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The Cowyards Blenheim Park, Oxford Road Woodstock OX20 1QR		
Date 19/08/2019 15:04 File Existing Pond Structure...	Designed by mgardner Checked by	
XP Solutions		Source Control 2018.1

Cascade Summary of Results for Bicester NTS - Existing Pond.SRCX

Upstream Structures

Outflow To

Overflow To

(None) Bicester NTS - Existing ditch.SRCX Bicester NTS - Existing ditch.SRCX

Half Drain Time : 17 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 (m ³)	Status
15 min Summer	77.804	1.064	1.2	32.4	249.5	283.1	49.2	FLOOD
30 min Summer	77.804	1.064	1.2	32.5	257.4	291.0	49.3	FLOOD
60 min Summer	77.803	1.063	1.2	32.4	233.9	267.5	49.2	FLOOD
120 min Summer	77.796	1.056	1.2	32.2	134.7	168.1	48.9	FLOOD
180 min Summer	77.793	1.053	1.2	32.1	98.1	131.4	48.6	FLOOD
240 min Summer	77.791	1.051	1.2	32.1	76.0	109.2	48.6	FLOOD
360 min Summer	77.789	1.049	1.2	32.0	55.8	89.0	48.4	FLOOD
480 min Summer	77.786	1.046	1.2	32.0	33.7	66.8	48.3	FLOOD
600 min Summer	77.785	1.045	1.2	31.9	25.9	59.0	48.2	FLOOD
720 min Summer	77.784	1.044	1.2	31.9	18.9	52.0	48.1	FLOOD
960 min Summer	77.783	1.043	1.2	31.9	9.8	42.9	48.0	FLOOD
1440 min Summer	77.573	0.833	1.0	25.5	0.0	26.5	36.4	O K
2160 min Summer	77.407	0.667	0.9	19.0	0.0	19.9	27.9	O K
2880 min Summer	77.330	0.590	0.9	15.1	0.0	15.9	24.2	O K
4320 min Summer	77.283	0.543	0.8	10.6	0.0	11.5	22.0	O K
5760 min Summer	77.266	0.526	0.8	8.2	0.0	9.1	21.2	O K
7200 min Summer	77.258	0.518	0.8	6.7	0.0	7.6	20.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Overflow Volume (m ³)	Time-Peak (mins)
15 min Summer	99.451	1.3	187.6	108.0	12
30 min Summer	65.047	1.4	245.4	147.8	21
60 min Summer	40.510	1.4	305.6	167.9	34
120 min Summer	24.372	1.1	367.8	162.8	64
180 min Summer	17.866	0.8	404.4	147.2	90
240 min Summer	14.249	0.8	430.0	130.0	122
360 min Summer	10.327	0.6	467.5	97.6	188
480 min Summer	8.219	0.4	496.1	69.7	240
600 min Summer	6.879	0.3	519.0	46.3	312
720 min Summer	5.946	0.3	538.4	27.5	360
960 min Summer	4.721	0.1	569.9	3.3	496
1440 min Summer	3.405	0.0	616.6	0.0	742
2160 min Summer	2.452	0.0	666.1	0.0	1104
2880 min Summer	1.941	0.0	702.9	0.0	1468
4320 min Summer	1.394	0.0	757.3	0.0	2200
5760 min Summer	1.101	0.0	797.7	0.0	2896
7200 min Summer	0.917	0.0	830.1	0.0	3648

