

MJA Consulting		Page 1					
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes						
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by						
Innovyze	Source Control 2020.1						
<u>Cascade Summary of Results for Pond.SRCX</u>							
Upstream Structures	Outflow To	Overflow To					
(None)	Deep Borehole Soakaway.SRCX	(None)					
Half Drain Time : 4054 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	5.549	0.149	0.0	0.6	0.6	79.4	O K
30 min Summer	5.594	0.194	0.0	0.6	0.6	104.8	O K
60 min Summer	5.641	0.241	0.0	0.6	0.6	132.5	O K
120 min Summer	5.691	0.291	0.0	0.7	0.7	162.5	O K
180 min Summer	5.721	0.321	0.0	0.7	0.7	181.1	O K
240 min Summer	5.742	0.342	0.0	0.7	0.7	194.5	O K
360 min Summer	5.773	0.373	0.0	0.7	0.7	213.9	O K
480 min Summer	5.795	0.395	0.0	0.7	0.7	227.8	O K
600 min Summer	5.811	0.411	0.0	0.7	0.7	238.5	O K
720 min Summer	5.824	0.424	0.0	0.7	0.7	246.9	O K
960 min Summer	5.843	0.443	0.0	0.7	0.7	259.5	O K
1440 min Summer	5.865	0.465	0.0	0.7	0.7	274.4	O K
2160 min Summer	5.878	0.478	0.0	0.7	0.7	283.6	O K
2880 min Summer	5.880	0.480	0.0	0.7	0.7	284.4	O K
4320 min Summer	5.869	0.469	0.0	0.7	0.7	276.9	O K
5760 min Summer	5.858	0.458	0.0	0.7	0.7	269.7	O K
7200 min Summer	5.849	0.449	0.0	0.7	0.7	263.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Summer	55.614	0.0	52.6	46			
30 min Summer	36.694	0.0	53.7	61			
60 min Summer	23.276	0.0	107.4	90			
120 min Summer	14.404	0.0	109.8	148			
180 min Summer	10.791	0.0	111.1	208			
240 min Summer	8.764	0.0	112.0	266			
360 min Summer	6.528	0.0	113.3	384			
480 min Summer	5.292	0.0	114.1	504			
600 min Summer	4.495	0.0	114.6	622			
720 min Summer	3.932	0.0	115.0	740			
960 min Summer	3.183	0.0	115.3	978			
1440 min Summer	2.361	0.0	115.1	1454			
2160 min Summer	1.750	0.0	229.8	2168			
2880 min Summer	1.414	0.0	229.3	2880			
4320 min Summer	1.047	0.0	225.8	3648			
5760 min Summer	0.846	0.0	440.9	4408			
7200 min Summer	0.716	0.0	432.7	5192			
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MJA Consulting

