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Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes 30 year	
Date 21/06/2022 File Cascade.CASX	Designed by S.Smith Checked by	
Innovyze	Source Control 2020.1	

Cascade Summary of Results for Pond.SRCX							
Upstream Structures		Outflow To		Overflow To			
(None)		Deep Borehole Soakaway.SRCX		(None)			
Half Drain Time : 6109 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	5.588	0.188	0.0	0.5	0.5	101.2	O K
30 min Summer	5.645	0.245	0.0	0.6	0.6	134.7	O K
60 min Summer	5.705	0.305	0.0	0.6	0.6	171.4	O K
120 min Summer	5.768	0.368	0.0	0.6	0.6	210.8	O K
180 min Summer	5.805	0.405	0.0	0.6	0.6	234.7	O K
240 min Summer	5.831	0.431	0.0	0.6	0.6	251.6	O K
360 min Summer	5.868	0.468	0.0	0.6	0.6	276.4	O K
480 min Summer	5.894	0.494	0.0	0.6	0.6	294.5	O K
600 min Summer	5.915	0.515	0.0	0.6	0.6	308.5	O K
720 min Summer	5.931	0.531	0.0	0.6	0.6	319.8	O K
960 min Summer	5.955	0.555	0.0	0.6	0.6	337.1	O K
1440 min Summer	5.986	0.586	0.0	0.6	0.6	359.4	O K
2160 min Summer	6.010	0.610	0.0	0.6	0.6	376.9	O K
2880 min Summer	6.021	0.621	0.0	0.6	0.6	384.3	O K
4320 min Summer	6.020	0.620	0.0	0.6	0.6	383.8	O K
5760 min Summer	6.007	0.607	0.0	0.6	0.6	374.4	O K
7200 min Summer	5.993	0.593	0.0	0.6	0.6	364.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	70.373	0.0	45.9	46
30 min Summer	46.843	0.0	47.0	61
60 min Summer	29.868	0.0	94.9	90
120 min Summer	18.484	0.0	97.3	150
180 min Summer	13.799	0.0	98.6	208
240 min Summer	11.157	0.0	99.4	268
360 min Summer	8.261	0.0	100.5	386
480 min Summer	6.668	0.0	101.2	506
600 min Summer	5.644	0.0	101.7	624
720 min Summer	4.923	0.0	101.9	744
960 min Summer	3.965	0.0	102.2	982
1440 min Summer	2.919	0.0	101.8	1458
2160 min Summer	2.146	0.0	205.0	2172
2880 min Summer	1.724	0.0	204.2	2888
4320 min Summer	1.264	0.0	200.6	4320
5760 min Summer	1.014	0.0	401.5	5040
7200 min Summer	0.854	0.0	397.7	5784