Cascade Summary of Results for Bicester NTS - Existing Pond.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	77.253	0.513	0.8	5.7	0.0	6.5	20.6	O K
10080 min Summer	77.241	0.501	0.8	4.9	0.0	5.7	20.1	O K
15 min Winter	77.808	1.068	1.2	32.5	315.1	348.8	49.4	FLOOD
30 min Winter	77.804	1.064	1.2	32.4	249.5	283.1	49.3	FLOOD
60 min Winter	77.800	1.060	1.2	32.3	189.2	222.7	49.2	FLOOD
120 min Winter	77.793	1.053	1.2	32.2	103.9	137.3	48.8	FLOOD
180 min Winter	77.791	1.051	1.2	32.1	76.0	109.2	48.5	FLOOD
240 min Winter	77.789	1.049	1.2	32.0	60.6	93.9	48.4	FLOOD
360 min Winter	77.786	1.046	1.2	32.0	33.7	66.8	48.3	FLOOD
480 min Winter	77.784	1.044	1.2	31.9	18.9	52.0	48.2	FLOOD
600 min Winter	77.783	1.043	1.2	31.9	9.8	42.9	48.0	FLOOD
720 min Winter	77.781	1.041	1.2	31.8	3.0	36.0	47.9	FLOOD
960 min Winter	77.596	0.856	1.1	26.3	0.0	27.3	37.6	O K
1440 min Winter	77.411	0.671	0.9	19.2	0.0	20.1	28.1	O K
2160 min Winter	77.311	0.571	0.8	13.7	0.0	14.6	23.3	O K
2880 min Winter	77.284	0.544	0.8	10.8	0.0	11.6	22.0	O K
4320 min Winter	77.262	0.522	0.8	7.6	0.0	8.4	21.0	O K
5760 min Winter	77.253	0.513	0.8	5.8	0.0	6.6	20.6	O K
7200 min Winter	77.235	0.495	0.8	4.6	0.0	5.4	19.8	O K
8640 min Winter	77.221	0.481	0.8	4.0	0.0	4.7	19.2	O K
10080 min Winter	77.213	0.473	0.8	3.4	0.0	4.2	18.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
8640 min Summer	0.789	0.0	857.2	0.0	4352
10080 min Summer	0.695	0.0	880.6	0.0	5080
15 min Winter	99.451	1.6	210.1	129.3	13
30 min Winter	65.047	1.5	274.8	175.2	20
60 min Winter	40.510	1.3	342.3	201.5	32
120 min Winter	24.372	0.9	411.9	193.3	68
180 min Winter	17.866	0.7	452.9	170.7	92
240 min Winter	14.249	0.6	481.6	144.6	128
360 min Winter	10.327	0.4	523.6	94.7	186
480 min Winter	8.219	0.3	555.6	53.0	240
600 min Winter	6.879	0.2	581.3	21.0	314
720 min Winter	5.946	0.1	603.0	1.3	380
960 min Winter	4.721	0.0	638.3	0.0	506
1440 min Winter	3.405	0.0	690.6	0.0	740
2160 min Winter	2.452	0.0	746.1	0.0	1100
2880 min Winter	1.941	0.0	787.3	0.0	1460
4320 min Winter	1.394	0.0	848.2	0.0	2144
5760 min Winter	1.101	0.0	893.4	0.0	2872
7200 min Winter	0.917	0.0	929.7	0.0	3672
8640 min Winter	0.789	0.0	960.1	0.0	4304
10080 min Winter	0.695	0.0	986.3	0.0	5056

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Cascade Rainfall Details for Bicester NTS - Existing Pond.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	0.409	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 1.006

Time (mins)		Area	Time (mins)		Area	Time (mins)		Area
From:	To:	(ha)	From:	To:	(ha)	From:	To:	(ha)
0	4	0.334	4	8	0.334	8	12	0.338

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Cascade Model Details for Bicester NTS - Existing Pond.SRCX

Storage is Online Cover Level (m) 77.780

Infiltration Basin Structure

Invert Level (m) 76.740 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.09360 Porosity 1.00
 Infiltration Coefficient Side (m/hr) 0.09360

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	35.0	1.000	57.0

Complex Outflow Control

Pipe


Diameter (m) 0.100 Entry Loss Coefficient 0.500
 Slope (1:X) 100.0 Coefficient of Contraction 0.600
 Length (m) 1.000 Upstream Invert Level (m) 77.150
 Roughness k (mm) 0.600