Monarch House
Barton Lane
OX14 3NB

Phase 2 Manor Farm
Bedhampton
Pond + Boreholes

Date 01/11/2022
File Cascade.CASX

Designed by S.Smith
Checked by

Innovyze

Source Control 2020.1

Micro Drainage

Cascade Summary of Results for Pond.SRCX

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	5.840	0.440	0.0	0.7	0.7	257.5	O K
10080 min Summer	5.831	0.431	0.0	0.7	0.7	251.5	O K
15 min Winter	5.566	0.166	0.0	0.6	0.6	89.2	O K
30 min Winter	5.616	0.216	0.0	0.6	0.6	117.7	O K
60 min Winter	5.668	0.268	0.0	0.7	0.7	148.8	O K
120 min Winter	5.724	0.324	0.0	0.7	0.7	182.8	O K
180 min Winter	5.757	0.357	0.0	0.7	0.7	203.9	O K
240 min Winter	5.781	0.381	0.0	0.7	0.7	219.2	O K
360 min Winter	5.816	0.416	0.0	0.7	0.7	241.6	O K
480 min Winter	5.840	0.440	0.0	0.7	0.7	257.8	O K
600 min Winter	5.859	0.459	0.0	0.7	0.7	270.3	O K
720 min Winter	5.874	0.474	0.0	0.7	0.7	280.4	O K
960 min Winter	5.896	0.496	0.0	0.7	0.7	295.7	O K
1440 min Winter	5.924	0.524	0.0	0.7	0.7	314.9	O K
2160 min Winter	5.944	0.544	0.0	0.7	0.7	328.9	O K
2880 min Winter	5.951	0.551	0.0	0.7	0.7	333.9	O K
4320 min Winter	5.946	0.546	0.0	0.7	0.7	330.4	O K
5760 min Winter	5.931	0.531	0.0	0.7	0.7	319.7	O K
7200 min Winter	5.916	0.516	0.0	0.7	0.7	309.3	O K
8640 min Winter	5.904	0.504	0.0	0.7	0.7	300.8	O K
10080 min Winter	5.890	0.490	0.0	0.7	0.7	291.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Summer	0.626	0.0	421.0	5992
10080 min Summer	0.558	0.0	406.6	6864
15 min Winter	55.614	0.0	53.0	46
30 min Winter	36.694	0.0	54.2	60
60 min Winter	23.276	0.0	108.7	88
120 min Winter	14.404	0.0	111.2	146
180 min Winter	10.791	0.0	112.6	204
240 min Winter	8.764	0.0	113.6	262
360 min Winter	6.528	0.0	114.9	378
480 min Winter	5.292	0.0	115.7	496
600 min Winter	4.495	0.0	116.2	612
720 min Winter	3.932	0.0	116.5	728
960 min Winter	3.183	0.0	116.8	962
1440 min Winter	2.361	0.0	116.3	1426
2160 min Winter	1.750	0.0	233.3	2116
2880 min Winter	1.414	0.0	232.4	2792
4320 min Winter	1.047	0.0	227.6	4076
5760 min Winter	0.846	0.0	451.6	4680
7200 min Winter	0.716	0.0	446.6	5560
8640 min Winter	0.626	0.0	436.2	6496
10080 min Winter	0.558	0.0	423.2	7392

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MJA Consulting		Page 3
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by	
Innovyze Source Control 2020.1		