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<u>Cascade Summary of Results for Pond.SRCX</u> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max E Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>8640 min Summer</td><td>5.982</td><td>0.582</td><td>0.0</td><td>0.6</td><td>0.6</td><td>356.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>5.972</td><td>0.572</td><td>0.0</td><td>0.6</td><td>0.6</td><td>348.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>5.609</td><td>0.209</td><td>0.0</td><td>0.5</td><td>0.5</td><td>113.5</td><td>O K</td></tr><tr><td>30 min Winter</td><td>5.672</td><td>0.272</td><td>0.0</td><td>0.6</td><td>0.6</td><td>151.1</td><td>O K</td></tr><tr><td>60 min Winter</td><td>5.739</td><td>0.339</td><td>0.0</td><td>0.6</td><td>0.6</td><td>192.3</td><td>O K</td></tr><tr><td>120 min Winter</td><td>5.808</td><td>0.408</td><td>0.0</td><td>0.6</td><td>0.6</td><td>236.8</td><td>O K</td></tr><tr><td>180 min Winter</td><td>5.849</td><td>0.449</td><td>0.0</td><td>0.6</td><td>0.6</td><td>263.8</td><td>O K</td></tr><tr><td>240 min Winter</td><td>5.878</td><td>0.478</td><td>0.0</td><td>0.6</td><td>0.6</td><td>283.0</td><td>O K</td></tr><tr><td>360 min Winter</td><td>5.919</td><td>0.519</td><td>0.0</td><td>0.6</td><td>0.6</td><td>311.3</td><td>O K</td></tr><tr><td>480 min Winter</td><td>5.948</td><td>0.548</td><td>0.0</td><td>0.6</td><td>0.6</td><td>332.0</td><td>O K</td></tr><tr><td>600 min Winter</td><td>5.971</td><td>0.571</td><td>0.0</td><td>0.6</td><td>0.6</td><td>348.2</td><td>O K</td></tr><tr><td>720 min Winter</td><td>5.989</td><td>0.589</td><td>0.0</td><td>0.6</td><td>0.6</td><td>361.5</td><td>O K</td></tr><tr><td>960 min Winter</td><td>6.017</td><td>0.617</td><td>0.0</td><td>0.6</td><td>0.6</td><td>381.9</td><td>O K</td></tr><tr><td>1440 min Winter</td><td>6.054</td><td>0.654</td><td>0.0</td><td>0.6</td><td>0.6</td><td>409.0</td><td>O K</td></tr><tr><td>2160 min Winter</td><td>6.084</td><td>0.684</td><td>0.0</td><td>0.6</td><td>0.6</td><td>431.6</td><td>O K</td></tr><tr><td>2880 min Winter</td><td>6.099</td><td>0.699</td><td>0.0</td><td>0.6</td><td>0.6</td><td>443.2</td><td>O K</td></tr><tr><td>4320 min Winter</td><td>6.107</td><td>0.707</td><td>0.0</td><td>0.6</td><td>0.6</td><td>449.7</td><td>O K</td></tr><tr><td>5760 min Winter</td><td>6.101</td><td>0.701</td><td>0.0</td><td>0.6</td><td>0.6</td><td>444.5</td><td>O K</td></tr><tr><td>7200 min Winter</td><td>6.086</td><td>0.686</td><td>0.0</td><td>0.6</td><td>0.6</td><td>433.5</td><td>O K</td></tr><tr><td>8640 min Winter</td><td>6.071</td><td>0.671</td><td>0.0</td><td>0.6</td><td>0.6</td><td>421.9</td><td>O K</td></tr><tr><td>10080 min Winter</td><td>6.057</td><td>0.657</td><td>0.0</td><td>0.6</td><td>0.6</td><td>411.1</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>8640 min Summer</td><td>0.743</td><td>0.0</td><td>389.9</td><td>6576</td></tr><tr><td>10080 min Summer</td><td>0.660</td><td>0.0</td><td>379.3</td><td>7296</td></tr><tr><td>15 min Winter</td><td>70.373</td><td>0.0</td><td>46.3</td><td>46</td></tr><tr><td>30 min Winter</td><td>46.843</td><td>0.0</td><td>47.5</td><td>61</td></tr><tr><td>60 min Winter</td><td>29.868</td><td>0.0</td><td>96.2</td><td>90</td></tr><tr><td>120 min Winter</td><td>18.484</td><td>0.0</td><td>98.7</td><td>148</td></tr><tr><td>180 