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104 Yorkshire St Rochdale Lancashire OL16 1JY	attenuation system CRH chestnut way Iboro	
Date may 2023 File calc-tjba-CRH-chestnut way-atenua...	Designed By ds Checked By	
Micro Drainage	Source Control W.10.4	

Summary of Results for 1 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m ³)	Status
15 Summer	6.3	6.3	165.3597	0.0998	4.4	O K
30 Summer	6.3	6.3	165.3752	0.1153	5.1	O K
60 Summer	6.3	6.3	165.3747	0.1148	5.1	O K
120 Summer	6.2	6.2	165.3507	0.0908	4.0	O K
180 Summer	6.1	6.1	165.3252	0.0653	2.9	O K
240 Summer	5.8	5.8	165.3053	0.0453	2.0	O K
360 Summer	5.3	5.3	165.2777	0.0178	0.8	O K
480 Summer	4.9	4.9	165.2622	0.0023	0.1	O K
600 Summer	4.5	4.5	165.2600	0.0000	0.0	O K
720 Summer	4.0	4.0	165.2600	0.0000	0.0	O K
960 Summer	3.4	3.4	165.2600	0.0000	0.0	O K
1440 Summer	2.6	2.6	165.2600	0.0000	0.0	O K
2160 Summer	2.0	2.0	165.2600	0.0000	0.0	O K
2880 Summer	1.7	1.7	165.2600	0.0000	0.0	O K
4320 Summer	1.3	1.3	165.2600	0.0000	0.0	O K
5760 Summer	1.1	1.1	165.2600	0.0000	0.0	O K
7200 Summer	0.9	0.9	165.2600	0.0000	0.0	O K
8640 Summer	0.8	0.8	165.2600	0.0000	0.0	O K
10080 Summer	0.7	0.7	165.2600	0.0000	0.0	O K
15 Winter	6.3	6.3	165.3797	0.1198	5.3	O K
30 Winter	6.4	6.4	165.3947	0.1348	6.0	O K
60 Winter	6.4	6.4	165.3837	0.1238	5.5	O K
120 Winter	6.2	6.2	165.3377	0.0778	3.4	O K
180 Winter	5.8	5.8	165.3032	0.0432	1.9	O K
240 Winter	5.3	5.3	165.2777	0.0178	0.8	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	28.17	16
30 Summer	19.18	25
60 Summer	12.80	42
120 Summer	8.41	74
180 Summer	6.56	104
240 Summer	5.47	134
360 Summer	4.21	194
480 Summer	3.50	248
600 Summer	3.03	0
720 Summer	2.70	0
960 Summer	2.25	0
1440 Summer	1.73	0
2160 Summer	1.33	0
2880 Summer	1.11	0
4320 Summer	0.85	0
5760 Summer	0.71	0
7200 Summer	0.61	0
8640 Summer	0.54	0
10080 Summer	0.49	0
15 Winter	28.17	17
30 Winter	19.18	26
60 Winter	12.80	44
120 Winter	8.41	78
180 Winter	6.56	108
240 Winter	5.47	136

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Summary of Results for 1 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m ³)	Status
360 Winter	4.5	4.5	165.2600	0.0000	0.0	O K
480 Winter	3.8	3.8	165.2600	0.0000	0.0	O K
600 Winter	3.3	3.3	165.2600	0.0000	0.0	O K
720 Winter	2.9	2.9	165.2600	0.0000	0.0	O K
960 Winter	2.4	2.4	165.2600	0.0000	0.0	O K
1440 Winter	1.9	1.9	165.2600	0.0000	0.0	O K
2160 Winter	1.5	1.5	165.2600	0.0000	0.0	O K
2880 Winter	1.2	1.2	165.2600	0.0000	0.0	O K
4320 Winter	0.9	0.9	165.2600	0.0000	0.0	O K
5760 Winter	0.8	0.8	165.2600	0.0000	0.0	O K
7200 Winter	0.7	0.7	165.2600	0.0000	0.0	O K
8640 Winter	0.6	0.6	165.2600	0.0000	0.0	O K
10080 Winter	0.5	0.5	165.2600	0.0000	0.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	4.21	0
480 Winter	3.50	0
600 Winter	3.03	0
720 Winter	2.70	0
960 Winter	2.25	0
1440 Winter	1.73	0
2160 Winter	1.33	0
2880 Winter	1.11	0
4320 Winter	0.85	0
5760 Winter	0.71	0
7200 Winter	0.61	0
8640 Winter	0.54	0
10080 Winter	0.49	0

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	1	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)	5	Dia of Outfall Pipe (m)	0.200
Slope of Outfall Pipe (1:x)	100.0	Roughness of Outfall Pipe	0.600

Time / Area Diagram

Total Area (ha) = 0.182

Time	(mins)	Area
from:	to:	(ha)
0	4	0.182

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Tank/Pond Details

Invert Level (m) 165.260 Ground Level (m) 166.400

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	44.3	0.60	81.0	1.20	2.0	1.80	2.0	2.40	2.0
0.10	44.3	0.70	81.0	1.30	2.0	1.90	2.0	2.50	2.0
0.20	44.3	0.80	81.0	1.40	2.0	2.00	2.0		
0.30	71.3	0.90	54.0	1.50	2.0	2.10	2.0		
0.40	71.3	1.00	54.0	1.60	2.0	2.20	2.0		
0.50	116.3	1.10	9.0	1.70	2.0	2.30	2.0		

Depth / Flow Outflow Control

Invert Level of Control 165.120

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	4.1	0.80	5.3	2.00	8.7	4.00	12.2	7.00	16.2
0.20	6.1	1.00	5.9	2.20	9.1	4.50	13.0	7.50	16.8
0.30	6.5	1.20	6.4	2.40	9.5	5.00	13.7	8.00	17.3
0.40	6.5	1.40	6.9	2.60	9.9	5.50	14.4	8.50	17.8
0.50	6.4	1.60	7.7	3.00	10.6	6.00	15.0	9.00	18.4
0.60	6.2	1.80	8.2	3.50	11.5	6.50	15.6	9.50	18.9