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Monarch House Barton Lane OX14 3NB			New Barn Lane Tank 1 (North)				
Date 13/02/2018 File 5529 TANK 1 (NORTH).SRCX			Designed by S.Smith Checked by				
Innovyze			Source Control 2017.1.2				
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 491 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	3.018	0.318	0.0	5.0	5.0	113.2	O K
30 min Summer	3.124	0.424	0.0	5.0	5.0	150.9	O K
60 min Summer	3.233	0.533	0.0	5.0	5.0	189.4	O K
120 min Summer	3.328	0.628	0.0	5.0	5.0	223.4	O K
180 min Summer	3.368	0.668	0.0	5.0	5.0	237.6	O K
240 min Summer	3.384	0.684	0.0	5.0	5.0	243.1	O K
360 min Summer	3.386	0.686	0.0	5.0	5.0	244.0	O K
480 min Summer	3.374	0.674	0.0	5.0	5.0	239.7	O K
600 min Summer	3.360	0.660	0.0	5.0	5.0	234.9	O K
720 min Summer	3.346	0.646	0.0	5.0	5.0	229.9	O K
960 min Summer	3.319	0.619	0.0	5.0	5.0	220.0	O K
1440 min Summer	3.265	0.565	0.0	5.0	5.0	200.9	O K
2160 min Summer	3.182	0.482	0.0	5.0	5.0	171.5	O K
2880 min Summer	3.091	0.391	0.0	5.0	5.0	138.9	O K
4320 min Summer	2.949	0.249	0.0	5.0	5.0	88.6	O K
5760 min Summer	2.852	0.152	0.0	5.0	5.0	54.1	O K
7200 min Summer	2.793	0.093	0.0	4.9	4.9	33.0	O K
8640 min Summer	2.758	0.058	0.0	4.7	4.7	20.6	O K
10080 min Summer	2.743	0.043	0.0	4.4	4.4	15.2	O K
15 min Winter	3.059	0.359	0.0	5.0	5.0	127.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
15 min Summer	124.633	0.0	119.7	26			
30 min Summer	83.789	0.0	160.9	40			
60 min Summer	53.779	0.0	206.8	70			
120 min Summer	33.337	0.0	256.3	128			
180 min Summer	24.832	0.0	286.5	186			
240 min Summer	20.006	0.0	307.7	244			
360 min Summer	14.706	0.0	339.4	360			
480 min Summer	11.818	0.0	363.6	430			
600 min Summer	9.966	0.0	383.4	492			
720 min Summer	8.665	0.0	399.9	558			
960 min Summer	6.943	0.0	427.2	688			
1440 min Summer	5.071	0.0	468.1	968			
2160 min Summer	3.696	0.0	511.7	1388			
2880 min Summer	2.949	0.0	544.5	1760			
4320 min Summer	2.142	0.0	593.2	2468			
5760 min Summer	1.705	0.0	629.6	3168			
7200 min Summer	1.427	0.0	658.6	3816			
8640 min Summer	1.235	0.0	684.0	4488			
10080 min Summer	1.093	0.0	706.6	5144			
15 min Winter	124.633	0.0	134.1	26			
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<u>Summary of Results for 100 year Return Period (+40%)</u>							
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
30 min Winter	3.180	0.480	0.0	5.0	5.0	170.6	O K
60 min Winter	3.303	0.603	0.0	5.0	5.0	214.3	O K
120 min Winter	3.415	0.715	0.0	5.0	5.0	254.2	O K
180 min Winter	3.465	0.765	0.0	5.0	5.0	272.0	O K
240 min Winter	3.487	0.787	0.0	5.1	5.1	279.9	O K
360 min Winter	3.499	0.799	0.0	5.1	5.1	284.1	O K
480 min Winter	3.491	0.791	0.0	5.1	5.1	281.2	O K
600 min Winter	3.472	0.772	0.0	5.1	5.1	274.7	O K
720 min Winter	3.454	0.754	0.0	5.0	5.0	268.3	O K
960 min Winter	3.418	0.718	0.0	5.0	5.0	255.4	O K
1440 min Winter	3.340	0.640	0.0	5.0	5.0	227.5	O K
2160 min Winter	3.218	0.518	0.0	5.0	5.0	184.1	O K
2880 min Winter	3.074	0.374	0.0	5.0	5.0	133.1	O K
4320 min Winter	2.872	0.172	0.0	5.0	5.0	61.3	O K
5760 min Winter	2.770	0.070	0.0	4.8	4.8	25.1	O K
7200 min Winter	2.739	0.039	0.0	4.2	4.2	13.9	O K
8640 min Winter	2.725	0.025	0.0	3.7	3.7	8.8	O K
10080 min Winter	2.715	0.015	0.0	3.3	3.3	5.5	O K
Storm Event	Rain (mm/hr)		Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)		
30 min Winter	83.789		0.0	180.3	40		
60 min Winter	53.779		0.0	231.6	68		
120 min Winter	33.337		0.0	287.1	126		
180 min Winter	24.832		0.0	320.9	182		
240 min Winter	20.006		0.0	344.7	240		
360 min Winter	14.706		0.0	380.1	352		
480 min Winter	11.818		0.0	407.4	460		
600 min Winter	9.966		0.0	429.4	556		
720 min Winter	8.665		0.0	448.0	580		
960 min Winter	6.943		0.0	478.6	734		
1440 min Winter	5.071		0.0	524.3	1046		
2160 min Winter	3.696		0.0	573.3	1500		
2880 min Winter	2.949		0.0	609.8	1880		
4320 min Winter	2.142		0.0	664.4	2552		
5760 min Winter	1.705		0.0	704.9	3120		
7200 min Winter	1.427		0.0	737.7	3752		
8640 min Winter	1.235		0.0	766.2	4416		
10080 min Winter	1.093		0.0	791.3	5152		
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Rainfall Details

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)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.513

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.171	4	8	0.171	8	12	0.171

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Model Details

Storage is Online Cover Level (m) 4.400

Cellular Storage Structure

Invert Level (m) 2.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	374.4	374.4	0.801	0.0	436.3
0.800	374.4	436.3			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0108-5000-0825-5000
Design Head (m) 0.825
Design Flow (l/s) 5.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 108
Invert Level (m) 2.625
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.825	5.0
Flush-Flo™	0.247	5.0
Kick-Flo®	0.548	4.1
Mean Flow over Head Range	-	4.3

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	3.7	1.200	5.9	3.000	9.1	7.000	13.7
0.200	5.0	1.400	6.4	3.500	9.8	7.500	14.2
0.300	5.0	1.600	6.8	4.000	10.5	8.000	14.6
0.400	4.8	1.800	7.2	4.500	11.1	8.500	15.0
0.500	4.5	2.000	7.6	5.000	11.7	9.000	15.4
0.600	4.3	2.200	7.9	5.500	12.2	9.500	15.9
0.800	4.9	2.400	8.2	6.000	12.7		
1.000	5.5	2.600	8.6	6.500	13.2		

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