min Winter</td><td>13.799</td><td>0.0</td><td>100.1</td><td>206</td></tr><tr><td>240 min Winter</td><td>11.157</td><td>0.0</td><td>100.9</td><td>264</td></tr><tr><td>360 min Winter</td><td>8.261</td><td>0.0</td><td>102.1</td><td>380</td></tr><tr><td>480 min Winter</td><td>6.668</td><td>0.0</td><td>102.8</td><td>498</td></tr><tr><td>600 min Winter</td><td>5.644</td><td>0.0</td><td>103.2</td><td>614</td></tr><tr><td>720 min Winter</td><td>4.923</td><td>0.0</td><td>103.5</td><td>732</td></tr><tr><td>960 min Winter</td><td>3.965</td><td>0.0</td><td>103.6</td><td>966</td></tr><tr><td>1440 min Winter</td><td>2.919</td><td>0.0</td><td>103.1</td><td>1434</td></tr><tr><td>2160 min Winter</td><td>2.146</td><td>0.0</td><td>208.4</td><td>2132</td></tr><tr><td>2880 min Winter</td><td>1.724</td><td>0.0</td><td>207.3</td><td>2824</td></tr><tr><td>4320 min Winter</td><td>1.264</td><td>0.0</td><td>202.7</td><td>4172</td></tr><tr><td>5760 min Winter</td><td>1.014</td><td>0.0</td><td>408.8</td><td>5480</td></tr><tr><td>7200 min Winter</td><td>0.854</td><td>0.0</td><td>404.2</td><td>6656</td></tr><tr><td>8640 min Winter</td><td>0.743</td><td>0.0</td><td>397.9</td><td>6936</td></tr><tr><td>10080 min Winter</td><td>0.660</td><td>0.0</td><td>390.0</td><td>7864</td></tr></table>								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	8640 min Summer	5.982	0.582	0.0	0.6	0.6	356.1	O K	10080 min Summer	5.972	0.572	0.0	0.6	0.6	348.9	O K	15 min Winter	5.609	0.209	0.0	0.5	0.5	113.5	O K	30 min Winter	5.672	0.272	0.0	0.6	0.6	151.1	O K	60 min Winter	5.739	0.339	0.0	0.6	0.6	192.3	O K	120 min Winter	5.808	0.408	0.0	0.6	0.6	236.8	O K	180 min Winter	5.849	0.449	0.0	0.6	0.6	263.8	O K	240 min Winter	5.878	0.478	0.0	0.6	0.6	283.0	O K	360 min Winter	5.919	0.519	0.0	0.6	0.6	311.3	O K	480 min Winter	5.948	0.548	0.0	0.6	0.6	332.0	O K	600 min Winter	5.971	0.571	0.0	0.6	0.6	348.2	O K	720 min Winter	5.989	0.589	0.0	0.6	0.6	361.5	O K	960 min Winter	6.017	0.617	0.0	0.6	0.6	381.9	O K	1440 min Winter	6.054	0.654	0.0	0.6	0.6	409.0	O K	2160 min Winter	6.084	0.684	0.0	0.6	0.6	431.6	O K	2880 min Winter	6.099	0.699	0.0	0.6	0.6	443.2	O K	4320 min Winter	6.107	0.707	0.0	0.6	0.6	449.7	O K	5760 min Winter	6.101	0.701	0.0	0.6	0.6	444.5	O K	7200 min Winter	6.086	0.686	0.0	0.6	0.6	433.5	O K	8640 min Winter	6.071	0.671	0.0	0.6	0.6	421.9	O K	10080 min Winter	6.057	0.657	0.0	0.6	0.6	411.1	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	8640 min Summer	0.743	0.0	389.9	6576	10080 min Summer	0.660	0.0	379.3	7296	15 min Winter	70.373	0.0	46.3	46	30 min Winter	46.843	0.0	47.5	61	60 min Winter	29.868	0.0	96.2	90	120 min Winter	18.484	0.0	98.7	148	180 min Winter	13.799	0.0	100.1	206	240 min Winter	11.157	0.0	100.9	264	360 min Winter	8.261	0.0	102.1	380	480 min Winter	6.668	0.0	102.8	498	600 min Winter	5.644	0.0	103.2	614	720 min Winter	4.923	0.0	103.5	732	960 min Winter	3.965	0.0	103.6	966	1440 min Winter	2.919	0.0	103.1	1434	2160 min Winter	2.146	0.0	208.4	2132	2880 min Winter	1.724	0.0	207.3	2824	4320 min Winter	1.264	0.0	202.7	4172	5760 min Winter	1.014	0.0	408.8	5480	7200 min Winter	0.854	0.0	404.2	6656	8640 min Winter	0.743	0.0	397.9	6936	10080 min Winter	0.660	0.0	390.0	7864
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Innovyze Source Control 2020.1		

