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104 Yorkshire St Rochdale Lancashire OL16 1JY	SW attenuation design hoyle devs woodheys rd smithy bridge	
Date sept 2023 File CALC-T~1.SRC	Designed By ds Checked By	
Micro Drainage		Source Control W.10.4

Summary of Results for 30 year Return Period (+40%)

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	3.8	0.0	3.8	176.8922	0.2822	0.0	3.6	O K
30 Summer	3.9	0.0	3.9	176.9258	0.3157	0.0	4.0	O K
60 Summer	3.9	0.0	3.9	176.9198	0.3097	0.0	3.9	O K
120 Summer	3.6	0.0	3.6	176.8683	0.2582	0.0	3.3	O K
180 Summer	3.3	0.0	3.3	176.8158	0.2057	0.0	2.6	O K
240 Summer	3.1	0.0	3.1	176.7747	0.1647	0.0	2.1	O K
360 Summer	2.7	0.0	2.7	176.7153	0.1053	0.0	1.3	O K
480 Summer	2.4	0.0	2.4	176.6763	0.0663	0.0	0.8	O K
600 Summer	2.1	0.0	2.1	176.6497	0.0397	0.0	0.5	O K
720 Summer	1.9	0.0	1.9	176.6308	0.0207	0.0	0.3	O K
960 Summer	1.7	0.0	1.7	176.6100	0.0000	0.0	0.0	O K
1440 Summer	1.3	0.0	1.3	176.6100	0.0000	0.0	0.0	O K
2160 Summer	0.9	0.0	0.9	176.6100	0.0000	0.0	0.0	O K
2880 Summer	0.8	0.0	0.8	176.6100	0.0000	0.0	0.0	O K
4320 Summer	0.6	0.0	0.6	176.6100	0.0000	0.0	0.0	O K
5760 Summer	0.5	0.0	0.5	176.6100	0.0000	0.0	0.0	O K
7200 Summer	0.4	0.0	0.4	176.6100	0.0000	0.0	0.0	O K
8640 Summer	0.3	0.0	0.3	176.6100	0.0000	0.0	0.0	O K
10080 Summer	0.3	0.0	0.3	176.6100	0.0000	0.0	0.0	O K
15 Winter	4.0	0.0	4.0	176.9357	0.3257	0.0	4.1	O K
30 Winter	4.2	0.0	4.2	176.9697	0.3597	0.0	4.5	O K
60 Winter	4.0	0.0	4.0	176.9442	0.3342	0.0	4.2	O K
120 Winter	3.6	0.0	3.6	176.8573	0.2472	0.0	3.1	O K
180 Winter	3.1	0.0	3.1	176.7847	0.1747	0.0	2.2	O K
240 Winter	2.8	0.0	2.8	176.7328	0.1228	0.0	1.5	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	68.99	14
30 Summer	47.08	22
60 Summer	30.81	40
120 Summer	19.53	72
180 Summer	14.75	104
240 Summer	12.05	134
360 Summer	9.05	194
480 Summer	7.38	254
600 Summer	6.29	314
720 Summer	5.52	372
960 Summer	4.49	0
1440 Summer	3.35	0
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	14
30 Winter	47.08	24
60 Winter	30.81	42
120 Winter	19.53	76
180 Winter	14.75	108
240 Winter	12.05	138

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360 Winter	2.3	0.0	2.3	176.6678	0.0578	0.0	0.7	O K
480 Winter	1.9	0.0	1.9	176.6313	0.0212	0.0	0.3	O K
600 Winter	1.7	0.0	1.7	176.6107	0.0008	0.0	0.0	O K
720 Winter	1.5	0.0	1.5	176.6100	0.0000	0.0	0.0	O K
960 Winter	1.2	0.0	1.2	176.6100	0.0000	0.0	0.0	O K
1440 Winter	0.9	0.0	0.9	176.6100	0.0000	0.0	0.0	O K
2160 Winter	0.7	0.0	0.7	176.6100	0.0000	0.0	0.0	O K
2880 Winter	0.5	0.0	0.5	176.6100	0.0000	0.0	0.0	O K
4320 Winter	0.4	0.0	0.4	176.6100	0.0000	0.0	0.0	O K
5760 Winter	0.3	0.0	0.3	176.6100	0.0000	0.0	0.0	O K
7200 Winter	0.3	0.0	0.3	176.6100	0.0000	0.0	0.0	O K
8640 Winter	0.2	0.0	0.2	176.6100	0.0000	0.0	0.0	O K
10080 Winter	0.2	0.0	0.2	176.6100	0.0000	0.0	0.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	9.05	198
480 Winter	7.38	256
600 Winter	6.29	308
720 Winter	5.52	0
960 Winter	4.49	0
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

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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 %	+40
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.033

Time	(mins)	Area
from:	to:	(ha)
0	4	0.033

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Tank/Pond Details

Invert Level (m) 176.610 Ground Level (m) 177.800

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)	Depth (m)	Area (m ²)
0.00	12.6	0.50	12.6	1.00	12.6	1.50	12.6	2.00	12.6	2.50	12.6
0.10	12.6	0.60	12.6	1.10	12.6	1.60	12.6	2.10	12.6		
0.20	12.6	0.70	12.6	1.20	12.6	1.70	12.6	2.20	12.6		
0.30	12.6	0.80	12.6	1.30	12.6	1.80	12.6	2.30	12.6		
0.40	12.6	0.90	12.6	1.40	12.6	1.90	12.6	2.40	12.6		

Orifice Outflow Control

Diameter (m) 0.055 Invert Level (m) 176.510
Discharge Coefficient 0.600

Pipe Overflow Control

Pipe Diameter (m) 0.100 Entry Loss Coef 0.500
Slope (1:x) 100.0 Coef of Contraction 0.600
Length (m) 1.000 Invert Level (m) 177.160
Roughness (mm) 0.600