

MJA Consulting

Monarch House

Barton Lane

OX14 3NB

Date 13/02/2018

File 5529 TANK 2 (SOUTH).SRCX

Innovyze

New Barn Lane

Tank 2 (South)

Designed by C.Pendle

Checked by

Source Control 2017.1.2

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Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 268 minutes.

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
15 min Summer	3.245	0.315	0.0	8.0	8.0	107.0	O K
30 min Summer	3.348	0.418	0.0	8.0	8.0	142.0	O K
60 min Summer	3.449	0.519	0.0	8.0	8.0	176.1	O K
120 min Summer	3.526	0.596	0.0	8.0	8.0	202.3	O K
180 min Summer	3.547	0.617	0.0	8.0	8.0	209.3	O K
240 min Summer	3.544	0.614	0.0	8.0	8.0	208.5	O K
360 min Summer	3.529	0.599	0.0	8.0	8.0	203.1	O K
480 min Summer	3.510	0.580	0.0	8.0	8.0	196.8	O K
600 min Summer	3.489	0.559	0.0	8.0	8.0	189.8	O K
720 min Summer	3.467	0.537	0.0	8.0	8.0	182.3	O K
960 min Summer	3.418	0.488	0.0	8.0	8.0	165.7	O K
1440 min Summer	3.324	0.394	0.0	8.0	8.0	133.7	O K
2160 min Summer	3.208	0.278	0.0	8.0	8.0	94.2	O K
2880 min Summer	3.123	0.193	0.0	8.0	8.0	65.4	O K
4320 min Summer	3.033	0.103	0.0	7.7	7.7	34.9	O K
5760 min Summer	3.005	0.075	0.0	6.6	6.6	25.5	O K
7200 min Summer	2.990	0.060	0.0	5.7	5.7	20.2	O K
8640 min Summer	2.979	0.049	0.0	4.9	4.9	16.7	O K
10080 min Summer	2.972	0.042	0.0	4.4	4.4	14.1	O K
15 min Winter	3.286	0.356	0.0	8.0	8.0	120.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	124.633	0.0	116.0	25
30 min Summer	83.789	0.0	156.0	39
60 min Summer	53.779	0.0	200.3	68
120 min Summer	33.337	0.0	248.4	124
180 min Summer	24.832	0.0	277.5	182
240 min Summer	20.006	0.0	298.0	230
360 min Summer	14.706	0.0	328.7	288
480 min Summer	11.818	0.0	352.3	354
600 min Summer	9.966	0.0	371.4	422
720 min Summer	8.665	0.0	387.4	492
960 min Summer	6.943	0.0	413.9	626
1440 min Summer	5.071	0.0	453.5	884
2160 min Summer	3.696	0.0	495.8	1252
2880 min Summer	2.949	0.0	527.5	1592
4320 min Summer	2.142	0.0	574.6	2252
5760 min Summer	1.705	0.0	609.8	2944
7200 min Summer	1.427	0.0	638.1	3672
8640 min Summer	1.235	0.0	662.8	4408
10080 min Summer	1.093	0.0	684.5	5136
15 min Winter	124.633	0.0	129.8	25

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Summary of Results for 100 year Return Period (+40%)

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
30 min Winter	3.404	0.474	0.0	8.0	8.0	160.9	O K
60 min Winter	3.519	0.589	0.0	8.0	8.0	199.9	O K
120 min Winter	3.611	0.681	0.0	8.0	8.0	231.1	O K
180 min Winter	3.640	0.710	0.0	8.0	8.0	241.0	O K
240 min Winter	3.643	0.713	0.0	8.0	8.0	241.9	O K
360 min Winter	3.621	0.691	0.0	8.0	8.0	234.4	O K
480 min Winter	3.597	0.667	0.0	8.0	8.0	226.4	O K
600 min Winter	3.569	0.639	0.0	8.0	8.0	216.7	O K
720 min Winter	3.537	0.607	0.0	8.0	8.0	206.1	O K
960 min Winter	3.470	0.540	0.0	8.0	8.0	183.3	O K
1440 min Winter	3.318	0.388	0.0	8.0	8.0	131.7	O K
2160 min Winter	3.147	0.217	0.0	8.0	8.0	73.5	O K
2880 min Winter	3.048	0.118	0.0	7.8	7.8	40.2	O K
4320 min Winter	2.998	0.068	0.0	6.2	6.2	23.1	O K
5760 min Winter	2.980	0.050	0.0	5.0	5.0	16.8	O K
7200 min Winter	2.969	0.039	0.0	4.2	4.2	13.1	O K
8640 min Winter	2.961	0.031	0.0	3.6	3.6	10.4	O K
10080 min Winter	2.955	0.025	0.0	3.2	3.2	8.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	83.789	0.0	174.8	39
60 min Winter	53.779	0.0	224.4	66
120 min Winter	33.337	0.0	278.1	122
180 min Winter	24.832	0.0	310.9	178
240 min Winter	20.006	0.0	333.9	234
360 min Winter	14.706	0.0	368.1	304
480 min Winter	11.818	0.0	394.5	376
600 min Winter	9.966	0.0	415.8	454
720 min Winter	8.665	0.0	433.9	532
960 min Winter	6.943	0.0	463.6	684
1440 min Winter	5.071	0.0	507.9	948
2160 min Winter	3.696	0.0	555.4	1296
2880 min Winter	2.949	0.0	590.8	1592
4320 min Winter	2.142	0.0	643.6	2248
5760 min Winter	1.705	0.0	683.0	2944
7200 min Winter	1.427	0.0	714.6	3672
8640 min Winter	1.235	0.0	742.3	4408
10080 min Winter	1.093	0.0	766.7	5136

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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) 0.497

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:
0	4	0.166	4	8	0.166
				8	12
					0.166

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Model Details

Storage is Online Cover Level (m) 4.900

Cellular Storage Structure

Invert Level (m) 2.930 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	357.2	357.2	0.801	0.0	417.7
0.800	357.2	417.7			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-G134-8000-0800-8000
Design Head (m) 0.800
Design Flow (l/s) 8.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 134
Invert Level (m) 2.878
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	8.0
Flush-Flo™	0.252	8.0
Kick-Flo®	0.559	6.8
Mean Flow over Head Range	-	6.8

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	4.8	1.200	9.7	3.000	14.9	7.000	22.4
0.200	7.9	1.400	10.4	3.500	16.1	7.500	23.2
0.300	8.0	1.600	11.1	4.000	17.1	8.000	23.9
0.400	7.8	1.800	11.7	4.500	18.1	8.500	24.5
0.500	7.4	2.000	12.3	5.000	19.1	9.000	25.3
0.600	7.0	2.200	12.9	5.500	20.0	9.500	26.0
0.800	8.0	2.400	13.4	6.000	20.8		
1.000	8.9	2.600	14.0	6.500	21.6		