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104 Yorkshire St Rochdale Lancashire OL16 1JY	full site attenuation sohail 43 bamford way	
Date feb 2023 - rev0 File calc-tjba-sohail-45 bamford way-dr...	Designed By ds Checked By	
Micro Drainage	Source Control W.10.4	

Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m ³)	Maximum Volume (m ³)	Status
15 Summer	5.4	0.0	5.4	139.5137	0.2437	0.0	24.8	O K
30 Summer	5.4	0.0	5.4	139.5827	0.3127	0.0	31.9	O K
60 Summer	5.4	0.0	5.4	139.6257	0.3557	0.0	36.3	O K
120 Summer	5.4	0.0	5.4	139.6328	0.3627	0.0	37.0	O K
180 Summer	5.4	0.0	5.4	139.6248	0.3547	0.0	36.2	O K
240 Summer	5.4	0.0	5.4	139.6093	0.3392	0.0	34.6	O K
360 Summer	5.4	0.0	5.4	139.5728	0.3027	0.0	30.9	O K
480 Summer	5.4	0.0	5.4	139.5327	0.2627	0.0	26.8	O K
600 Summer	5.4	0.0	5.4	139.4928	0.2227	0.0	22.7	O K
720 Summer	5.4	0.0	5.4	139.4563	0.1862	0.0	19.0	O K
960 Summer	5.4	0.0	5.4	139.3938	0.1238	0.0	12.6	O K
1440 Summer	5.2	0.0	5.2	139.3108	0.0407	0.0	4.2	O K
2160 Summer	4.9	0.0	4.9	139.2700	0.0000	0.0	0.0	O K
2880 Summer	4.0	0.0	4.0	139.2700	0.0000	0.0	0.0	O K
4320 Summer	2.9	0.0	2.9	139.2700	0.0000	0.0	0.0	O K
5760 Summer	2.4	0.0	2.4	139.2700	0.0000	0.0	0.0	O K
7200 Summer	2.1	0.0	2.1	139.2700	0.0000	0.0	0.0	O K
8640 Summer	1.8	0.0	1.8	139.2700	0.0000	0.0	0.0	O K
10080 Summer	1.6	0.0	1.6	139.2700	0.0000	0.0	0.0	O K
15 Winter	5.4	0.0	5.4	139.5482	0.2782	0.0	28.4	O K
30 Winter	5.4	0.0	5.4	139.6353	0.3652	0.0	37.3	O K
60 Winter	5.4	0.0	5.4	139.6967	0.4267	0.0	43.5	O K
120 Winter	5.4	0.0	5.4	139.7038	0.4337	0.0	44.3	O K
180 Winter	5.4	0.0	5.4	139.6868	0.4167	0.0	42.5	O K
240 Winter	5.4	0.0	5.4	139.6593	0.3892	0.0	39.7	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	68.99	17
30 Summer	47.08	31
60 Summer	30.81	60
120 Summer	19.53	92
180 Summer	14.75	126
240 Summer	12.05	160
360 Summer	9.05	228
480 Summer	7.38	294
600 Summer	6.29	360
720 Summer	5.52	420
960 Summer	4.49	540
1440 Summer	3.35	766
2160 Summer	2.49	0
2880 Summer	2.02	0
4320 Summer	1.50	0
5760 Summer	1.21	0
7200 Summer	1.03	0
8640 Summer	0.90	0
10080 Summer	0.81	0
15 Winter	68.99	17
30 Winter	47.08	31
60 Winter	30.81	60
120 Winter	19.53	102
180 Winter	14.75	138
240 Winter	12.05	176

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Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m ³)	Maximum Volume (m ³)	Status
360 Winter	5.4	0.0	5.4	139.5963	0.3262	0.0	33.3	O K
480 Winter	5.4	0.0	5.4	139.5303	0.2602	0.0	26.5	O K
600 Winter	5.4	0.0	5.4	139.4678	0.1977	0.0	20.2	O K
720 Winter	5.4	0.0	5.4	139.4133	0.1433	0.0	14.6	O K
960 Winter	5.3	0.0	5.3	139.3307	0.0608	0.0	6.2	O K
1440 Winter	4.7	0.0	4.7	139.2700	0.0000	0.0	0.0	O K
2160 Winter	3.6	0.0	3.6	139.2700	0.0000	0.0	0.0	O K
2880 Winter	2.9	0.0	2.9	139.2700	0.0000	0.0	0.0	O K
4320 Winter	2.2	0.0	2.2	139.2700	0.0000	0.0	0.0	O K
5760 Winter	1.7	0.0	1.7	139.2700	0.0000	0.0	0.0	O K
7200 Winter	1.5	0.0	1.5	139.2700	0.0000	0.0	0.0	O K
8640 Winter	1.3	0.0	1.3	139.2700	0.0000	0.0	0.0	O K
10080 Winter	1.2	0.0	1.2	139.2700	0.0000	0.0	0.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	9.05	248
480 Winter	7.38	316
600 Winter	6.29	380
720 Winter	5.52	440
960 Winter	4.49	552
1440 Winter	3.35	0
2160 Winter	2.49	0
2880 Winter	2.02	0
4320 Winter	1.50	0
5760 Winter	1.21	0
7200 Winter	1.03	0
8640 Winter	0.90	0
10080 Winter	0.81	0

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	30	Longest Storm (mins)	10080
M5-60 (mm)	20.000	Summer Storms	Yes
Ratio-R	0.300	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Pipe Network

Volume in Pipe Network (m³)	1	Dia of Outfall Pipe (m)	0.100
Slope of Outfall Pipe (1:x)	100.0	Roughness of Outfall Pipe	0.600

Time / Area Diagram

Total Area (ha) = 0.240

Time	(mins)	Area
from:	to:	(ha)
0	4	0.240

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Tank/Pond Details

Invert Level (m) 139.270 Ground Level (m) 140.350

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.00	102.0	0.60	102.0	1.20	102.0	1.80	102.0	2.40	102.0
0.10	102.0	0.70	102.0	1.30	102.0	1.90	102.0	2.50	102.0
0.20	102.0	0.80	102.0	1.40	102.0	2.00	102.0		
0.30	102.0	0.90	102.0	1.50	102.0	2.10	102.0		
0.40	102.0	1.00	102.0	1.60	102.0	2.20	102.0		
0.50	102.0	1.10	102.0	1.70	102.0	2.30	102.0		

Depth / Flow Outflow Control

Invert Level of Control 139.040

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	3.5	0.80	4.4	2.00	7.0	4.00	10.0	7.00	13.2
0.20	5.0	1.00	4.8	2.20	7.4	4.50	10.6	7.50	13.6
0.30	5.3	1.20	5.2	2.40	7.7	5.00	11.1	8.00	14.1
0.40	5.4	1.40	5.6	2.60	8.0	5.50	11.7	8.50	14.5
0.50	5.3	1.60	6.3	3.00	8.6	6.00	12.2	9.00	14.9
0.60	5.2	1.80	6.7	3.50	9.3	6.50	12.7	9.50	15.4

Pipe Overflow Control

Pipe Diameter (m)	0.150	Entry Loss Coef	0.500
Slope (1:x)	100.0	Coef of Contraction	0.600
Length (m)	4.000	Invert Level (m)	140.350
Roughness (mm)	0.600		