	195.5	O K
960 min Winter	72.225	0.625	16.4	179.7	O K
1440 min Winter	72.142	0.542	14.7	147.7	O K
2160 min Winter	72.000	0.400	11.9	98.9	O K
2880 min Winter	71.863	0.263	9.3	59.0	O K
4320 min Winter	71.679	0.079	6.0	15.5	O K
5760 min Winter	71.639	0.039	4.1	7.4	O K
7200 min Winter	71.626	0.026	2.7	4.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
5760 min Summer	1.535	0.0	3024
7200 min Summer	1.278	0.0	3688
8640 min Summer	1.099	0.0	4416
10080 min Summer	0.968	0.0	5144
15 min Winter	139.469	0.0	148
30 min Winter	91.145	0.0	178
60 min Winter	56.713	0.0	202
120 min Winter	34.093	0.0	238
180 min Winter	24.982	0.0	278
240 min Winter	19.920	0.0	320
360 min Winter	14.430	0.0	404
480 min Winter	11.481	0.0	482
600 min Winter	9.608	0.0	542
720 min Winter	8.303	0.0	600
960 min Winter	6.590	0.0	724
1440 min Winter	4.752	0.0	966
2160 min Winter	3.421	0.0	1300
2880 min Winter	2.707	0.0	1652
4320 min Winter	1.944	0.0	2332
5760 min Winter	1.535	0.0	2976
7200 min Winter	1.278	0.0	3648

The Cowyards
 Blenheim Park, Oxford Road
 Woodstock OX20 1QR

F.A.S.T.
 Basin 1



Date 24/10/2019 11:36
 File Cascade 1 (Swale 1 & Ba...

Designed by MG
 Checked by SW


XP Solutions

Source Control 2018.1

Cascade Summary of Results for Basin 1.SRCX


Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
8640 min Winter	71.617	0.017	1.8	3.2	O K
10080 min Winter	71.613	0.013	1.3	2.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
8640 min Winter	1.099	0.0	4376
10080 min Winter	0.968	0.0	5048

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 1	
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XP Solutions	Source Control 2018.1	

Cascade Rainfall Details for Basin 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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 1	
Date 24/10/2019 11:36 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	


Cascade Model Details for Basin 1.SRCX

Storage is Online Cover Level (m) 72.600

Infiltration Basin Structure

Invert Level (m) 71.600 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.18000 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.18000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	184.0	1.000	580.0

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 2	
Date 24/10/2019 11:38 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Basin 2.SRCX


**Upstream Outflow To Overflow To
Structures**

Swale 4.SRCX Basin 1.SRCX (None)
Swale 3.SRCX
Swale 2.SRCX

Half Drain Time : 45 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	73.139	0.139	13.5	1.8	15.3	54.2	O K
30 min Summer	73.165	0.165	14.5	1.8	16.3	65.8	O K
60 min Summer	73.178	0.178	14.9	1.9	16.8	71.5	O K
120 min Summer	73.178	0.178	14.9	1.9	16.8	71.5	O K
180 min Summer	73.169	0.169	14.6	1.9	16.4	67.7	O K
240 min Summer	73.159	0.159	14.2	1.8	16.1	63.1	O K
360 min Summer	73.139	0.139	13.5	1.8	15.3	54.4	O K
480 min Summer	73.122	0.122	12.9	1.7	14.6	47.0	O K
600 min Summer	73.107	0.107	12.4	1.7	14.1	40.7	O K
720 min Summer	73.094	0.094	12.0	1.6	13.6	35.5	O K
960 min Summer	73.075	0.075	11.3	1.3	12.6	27.7	O K
1440 min Summer	73.052	0.052	10.5	0.9	11.4	18.8	O K
2160 min Summer	73.042	0.042	8.6	0.6	9.2	15.0	O K
2880 min Summer	73.036	0.036	7.3	0.5	7.8	12.8	O K
4320 min Summer	73.028	0.028	5.7	0.3	6.0	10.1	O K
5760 min Summer	73.024	0.024	4.7	0.2	4.9	8.4	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.469	0.0	104.4	17
30 min Summer	91.145	0.0	135.8	31
60 min Summer	56.713	0.0	168.2	50
120 min Summer	34.093	0.0	201.7	84
180 min Summer	24.982	0.0	221.5	118
240 min Summer	19.920	0.0	235.6	152
360 min Summer	14.430	0.0	256.4	218
480 min Summer	11.481	0.0	272.3	282
600 min Summer	9.608	0.0	284.9	344
720 min Summer	8.303	0.0	295.3	404
960 min Summer	6.590	0.0	312.0	522
1440 min Summer	4.752	0.0	333.0	750
2160 min Summer	3.421	0.0	351.4	1104
2880 min Summer	2.707	0.0	363.8	1468
4320 min Summer	1.944	0.0	378.4	2204
5760 min Summer	1.535	0.0	384.8	2936