Cascade Rainfall Details for Pond.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	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																																																																																																																																												
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<u>Cascade Model Details for Pond.SRCX</u> Storage is Online Cover Level (m) 7.000 <u>Infiltration Basin Structure</u> 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 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr><tr><td>0.000</td><td>506.0</td><td>0.500</td><td>690.0</td><td>1.000</td><td>888.0</td><td>1.500</td><td>1100.0</td></tr><tr><td>0.100</td><td>542.0</td><td>0.600</td><td>728.0</td><td>1.100</td><td>929.0</td><td>1.600</td><td>1144.0</td></tr><tr><td>0.200</td><td>578.0</td><td>0.700</td><td>767.0</td><td>1.200</td><td>971.0</td><td></td><td></td></tr><tr><td>0.300</td><td>615.0</td><td>0.800</td><td>807.0</td><td>1.300</td><td>1013.0</td><td></td><td></td></tr><tr><td>0.400</td><td>651.0</td><td>0.900</td><td>847.0</td><td>1.400</td><td>1056.0</td><td></td><td></td></tr></table> <u>Hydro-Brake® Optimum Outflow Control</u> Unit Reference MD-SHE-0036-7000-1300-7000 Design Head (m) 1.300 Design Flow (l/s) 0.7 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 36 Invert Level (m) 4.550 Minimum Outlet Pipe Diameter (mm) 75 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>1.300</td><td>0.7</td><td>Kick-Flo®</td><td>0.325</td><td>0.4</td></tr><tr><td>Flush-Flo™</td><td>0.160</td><td>0.5</td><td>Mean Flow over Head Range</td><td>-</td><td>0.5</td></tr></table> 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 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>0.4</td><td>1.200</td><td>0.7</td><td>3.000</td><td>1.0</td><td>7.000</td><td>1.5</td></tr><tr><td>0.200</td><td>0.5</td><td>1.400</td><td>0.7</td><td>3.500</td><td>1.1</td><td>7.500</td><td>1.5</td></tr><tr><td>0.300</td><td>0.4</td><td>1.600</td><td>0.8</td><td>4.000</td><td>1.2</td><td>8.000</td><td>1.6</td></tr><tr><td>0.400</td><td>0.4</td><td>1.800</td><td>0.8</td><td>4.500</td><td>1.2</td><td>8.500</td><td>1.6</td></tr><tr><td>0.500</td><td>0.5</td><td>2.000</td><td>0.8</td><td>5.000</td><td>1.3</td><td>9.000</td><td>1.7</td></tr><tr><td>0.600</td><td>0.5</td><td>2.200</td><td>0.9</td><td>5.500</td><td>1.3</td><td>9.500</td><td>1.7</td></tr><tr><td>0.800</td><td>0.6</td><td>2.400</td><td>0.9</td><td>6.000</td><td>1.4</td><td></td><td></td></tr><tr><td>1.000</td><td>0.6</td><td>2.600</td><td>1.0</td><td>6.500</td><td>1.4</td><td></td><td></td></tr></table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	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			Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.300	0.7	Kick-Flo®	0.325	0.4	Flush-Flo™	0.160	0.5	Mean Flow over Head Range	-	0.5	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	0.7	3.000	1.0	7.000	1.5	0.200	0.5	1.400	0.7	3.500	1.1	7.500	1.5	0.300	0.4	1.600	0.8	4.000	1.2	8.000	1.6	0.400	0.4	1.800	0.8	4.500	1.2	8.500	1.6	0.500	0.5	2.000	0.8	5.000	1.3	9.000	1.7	0.600	0.5	2.200	0.9	5.500	1.3	9.500	1.7	0.800	0.6	2.400	0.9	6.000	1.4			1.000	0.6	2.600	1.0	6.500	1.4		
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MJA Consulting							Page 1
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Date 01/11/2022 File Cascade.CASX		Designed by S.Smith Checked by CP					
Innovyze		Source Control 2020.1					
<u>Cascade Summary of Results for Deep Borehole Soakaway.SRCX</u>							
Upstream Structures		Outflow To		Overflow To			
Pond.SRCX		(None)		Deep Borehole Soakaway 2.SRCX			
Half Drain Time : 116 minutes.							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	99.621	50.121	0.4	0.3	0.6	3.7	O K
30 min Summer	99.622	50.122	0.4	0.3	0.6	3.7	O K
60 min Summer	99.622	50.122	0.4	0.3	0.6	3.7	O K
120 min Summer	99.623	50.123	0.4	0.3	0.7	3.7	O K
180 min Summer	99.623	50.123	0.4	0.3	0.7	3.7	O K
240 min Summer	99.624	50.124	0.4	0.3	0.7	3.7	O K
360 min Summer	99.624	50.124	0.4	0.3	0.7	3.7	O K
480 min Summer	99.624	50.124	0.4	0.3	0.7	3.7	O K
600 min Summer	99.624	50.124	0.4	0.4	0.7	3.7	O K
720 min Summer	99.624	50.124	0.4	0.4	0.7	3.7	O K
960 min Summer	99.624	50.124	0.4	0.4	0.7	3.7	O K
1440 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
2160 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
2880 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
4320 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
5760 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
7200 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)			
15 min Summer	55.614	0.0	20.0	204			
30 min Summer	36.694	0.0	21.0	155			
60 min Summer	23.276	0.0	44.5	154			
120 min Summer	14.404	0.0	46.9	218			
180 min Summer	10.791	0.0	48.3	204			
240 min Summer	8.764	0.0	49.3	238			
360 min Summer	6.528	0.0	50.5	796			
480 min Summer	5.292	0.0	51.3	498			
600 min Summer	4.495	0.0	51.9	676			
720 min Summer	3.932	0.0	52.2	670			
960 min Summer	3.183	0.0	52.6	960			
1440 min Summer	2.361	0.0	52.4	1378			
2160 min Summer	1.750	0.0	106.6	2616			
2880 min Summer	1.414	0.0	106.3	3376			
4320 min Summer	1.047	0.0	102.9	4464			
5760 min Summer	0.846	0.0	197.6	4056			
7200 min Summer	0.716	0.0	190.0	5432			
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MJA Consulting							Page 2
Monarch House Barton Lane OX14 3NB			Phase 2 Manor Farm Bedhampton Pond + Boreholes				
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Innovyze			Source Control 2020.1				
<u>Cascade Summary of Results for Deep Borehole Soakaway.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	99.625	50.125	0.4	0.4	0.7	3.7	O K
10080 min Summer	99.625	50.125	0.4	0.4	0.7	3.7	O K
15 min Winter	99.621	50.121	0.4	0.3	0.6	3.7	O K
30 min Winter	99.622	50.122	0.4	0.3	0.6	3.7	O K
60 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
120 min Winter	99.623	50.123	0.4	0.3	0.7	3.7	O K
180 min Winter	99.624	50.124	0.4	0.3	0.7	3.7	O K
240 min Winter	99.624	50.124	0.4	0.3	0.7	3.7	O K
360 min Winter	99.624	50.124	0.4	0.4	0.7	3.7	O K
480 min Winter	99.624	50.124	0.4	0.4	0.7	3.7	O K
600 min Winter	99.624	50.124	0.4	0.4	0.7	3.7	O K
720 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
960 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
1440 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
2160 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
2880 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
4320 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
5760 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
7200 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
8640 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
10080 min Winter	99.625	50.125	0.4	0.4	0.7	3.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)			
8640 min Summer	0.626	0.0	179.4	7224			
10080 min Summer	0.558	0.0	167.2	6336			
15 min Winter	55.614	0.0	20.4	155			
30 min Winter	36.694	0.0	21.5	197			
60 min Winter	23.276	0.0	45.8	156			
120 min Winter	14.404	0.0	48.4	170			
180 min Winter	10.791	0.0	49.9	284			
240 min Winter	8.764	0.0	50.9	270			
360 min Winter	6.528	0.0	52.2	716			
480 min Winter	5.292	0.0	53.1	566			
600 min Winter	4.495	0.0	53.6	618			
720 min Winter	3.932	0.0	54.0	736			
960 min Winter	3.183	0.0	54.3	1166			
1440 min Winter	2.361	0.0	54.0	1452			
2160 min Winter	1.750	0.0	110.8	2064			
2880 min Winter	1.414	0.0	110.2	2252			
4320 min Winter	1.047	0.0	106.2	4552			
5760 min Winter	0.846	0.0	210.2	5680			
7200 min Winter	0.716	0.0	206.4	7232			
8640 min Winter	0.626	0.0	197.2	7768			
10080 min Winter	0.558	0.0	185.6	7232			
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MJA Consulting		Page 3
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	
Innovyze Source Control 2020.1		