Cascade Rainfall Details for Pond.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.778

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:	From:	To:
0	4 0.100	8	12 0.100	16	20 0.100	24	28 0.100
4	8 0.100	12	16 0.100	20	24 0.100	28	32 0.078

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MJA Consulting		Page 4
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes 30 year	
Date 21/06/2022 File Cascade.CASX	Designed by S.Smith Checked by	
Innovyze Source Control 2020.1		

Cascade Model Details for Pond.SRCX

Storage is Online Cover Level (m) 7.000

Infiltration Basin Structure

Invert Level (m) 5.400 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	506.0	0.500	690.0	1.000	888.0	1.500	1100.0
0.100	542.0	0.600	728.0	1.100	929.0	1.600	1144.0
0.200	578.0	0.700	767.0	1.200	971.0		
0.300	615.0	0.800	807.0	1.300	1013.0		
0.400	651.0	0.900	847.0	1.400	1056.0		

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0033-6000-1300-6000
Design Head (m) 1.300
Design Flow (l/s) 0.6
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 33
Invert Level (m) 4.550
Minimum Outlet Pipe Diameter (mm) 75
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	0.6	Kick-Flo®	0.297	0.3
Flush-Flo™	0.146	0.4	Mean Flow over Head Range	-	0.4

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	0.4	1.200	0.6	3.000	0.9	7.000	1.3
0.200	0.4	1.400	0.6	3.500	0.9	7.500	1.3
0.300	0.3	1.600	0.7	4.000	1.0	8.000	1.4
0.400	0.4	1.800	0.7	4.500	1.0	8.500	1.4
0.500	0.4	2.000	0.7	5.000	1.1	9.000	1.4
0.600	0.4	2.200	0.8	5.500	1.1	9.500	1.5
0.800	0.5	2.400	0.8	6.000	1.2		
1.000	0.5	2.600	0.8	6.500	1.2		

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Monarch House
Barton Lane
OX14 3NB

Phase 2 Manor Farm
Bedhampton
Pond + Boreholes 30 year

Date 21/06/2022
File Cascade.CASX

Designed by S.Smith
Checked by CP

Innovyze

Source Control 2020.1

Micro Drainage

Cascade Summary of Results for Deep Borehole Soakaway.SRCX

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
8640 min Summer	99.622	50.122	0.4	0.3	0.6	3.7	O K
10080 min Summer	99.622	50.122	0.4	0.3	0.6	3.7	O K
15 min Winter	99.617	50.117	0.4	0.2	0.6	3.7	O K
30 min Winter	99.618	50.118	0.4	0.2	0.6	3.7	O K
60 min Winter	99.619	50.119	0.4	0.2	0.6	3.7	O K
120 min Winter	99.619	50.119	0.4	0.2	0.6	3.7	O K
180 min Winter	99.620	50.120	0.4	0.2	0.6	3.7	O K
240 min Winter	99.620	50.120	0.4	0.3	0.6	3.7	O K
360 min Winter	99.621	50.121	0.4	0.3	0.6	3.7	O K
480 min Winter	99.621	50.121	0.4	0.3	0.6	3.7	O K
600 min Winter	99.621	50.121	0.4	0.3	0.6	3.7	O K
720 min Winter	99.621	50.121	0.4	0.3	0.6	3.7	O K
960 min Winter	99.622	50.122	0.4	0.3	0.6	3.7	O K
1440 min Winter	99.622	50.122	0.4	0.3	0.6	3.7	O K
2160 min Winter	99.622	50.122	0.4	0.3	0.6	3.7	O K
2880 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
4320 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
5760 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
7200 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
8640 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
10080 min Winter	99.622	50.122	0.4	0.3	0.6	3.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
8640 min Summer	0.743	0.0	147.1	5744
10080 min Summer	0.660	0.0	137.2	7704
15 min Winter	70.373	0.0	14.0	215
30 min Winter	46.843	0.0	15.1	196
60 min Winter	29.868	0.0	33.5	194
120 min Winter	18.484	0.0	36.1	204
180 min Winter	13.799	0.0	37.5	202
240 min Winter	11.157	0.0	38.5	490
360 min Winter	8.261	0.0	39.7	428
480 min Winter	6.668	0.0	40.5	484
600 min Winter	5.644	0.0	41.0	854
720 min Winter	4.923	0.0	41.2	784
960 min Winter	3.965	0.0	41.5	900
1440 min Winter	2.919	0.0	41.0	1400
2160 min Winter	2.146	0.0	86.1	2108
2880 min Winter	1.724	0.0	85.2	2756
4320 min Winter	1.264	0.0	81.2	4120
5760 min Winter	1.014	0.0	167.0	5088
7200 min Winter	0.854	0.0	163.4	6544
8640 min Winter	0.743	0.0	158.1	7528
10080 min Winter	0.660	0.0	151.4	7824