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 2	
Date 24/10/2019 11:38 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	

Cascade Summary of Results for Basin 2.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
7200 min Summer	73.020	0.020	4.0	0.2	4.2	7.1	O K
8640 min Summer	73.018	0.018	3.5	0.1	3.6	6.2	O K
10080 min Summer	73.015	0.015	3.0	0.1	3.1	5.4	O K
15 min Winter	73.155	0.155	14.1	1.8	15.9	61.2	O K
30 min Winter	73.185	0.185	15.2	1.9	17.0	74.8	O K
60 min Winter	73.199	0.199	15.7	1.9	17.6	81.4	O K
120 min Winter	73.197	0.197	15.6	1.9	17.5	80.1	O K
180 min Winter	73.184	0.184	15.1	1.9	17.0	74.3	O K
240 min Winter	73.169	0.169	14.6	1.9	16.4	67.5	O K
360 min Winter	73.141	0.141	13.6	1.8	15.4	55.0	O K
480 min Winter	73.117	0.117	12.7	1.7	14.4	44.7	O K
600 min Winter	73.097	0.097	12.1	1.6	13.7	36.5	O K
720 min Winter	73.081	0.081	11.5	1.4	12.9	30.1	O K
960 min Winter	73.058	0.058	10.7	1.0	11.7	21.1	O K
1440 min Winter	73.043	0.043	8.9	0.7	9.6	15.6	O K
2160 min Winter	73.035	0.035	7.0	0.5	7.5	12.4	O K
2880 min Winter	73.029	0.029	5.9	0.3	6.2	10.4	O K
4320 min Winter	73.022	0.022	4.4	0.2	4.6	7.9	O K
5760 min Winter	73.018	0.018	3.6	0.1	3.7	6.4	O K
7200 min Winter	73.015	0.015	2.9	0.1	3.0	5.2	O K
8640 min Winter	73.012	0.012	2.3	0.1	2.3	4.1	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
7200 min Summer	1.278	0.0	386.7	3672
8640 min Summer	1.099	0.0	386.3	4384
10080 min Summer	0.968	0.0	384.8	5144
15 min Winter	139.469	0.0	116.7	17
30 min Winter	91.145	0.0	151.7	31
60 min Winter	56.713	0.0	187.8	56
120 min Winter	34.093	0.0	225.0	90
180 min Winter	24.982	0.0	247.1	128
240 min Winter	19.920	0.0	262.9	164
360 min Winter	14.430	0.0	286.2	234
480 min Winter	11.481	0.0	304.4	298
600 min Winter	9.608	0.0	319.2	362
720 min Winter	8.303	0.0	331.6	420
960 min Winter	6.590	0.0	351.4	532
1440 min Winter	4.752	0.0	378.9	752
2160 min Winter	3.421	0.0	402.4	1140
2880 min Winter	2.707	0.0	416.9	1484
4320 min Winter	1.944	0.0	430.6	2248
5760 min Winter	1.535	0.0	431.9	2968
7200 min Winter	1.278	0.0	426.6	3640
8640 min Winter	1.099	0.0	419.1	4400

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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR	F.A.S.T. Basin 2	
Date 24/10/2019 11:38 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Basin 2.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m ³)	Status
10080 min Winter	73.010	0.010	1.9	0.1	1.9	3.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
10080 min Winter	0.968	0.0	420.3	5152

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Date 24/10/2019 11:38 File Cascade 1 (Swale 1 & Ba...	Designed by MG Checked by SW	
XP Solutions	Source Control 2018.1	


Cascade Rainfall Details for Basin 2.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)	20.000	Shortest Storm (mins)	15
Ratio R	0.411	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.237

Time (mins) Area		
From:	To:	(ha)
0	4	0.237

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XP Solutions	Source Control 2018.1	

Cascade Model Details for Basin 2.SRCX

Storage is Online Cover Level (m) 74.000

Infiltration Basin Structure

Invert Level (m) 73.000 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.18000 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.18000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	350.0	1.000	1131.0

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0067-2000-1000-2000
 Design Head (m) 1.000
 Design Flow (l/s) 2.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 67
 Invert Level (m) 73.000
 Minimum Outlet Pipe Diameter (mm) 100
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	2.0
Flush-Flo™	0.296	1.9
Kick-Flo®	0.599	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	1.6	1.200	2.2	3.000	3.3	7.000	4.9
0.200	1.9	1.400	2.3	3.500	3.5	7.500	5.1
0.300	1.9	1.600	2.5	4.000	3.8	8.000	5.2
0.400	1.9	1.800	2.6	4.500	4.0	8.500	5.4
0.500	1.8	2.000	2.7	5.000	4.2	9.000	5.5
0.600	1.6	2.200	2.9	5.500	4.4	9.500	5.7
0.800	1.8	2.400	3.0	6.000	4.6		
1.000	2.0	2.600	3.1	6.500	4.7		