Cascade Rainfall Details for Deep Borehole Soakaway.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	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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MJA Consulting		Page 4
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 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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Monarch House

Barton Lane

OX14 3NB

Phase 2 Manor Farm

Bedhampton

Pond + Boreholes

Date 01/11/2022

File Cascade.CASX

Designed by S.Smith

Checked by CP

Page 1



Innovyze

Source Control 2020.1

Cascade Summary of Results for Deep Borehole Soakaway 2.SRCX

Upstream Structures

Deep Borehole Soakaway.SRCX

Pond.SRCX

Outflow To

(None)

Overflow To

Deep Borehole Soakaway 3.SRCX

Half Drain Time : 115 minutes.

Storm Event

Max Level (m)

Max Depth (m)

Max Infiltration (l/s)

Max Overflow (l/s)

Max Outflow (l/s)

Max Volume (m³)

Status

15 min Summer

86.146

36.646

0.3

0.0

0.3

2.6

O K

30 min Summer

87.963

38.463

0.3

0.0

0.3

2.7

O K

60 min Summer

89.867

40.367

0.3

0.0

0.3

2.9

O K

120 min Summer

91.889

42.389

0.3

0.0

0.3

3.0

O K

180 min Summer

93.130

43.630

0.3

0.0

0.3

3.1

O K

240 min Summer

94.031

44.531

0.3

0.0

0.3

3.1

O K

360 min Summer

95.351

45.851

0.3

0.0

0.3

3.2

O K

480 min Summer

96.310

46.810

0.3

0.0

0.3

3.3

O K

600 min Summer

97.054

47.554

0.3

0.0

0.3

3.4

O K

720 min Summer

97.649

48.149

0.3

0.0

0.3

3.4

O K

960 min Summer

98.530

49.030

0.3

0.0

0.3

3.5

O K

1440 min Summer

99.504

50.004

0.3

0.0

0.3

3.5

O K

2160 min Summer

99.601

50.101

0.3

0.0

0.4

3.6

O K

2880 min Summer

99.603

50.103

0.3

0.0

0.4

3.7

O K

4320 min Summer

99.601

50.101

0.3

0.0

0.4

3.6

O K

5760 min Summer

99.526

50.026

0.3

0.0

0.3

3.6

O K

7200 min Summer

99.330

49.830

0.3

0.0

0.3

3.5

O K

Storm Event

Rain (mm/hr)