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Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes 30 year																															
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<u>Cascade Rainfall Details for Deep Borehole Soakaway.SRCX</u> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>Return Period (years)</td> <td>30</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.400</td> <td>Shortest Storm (mins)</td> <td>15</td> </tr> <tr> <td>Ratio R</td> <td>0.350</td> <td>Longest Storm (mins)</td> <td>10080</td> </tr> <tr> <td>Summer Storms</td> <td>Yes</td> <td>Climate Change %</td> <td>+0</td> </tr> </table> <u>Time Area Diagram</u> Total Area (ha) 0.000 <table> <tr> <td>Time (mins)</td> <td>Area</td> </tr> <tr> <td>From: To:</td> <td>(ha)</td> </tr> <tr> <td>0</td> <td>4 0.000</td> </tr> </table>			Rainfall Model	FSR	Winter Storms	Yes	Return Period (years)	30	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	19.400	Shortest Storm (mins)	15	Ratio R	0.350	Longest Storm (mins)	10080	Summer Storms	Yes	Climate Change %	+0	Time (mins)	Area	From: To:	(ha)	0	4 0.000
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Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes 30 year	
Date 21/06/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	
Innovyze Source Control 2020.1		

Cascade Model Details for Deep Borehole Soakaway.SRCX

Storage is Online Cover Level (m) 100.000

Deep Bore Soakaway Structure

Chamber Invert Level (m) 99.500 Infiltration Coefficient Base (m/hr) 0.05328
 Chamber Diameter/Length (m) 1.200 Safety Factor 2.0
 Borehole Diameter (m) 0.300
 Borehole Depth (m) 50.000

Depth (m)	Side Infil. Coef. (m/hr)	Depth (m)	Side Infil. Coef. (m/hr)
0.000	0.05328	50.000	0.05328

Orifice Overflow Control

Diameter (m) 0.150 Discharge Coefficient 0.600 Invert Level (m) 99.600

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Cascade Summary of Results for Deep Borehole Soakaway 2.SRCX

**Upstream
Structures**

Outflow To

Overflow To

Deep Borehole Soakaway.SRCX (None) Deep Borehole Soakaway 3.SRCX
Pond.SRCX

Half Drain Time : 113 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	75.088	25.588	0.2	0.0	0.2	1.8	O K
30 min Summer	77.013	27.513	0.2	0.0	0.2	1.9	O K
60 min Summer	78.999	29.499	0.2	0.0	0.2	2.1	O K
120 min Summer	81.042	31.542	0.2	0.0	0.2	2.2	O K
180 min Summer	82.245	32.745	0.2	0.0	0.2	2.3	O K
240 min Summer	83.088	33.588	0.2	0.0	0.2	2.4	O K
360 min Summer	84.325	34.825	0.2	0.0	0.2	2.5	O K
480 min Summer	85.224	35.724	0.2	0.0	0.2	2.5	O K
600 min Summer	85.914	36.414	0.3	0.0	0.3	2.6	O K
720 min Summer	86.473	36.973	0.3	0.0	0.3	2.6	O K
960 min Summer	87.316	37.816	0.3	0.0	0.3	2.7	O K
1440 min Summer	88.360	38.860	0.3	0.0	0.3	2.7	O K
2160 min Summer	89.154	39.654	0.3	0.0	0.3	2.8	O K
2880 min Summer	89.502	40.002	0.3	0.0	0.3	2.8	O K
4320 min Summer	89.562	40.062	0.3	0.0	0.3	2.8	O K
5760 min Summer	89.241	39.741	0.3	0.0	0.3	2.8	O K
7200 min Summer	88.855	39.355	0.3	0.0	0.3	2.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	70.373	0.0	0.0	925
30 min Summer	46.843	0.0	0.0	941
60 min Summer	29.868	0.0	0.0	966
120 min Summer	18.484	0.0	0.0	986
180 min Summer	13.799	0.0	0.0	992
240 min Summer	11.157	0.0	0.0	1020
360 min Summer	8.261	0.0	0.0	1062
480 min Summer	6.668	0.0	0.0	1100
600 min Summer	5.644	0.0	0.0	1122
720 min Summer	4.923	0.0	0.0	1214
960 min Summer	3.965	0.0	0.0	1330
1440 min Summer	2.919	0.0	0.0	1696
2160 min Summer	2.146	0.0	0.0	2328
2880 min Summer	1.724	0.0	0.0	2996
4320 min Summer	1.264	0.0	0.0	4360
5760 min Summer	1.014	0.0	0.0	5256
7200 min Summer	0.854	0.0	0.0	5832