Pipe

Diameter (m) 0.100 Entry Loss Coefficient 0.500
 Slope (1:X) 100.0 Coefficient of Contraction 0.600
 Length (m) 1.000 Upstream Invert Level (m) 77.150
 Roughness k (mm) 0.600

Weir Overflow Control

Discharge Coef 0.544 Width (m) 40.000 Invert Level (m) 77.780

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Cascade Summary of Results for Bicester NTS - Existing ditch.SRCX

Upstream Structures **Outflow To** **Overflow To**
 Bicester NTS - Existing Pond.SRCX (None) (None)

Half Drain Time : 6 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 (m ³)	Status
15 min Summer	77.830	0.770	1.6	72.9	126.1	200.6	40.2	O K
30 min Summer	77.867	0.807	1.7	74.6	142.8	219.0	44.5	O K
60 min Summer	77.838	0.778	1.6	73.3	129.7	204.5	41.0	O K
120 min Summer	77.740	0.680	1.4	68.9	86.9	157.2	30.6	O K
180 min Summer	77.666	0.606	1.2	65.5	59.4	126.1	23.8	O K
240 min Summer	77.612	0.552	1.1	62.8	41.9	105.8	19.4	O K
360 min Summer	77.544	0.484	0.9	59.2	18.8	79.0	14.3	O K
480 min Summer	77.483	0.423	0.8	55.9	6.5	63.2	10.6	O K
600 min Summer	77.421	0.361	0.6	52.3	0.4	53.3	7.3	O K
720 min Summer	77.374	0.314	0.5	46.7	0.0	47.3	5.2	O K
960 min Summer	77.321	0.261	0.4	35.9	0.0	36.3	3.3	O K
1440 min Summer	77.269	0.209	0.3	25.2	0.0	25.5	1.9	O K
2160 min Summer	77.235	0.175	0.2	18.8	0.0	19.0	1.2	O K
2880 min Summer	77.208	0.148	0.2	14.9	0.0	15.1	0.8	O K
4320 min Summer	77.182	0.122	0.1	10.6	0.0	10.7	0.5	O K
5760 min Summer	77.169	0.109	0.1	8.2	0.0	8.3	0.4	O K
7200 min Summer	77.159	0.099	0.1	6.7	0.0	6.8	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Overflow Volume (m ³)	Time-Peak (mins)
15 min Summer	99.451	0.0	167.3	66.5	18
30 min Summer	65.047	0.0	224.3	96.8	25
60 min Summer	40.510	0.0	282.9	107.0	40
120 min Summer	24.372	0.0	342.1	92.0	70
180 min Summer	17.866	0.0	375.9	71.7	100
240 min Summer	14.249	0.0	398.7	52.4	128
360 min Summer	10.327	0.0	430.3	23.1	190
480 min Summer	8.219	0.0	453.1	6.5	250
600 min Summer	6.879	0.0	470.6	0.2	310
720 min Summer	5.946	0.0	484.4	0.0	370
960 min Summer	4.721	0.0	505.3	0.0	494
1440 min Summer	3.405	0.0	531.5	0.0	742
2160 min Summer	2.452	0.0	549.9	0.0	1104
2880 min Summer	1.941	0.0	555.5	0.0	1464
4320 min Summer	1.394	0.0	548.2	0.0	2152
5760 min Summer	1.101	0.0	528.9	0.0	2872
7200 min Summer	0.917	0.0	507.1	0.0	3616

