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Broomgrove Lodge 13 Broomgrove Road Sheffield S10 2LZ	BGC Pulborough Garden Centre Car Park + Warehouse	
Date 28/07/2021 File Tank - Car Park +	Designed by PSA Checked by	

XP Solutions Source Control 2020.1

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	8.019	0.269	3.0	127.9	O K
30 min Summer	8.111	0.361	3.0	171.3	O K
60 min Summer	8.208	0.458	3.0	217.6	O K
120 min Summer	8.304	0.554	3.0	263.0	O K
180 min Summer	8.351	0.601	3.0	285.7	O K
240 min Summer	8.380	0.630	3.0	299.2	O K
360 min Summer	8.414	0.664	3.0	315.4	O K
480 min Summer	8.430	0.680	3.0	322.8	O K
600 min Summer	8.435	0.685	3.0	325.2	O K
720 min Summer	8.433	0.683	3.0	324.4	O K
960 min Summer	8.418	0.668	3.0	317.1	O K
1440 min Summer	8.384	0.634	3.0	301.3	O K
2160 min Summer	8.344	0.594	3.0	282.3	O K
2880 min Summer	8.307	0.557	3.0	264.4	O K
4320 min Summer	8.228	0.478	3.0	226.9	O K
5760 min Summer	8.139	0.389	3.0	184.9	O K
7200 min Summer	8.066	0.316	3.0	150.3	O K
8640 min Summer	8.004	0.254	3.0	120.4	O K
10080 min Summer	7.950	0.200	3.0	94.9	O K
15 min Winter	8.052	0.302	3.0	143.6	O K
30 min Winter	8.156	0.406	3.0	192.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	130.386	0.0	130.8	19
30 min Summer	88.061	0.0	176.7	34
60 min Summer	56.713	0.0	227.8	64
120 min Summer	35.186	0.0	282.8	124
180 min Summer	26.170	0.0	315.2	182
240 min Summer	21.081	0.0	338.8	242
360 min Summer	15.557	0.0	375.1	362
480 min Summer	12.518	0.0	402.5	482
600 min Summer	10.566	0.0	424.7	602
720 min Summer	9.195	0.0	443.3	720
960 min Summer	7.376	0.0	474.3	932
1440 min Summer	5.395	0.0	465.9	1154
2160 min Summer	3.937	0.0	569.7	1556
2880 min Summer	3.144	0.0	606.1	1960
4320 min Summer	2.285	0.0	661.4	2808
5760 min Summer	1.821	0.0	702.7	3568
7200 min Summer	1.529	0.0	737.4	4320
8640 min Summer	1.325	0.0	767.0	5016
10080 min Summer	1.174	0.0	793.2	5656
15 min Winter	130.386	0.0	146.6	19
30 min Winter	88.061	0.0	198.0	33


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Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	8.266	0.516	3.0	245.0	O K
120 min Winter	8.375	0.625	3.0	297.0	O K
180 min Winter	8.432	0.682	3.0	323.7	O K
240 min Winter	8.466	0.716	3.0	339.9	O K
360 min Winter	8.509	0.759	3.0	360.6	O K
480 min Winter	8.532	0.782	3.0	371.3	O K
600 min Winter	8.543	0.793	3.0	376.5	O K
720 min Winter	8.546	0.796	3.0	378.1	O K
960 min Winter	8.539	0.789	3.0	374.9	O K
1440 min Winter	8.499	0.749	3.0	355.6	O K
2160 min Winter	8.443	0.693	3.0	329.2	O K
2880 min Winter	8.390	0.640	3.0	303.9	O K
4320 min Winter	8.275	0.525	3.0	249.4	O K
5760 min Winter	8.138	0.388	3.0	184.1	O K
7200 min Winter	8.026	0.276	3.0	131.2	O K
8640 min Winter	7.938	0.188	3.0	89.2	O K
10080 min Winter	7.871	0.121	3.0	57.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	56.713	0.0	255.0	62
120 min Winter	35.186	0.0	316.7	122
180 min Winter	26.170	0.0	353.3	180
240 min Winter	21.081	0.0	379.5	238
360 min Winter	15.557	0.0	420.0	356
480 min Winter	12.518	0.0	450.6	472
600 min Winter	10.566	0.0	475.4	584
720 min Winter	9.195	0.0	483.0	698
960 min Winter	7.376	0.0	480.7	916
1440 min Winter	5.395	0.0	470.2	1312
2160 min Winter	3.937	0.0	637.9	1644
2880 min Winter	3.144	0.0	679.3	2128
4320 min Winter	2.285	0.0	740.5	3028
5760 min Winter	1.821	0.0	786.5	3808
7200 min Winter	1.529	0.0	825.8	4536
8640 min Winter	1.325	0.0	859.3	5192
10080 min Winter	1.174	0.0	888.3	5848

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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)	20.000	Shortest Storm (mins)	15
Ratio R	0.339	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.536

Time (mins)	Area
From: To:	(ha)
0	4 0.536

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Model Details

Storage is Online Cover Level (m) 9.000

Tank or Pond Structure

Invert Level (m) 7.750

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	475.0	0.800	475.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0084-3000-0900-3000
Design Head (m)	0.900
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	84
Invert Level (m)	7.650
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	3.0	Kick-Flo®	0.570	2.4
Flush-Flo™	0.267	3.0	Mean Flow over Head Range	-	2.6

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	2.5	1.200	3.4	3.000	5.2	7.000	7.8
0.200	3.0	1.400	3.7	3.500	5.6	7.500	8.1
0.300	3.0	1.600	3.9	4.000	6.0	8.000	8.3
0.400	2.9	1.800	4.1	4.500	6.3	8.500	8.6
0.500	2.7	2.000	4.3	5.000	6.7	9.000	8.8
0.600	2.5	2.200	4.5	5.500	7.0	9.500	9.0
0.800	2.8	2.400	4.7	6.000	7.3		
1.000	3.1	2.600	4.9	6.500	7.5		