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Monarch House Barton Lane OX14 3NB			Phase 2 Manor Farm Bedhampton Pond + Boreholes 30 year				
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Innovyze			Source Control 2020.1				
<u>Cascade Summary of Results for Deep Borehole Soakaway 2.SRCX</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
8640 min Summer	88.548	39.048	0.3	0.0	0.3	2.8	O K
10080 min Summer	88.267	38.767	0.3	0.0	0.3	2.7	O K
15 min Winter	75.800	26.300	0.2	0.0	0.2	1.9	O K
30 min Winter	77.893	28.393	0.2	0.0	0.2	2.0	O K
60 min Winter	80.048	30.548	0.2	0.0	0.2	2.2	O K
120 min Winter	82.250	32.750	0.2	0.0	0.2	2.3	O K
180 min Winter	83.543	34.043	0.2	0.0	0.2	2.4	O K
240 min Winter	84.448	34.948	0.2	0.0	0.2	2.5	O K
360 min Winter	85.774	36.274	0.3	0.0	0.3	2.6	O K
480 min Winter	86.734	37.234	0.3	0.0	0.3	2.6	O K
600 min Winter	87.479	37.979	0.3	0.0	0.3	2.7	O K
720 min Winter	88.081	38.581	0.3	0.0	0.3	2.7	O K
960 min Winter	88.995	39.495	0.3	0.0	0.3	2.8	O K
1440 min Winter	90.160	40.660	0.3	0.0	0.3	2.9	O K
2160 min Winter	91.102	41.602	0.3	0.0	0.3	2.9	O K
2880 min Winter	91.583	42.083	0.3	0.0	0.3	3.0	O K
4320 min Winter	91.876	42.376	0.3	0.0	0.3	3.0	O K
5760 min Winter	91.727	42.227	0.3	0.0	0.3	3.0	O K
7200 min Winter	91.366	41.866	0.3	0.0	0.3	3.0	O K
8640 min Winter	90.959	41.459	0.3	0.0	0.3	2.9	O K
10080 min Winter	90.573	41.073	0.3	0.0	0.3	2.9	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)			
8640 min Summer	0.743	0.0	0.0	6800			
10080 min Summer	0.660	0.0	0.0	7592			
15 min Winter	70.373	0.0	0.0	938			
30 min Winter	46.843	0.0	0.0	956			
60 min Winter	29.868	0.0	0.0	962			
120 min Winter	18.484	0.0	0.0	992			
180 min Winter	13.799	0.0	0.0	1000			
240 min Winter	11.157	0.0	0.0	1048			
360 min Winter	8.261	0.0	0.0	1062			
480 min Winter	6.668	0.0	0.0	1120			
600 min Winter	5.644	0.0	0.0	1160			
720 min Winter	4.923	0.0	0.0	1212			
960 min Winter	3.965	0.0	0.0	1346			
1440 min Winter	2.919	0.0	0.0	1692			
2160 min Winter	2.146	0.0	0.0	2280			
2880 min Winter	1.724	0.0	0.0	2936			
4320 min Winter	1.264	0.0	0.0	4296			
5760 min Winter	1.014	0.0	0.0	5664			
7200 min Winter	0.854	0.0	0.0	6792			
8640 min Winter	0.743	0.0	0.0	7208			
10080 min Winter	0.660	0.0	0.0	8160			
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Innovyze Source Control 2020.1

Cascade Rainfall Details for Deep Borehole Soakaway 2.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.000