Cascade Summary of Results for Bicester NTS - Existing ditch.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	77.150	0.090	0.1	5.7	0.0	5.8	0.2	O K
10080 min Summer	77.143	0.083	0.1	4.9	0.0	5.0	0.2	O K
15 min Winter	77.879	0.819	1.7	75.0	147.9	224.6	45.9	O K
30 min Winter	77.900	0.840	1.7	75.9	157.5	235.2	48.6	O K
60 min Winter	77.824	0.764	1.6	72.7	123.5	197.7	39.5	O K
120 min Winter	77.688	0.628	1.2	66.5	66.2	134.0	25.8	O K
180 min Winter	77.604	0.544	1.1	62.4	38.6	102.1	18.7	O K
240 min Winter	77.554	0.494	0.9	59.8	21.2	81.9	15.0	O K
360 min Winter	77.464	0.404	0.7	54.8	3.9	59.4	9.5	O K
480 min Winter	77.375	0.315	0.5	46.9	0.0	47.5	5.3	O K
600 min Winter	77.338	0.278	0.5	39.4	0.0	39.8	3.9	O K
720 min Winter	77.308	0.248	0.4	33.2	0.0	33.6	2.9	O K
960 min Winter	77.273	0.213	0.3	26.0	0.0	26.3	2.0	O K
1440 min Winter	77.236	0.176	0.2	18.9	0.0	19.2	1.2	O K
2160 min Winter	77.199	0.139	0.2	13.6	0.0	13.8	0.6	O K
2880 min Winter	77.182	0.122	0.1	10.7	0.0	10.8	0.5	O K
4320 min Winter	77.165	0.105	0.1	7.5	0.0	7.6	0.3	O K
5760 min Winter	77.151	0.091	0.1	5.8	0.0	5.9	0.2	O K
7200 min Winter	77.141	0.081	0.1	4.6	0.0	4.7	0.2	O K
8640 min Winter	77.135	0.075	0.1	4.0	0.0	4.0	0.1	O K
10080 min Winter	77.130	0.070	0.1	3.4	0.0	3.5	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
8640 min Summer	0.789	0.0	488.1	0.0	4288
10080 min Summer	0.695	0.0	471.3	0.0	5040
15 min Winter	99.451	0.0	189.8	84.3	18
30 min Winter	65.047	0.0	253.7	118.4	25
60 min Winter	40.510	0.0	319.6	127.8	40
120 min Winter	24.372	0.0	386.0	102.5	70
180 min Winter	17.866	0.0	424.1	70.0	98
240 min Winter	14.249	0.0	450.0	41.2	130
360 min Winter	10.327	0.0	486.0	5.5	190
480 min Winter	8.219	0.0	512.3	0.0	252
600 min Winter	6.879	0.0	532.5	0.0	308
720 min Winter	5.946	0.0	548.8	0.0	382
960 min Winter	4.721	0.0	574.5	0.0	504
1440 min Winter	3.405	0.0	606.9	0.0	740
2160 min Winter	2.452	0.0	631.6	0.0	1088
2880 min Winter	1.941	0.0	642.2	0.0	1476
4320 min Winter	1.394	0.0	642.6	0.0	2176
5760 min Winter	1.101	0.0	628.9	0.0	2856
7200 min Winter	0.917	0.0	608.4	0.0	3600
8640 min Winter	0.789	0.0	584.5	0.0	4312
10080 min Winter	0.695	0.0	560.5	0.0	5064

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Cascade Rainfall Details for Bicester NTS - Existing ditch.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	0.409	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

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Cascade Model Details for Bicester NTS - Existing ditch.SRCX

Storage is Online Cover Level (m) 78.140

Swale Structure

Infiltration Coefficient Base (m/hr)	0.09360	Length (m)	20.0
Infiltration Coefficient Side (m/hr)	0.09360	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	100.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	77.060	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.3		

Pipe Outflow Control

Diameter (m)	0.225	Entry Loss Coefficient	0.500
Slope (1:X)	100.0	Coefficient of Contraction	0.600
Length (m)	30.000	Upstream Invert Level (m)	77.060
Roughness k (mm)	0.600		

Pipe Overflow Control

Diameter (m)	0.375	Entry Loss Coefficient	0.500
Slope (1:X)	100.0	Coefficient of Contraction	0.600
Length (m)	20.000	Upstream Invert Level (m)	77.400
Roughness k (mm)	0.600		