Flooded Volume (m³)

Overflow Volume (m³)

Time-Peak (mins)

15 min Summer

55.614

0.0

0.0

912

30 min Summer

36.694

0.0

0.0

912

60 min Summer

23.276

0.0

0.0

904

120 min Summer

14.404

0.0

0.0

936

180 min Summer

10.791

0.0

0.0

940

240 min Summer

8.764

0.0

0.0

970

360 min Summer

6.528

0.0

0.0

1000

480 min Summer

5.292

0.0

0.0

1030

600 min Summer

4.495

0.0

0.0

1082

720 min Summer

3.932

0.0

0.0

1136

960 min Summer

3.183

0.0

0.0

1264

1440 min Summer

2.361

0.0

0.0

1644

2160 min Summer

1.750

0.0

0.0

2332

2880 min Summer

1.414

0.0

0.1

2828

4320 min Summer

1.047

0.0

0.1

4380

5760 min Summer

0.846

0.0

0.0

4952

7200 min Summer

0.716

0.0

0.0

5400

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MJA Consulting		Page 2
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	

Innovyze Source Control 2020.1

Cascade Summary of Results for Deep Borehole Soakaway 2.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	99.028	49.528	0.3	0.0	0.3	3.5	O K
10080 min Summer	98.718	49.218	0.3	0.0	0.3	3.5	O K
15 min Winter	86.839	37.339	0.3	0.0	0.3	2.6	O K
30 min Winter	88.829	39.329	0.3	0.0	0.3	2.8	O K
60 min Winter	90.909	41.409	0.3	0.0	0.3	2.9	O K
120 min Winter	93.102	43.602	0.3	0.0	0.3	3.1	O K
180 min Winter	94.437	44.937	0.3	0.0	0.3	3.2	O K
240 min Winter	95.407	45.907	0.3	0.0	0.3	3.2	O K
360 min Winter	96.830	47.330	0.3	0.0	0.3	3.3	O K
480 min Winter	97.862	48.362	0.3	0.0	0.3	3.4	O K
600 min Winter	98.675	49.175	0.3	0.0	0.3	3.5	O K
720 min Winter	99.319	49.819	0.3	0.0	0.3	3.5	O K
960 min Winter	99.602	50.102	0.3	0.0	0.4	3.6	O K
1440 min Winter	99.605	50.105	0.3	0.0	0.4	3.7	O K
2160 min Winter	99.606	50.106	0.3	0.0	0.4	3.7	O K
2880 min Winter	99.606	50.106	0.3	0.0	0.4	3.7	O K
4320 min Winter	99.606	50.106	0.3	0.0	0.4	3.7	O K
5760 min Winter	99.606	50.106	0.3	0.0	0.4	3.7	O K
7200 min Winter	99.606	50.106	0.3	0.0	0.4	3.7	O K
8640 min Winter	99.604	50.104	0.3	0.0	0.4	3.7	O K
10080 min Winter	99.604	50.104	0.3	0.0	0.4	3.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
8640 min Summer	0.626	0.0	0.0	6144
10080 min Summer	0.558	0.0	0.0	6952
15 min Winter	55.614	0.0	0.0	908
30 min Winter	36.694	0.0	0.0	924
60 min Winter	23.276	0.0	0.0	924
120 min Winter	14.404	0.0	0.0	944
180 min Winter	10.791	0.0	0.0	974
240 min Winter	8.764	0.0	0.0	962
360 min Winter	6.528	0.0	0.0	1000
480 min Winter	5.292	0.0	0.0	1084
600 min Winter	4.495	0.0	0.0	1094
720 min Winter	3.932	0.0	0.0	1158
960 min Winter	3.183	0.0	0.0	1324
1440 min Winter	2.361	0.0	0.6	1422
2160 min Winter	1.750	0.0	1.3	2068
2880 min Winter	1.414	0.0	1.9	2812
4320 min Winter	1.047	0.0	2.3	4004
5760 min Winter	0.846	0.0	2.2	5688
7200 min Winter	0.716	0.0	1.8	6312
8640 min Winter	0.626	0.0	1.3	6896
10080 min Winter	0.558	0.0	0.7	7720