Time (mins)	Area
From:	To: (ha)
0	4 0.000

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<u>Cascade Summary of Results for Deep Borehole Soakaway 3.SRCX</u>					
Upstream Structures		Outflow To Overflow To			
Deep Borehole Soakaway 2.SRCX		(None)	(None)		
Deep Borehole Soakaway.SRCX					
Pond.SRCX					
Half Drain Time exceeds 7 days.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	49.500	0.000	0.0	0.0	O K
30 min Summer	49.500	0.000	0.0	0.0	O K
60 min Summer	49.500	0.000	0.0	0.0	O K
120 min Summer	49.500	0.000	0.0	0.0	O K
180 min Summer	49.500	0.000	0.0	0.0	O K
240 min Summer	49.500	0.000	0.0	0.0	O K
360 min Summer	49.500	0.000	0.0	0.0	O K
480 min Summer	49.500	0.000	0.0	0.0	O K
600 min Summer	49.500	0.000	0.0	0.0	O K
720 min Summer	49.500	0.000	0.0	0.0	O K
960 min Summer	49.500	0.000	0.0	0.0	O K
1440 min Summer	49.500	0.000	0.0	0.0	O K
2160 min Summer	49.500	0.000	0.0	0.0	O K
2880 min Summer	49.500	0.000	0.0	0.0	O K
4320 min Summer	49.500	0.000	0.0	0.0	O K
5760 min Summer	49.500	0.000	0.0	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	70.373	0.0	0		
30 min Summer	46.843	0.0	0		
60 min Summer	29.868	0.0	0		
120 min Summer	18.484	0.0	0		
180 min Summer	13.799	0.0	0		
240 min Summer	11.157	0.0	0		
360 min Summer	8.261	0.0	0		
480 min Summer	6.668	0.0	0		
600 min Summer	5.644	0.0	0		
720 min Summer	4.923	0.0	0		
960 min Summer	3.965	0.0	0		
1440 min Summer	2.919	0.0	0		
2160 min Summer	2.146	0.0	0		
2880 min Summer	1.724	0.0	0		
4320 min Summer	1.264	0.0	0		
5760 min Summer	1.014	0.0	0		
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<u>Cascade Summary of Results for Deep Borehole Soakaway 3.SRCX</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
7200 min Summer	49.500	0.000	0.0	0.0	O K
8640 min Summer	49.500	0.000	0.0	0.0	O K
10080 min Summer	49.500	0.000	0.0	0.0	O K
15 min Winter	49.500	0.000	0.0	0.0	O K
30 min Winter	49.500	0.000	0.0	0.0	O K
60 min Winter	49.500	0.000	0.0	0.0	O K
120 min Winter	49.500	0.000	0.0	0.0	O K
180 min Winter	49.500	0.000	0.0	0.0	O K
240 min Winter	49.500	0.000	0.0	0.0	O K
360 min Winter	49.500	0.000	0.0	0.0	O K
480 min Winter	49.500	0.000	0.0	0.0	O K
600 min Winter	49.500	0.000	0.0	0.0	O K
720 min Winter	49.500	0.000	0.0	0.0	O K
960 min Winter	49.500	0.000	0.0	0.0	O K
1440 min Winter	49.500	0.000	0.0	0.0	O K
2160 min Winter	49.500	0.000	0.0	0.0	O K
2880 min Winter	49.500	0.000	0.0	0.0	O K
4320 min Winter	49.500	0.000	0.0	0.0	O K
5760 min Winter	49.500	0.000	0.0	0.0	O K
7200 min Winter	49.500	0.000	0.0	0.0	O K
8640 min Winter	49.500	0.000	0.0	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
7200 min Summer	0.854	0.0	0		
8640 min Summer	0.743	0.0	0		
10080 min Summer	0.660	0.0	0		
15 min Winter	70.373	0.0	0		
30 min Winter	46.843	0.0	0		
60 min Winter	29.868	0.0	0		
120 min Winter	18.484	0.0	0		
180 min Winter	13.799	0.0	0		
240 min Winter	11.157	0.0	0		
360 min Winter	8.261	0.0	0		
480 min Winter	6.668	0.0	0		
600 min Winter	5.644	0.0	0		
720 min Winter	4.923	0.0	0		
960 min Winter	3.965	0.0	0		
1440 min Winter	2.919	0.0	0		
2160 min Winter	2.146	0.0	0		
2880 min Winter	1.724	0.0	0		
4320 min Winter	1.264	0.0	0		
5760 min Winter	1.014	0.0	0		
7200 min Winter	0.854	0.0	0		
8640 min Winter	0.743	0.0	0		
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Innovyze		Source Control 2020.1			
<u>Cascade Summary of Results for Deep Borehole Soakaway 3.SRCX</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Winter	49.500	0.000	0.0	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Winter	0.660	0.0	0		
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M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.000

Time (mins)	Area
From:	To: (ha)
0	4 0.000

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Cascade Model Details for Deep Borehole Soakaway 3.SRCX

Storage is Online Cover Level (m) 100.000

Deep Bore Soakaway Structure

Chamber Invert Level (m) 99.500 Infiltration Coefficient Base (m/hr) 0.05328
 Chamber Diameter/Length (m) 1.200 Safety Factor 2.0
 Borehole Diameter (m) 0.300
 Borehole Depth (m) 50.000

Depth (m)	Side Infil. Coef. (m/hr)	Depth (m)	Side Infil. Coef. (m/hr)
0.000	0.05328	50.000	0.05328

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