MJA Consulting		Page 3
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	
Innovyze Source Control 2020.1		

Cascade Rainfall Details for Deep Borehole Soakaway 2.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	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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MJA Consulting		Page 4
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	

Innovyze Source Control 2020.1

Cascade Model Details for Deep Borehole Soakaway 2.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

MJA Consulting			Page 1		
Monarch House Barton Lane OX14 3NB		Phase 2 Manor Farm Bedhampton Pond + Boreholes			
Date 01/11/2022 File Cascade.CASX		Designed by S.Smith Checked by CP			
Innovyze		Source Control 2020.1			
<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 : 109 minutes.					
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	49.704	0.204	0.0	0.0	O K
2880 min Summer	50.064	0.564	0.0	0.0	O K
4320 min Summer	49.739	0.239	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	55.614	0.0	0		
30 min Summer	36.694	0.0	0		
60 min Summer	23.276	0.0	0		
120 min Summer	14.404	0.0	0		
180 min Summer	10.791	0.0	0		
240 min Summer	8.764	0.0	0		
360 min Summer	6.528	0.0	0		
480 min Summer	5.292	0.0	0		
600 min Summer	4.495	0.0	0		
720 min Summer	3.932	0.0	0		
960 min Summer	3.183	0.0	0		
1440 min Summer	2.361	0.0	0		
2160 min Summer	1.750	0.0	2408		
2880 min Summer	1.414	0.0	3008		
4320 min Summer	1.047	0.0	4136		
5760 min Summer	0.846	0.0	0		
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MJA Consulting				Page 2	
Monarch House Barton Lane OX14 3NB		Phase 2 Manor Farm Bedhampton Pond + Boreholes			
Date 01/11/2022 File Cascade.CASX		Designed by S.Smith Checked by CP			
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
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	49.751	0.251	0.0	0.0	O K
1440 min Winter	51.134	1.634	0.0	0.1	O K
2160 min Winter	52.105	2.605	0.0	0.2	O K
2880 min Winter	52.452	2.952	0.0	0.2	O K
4320 min Winter	52.386	2.886	0.0	0.2	O K
5760 min Winter	51.905	2.405	0.0	0.2	O K
7200 min Winter	51.406	1.906	0.0	0.1	O K
8640 min Winter	50.990	1.490	0.0	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
7200 min Summer	0.716	0.0	0		
8640 min Summer	0.626	0.0	0		
10080 min Summer	0.558	0.0	0		
15 min Winter	55.614	0.0	0		
30 min Winter	36.694	0.0	0		
60 min Winter	23.276	0.0	0		
120 min Winter	14.404	0.0	0		
180 min Winter	10.791	0.0	0		
240 min Winter	8.764	0.0	0		
360 min Winter	6.528	0.0	0		
480 min Winter	5.292	0.0	0		
600 min Winter	4.495	0.0	0		
720 min Winter	3.932	0.0	0		
960 min Winter	3.183	0.0	1452		
1440 min Winter	2.361	0.0	1720		
2160 min Winter	1.750	0.0	2248		
2880 min Winter	1.414	0.0	2920		
4320 min Winter	1.047	0.0	4156		
5760 min Winter	0.846	0.0	4864		
7200 min Winter	0.716	0.0	5856		
8640 min Winter	0.626	0.0	6744		
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MJA Consulting				Page 3	
Monarch House Barton Lane OX14 3NB		Phase 2 Manor Farm Bedhampton Pond + Boreholes			
Date 01/11/2022 File Cascade.CASX		Designed by S.Smith Checked by CP			
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	50.548	1.048	0.0	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Winter	0.558	0.0	7632		
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MJA Consulting		Page 4
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	
Innovyze		Source Control 2020.1

Cascade Rainfall Details for Deep Borehole Soakaway 3.SRCX

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	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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MJA Consulting		Page 5
Monarch House Barton Lane OX14 3NB	Phase 2 Manor Farm Bedhampton Pond + Boreholes	
Date 01/11/2022 File Cascade.CASX	Designed by S.Smith Checked by CP	
Innovyze Source Control 2020.1		

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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