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104 Yorkshire St Rochdale Lancashire OL16 1JY	SW attenuation 30yr gillings-midway hse 51-53 hudds rd-meltham	
Date july 2021 - rev0 File calc-tjba-gillings-midway, meltham-...	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	2.9	0.0	2.9	178.5712	0.2312	0.0	8.3	O K
30 Summer	3.0	0.0	3.0	178.6492	0.3092	0.0	11.1	O K
60 Summer	3.0	0.0	3.0	178.7202	0.3802	0.0	13.7	O K
120 Summer	3.0	0.0	3.0	178.7672	0.4272	0.0	15.4	O K
180 Summer	3.0	0.0	3.0	178.7707	0.4307	0.0	15.5	O K
240 Summer	3.0	0.0	3.0	178.7632	0.4232	0.0	15.2	O K
360 Summer	3.0	0.0	3.0	178.7327	0.3927	0.0	14.1	O K
480 Summer	3.0	0.0	3.0	178.6962	0.3562	0.0	12.8	O K
600 Summer	3.0	0.0	3.0	178.6587	0.3187	0.0	11.5	O K
720 Summer	3.0	0.0	3.0	178.6237	0.2837	0.0	10.2	O K
960 Summer	2.9	0.0	2.9	178.5652	0.2252	0.0	8.1	O K
1440 Summer	2.7	0.0	2.7	178.4912	0.1513	0.0	5.4	O K
2160 Summer	2.4	0.0	2.4	178.4342	0.0943	0.0	3.4	O K
2880 Summer	2.1	0.0	2.1	178.4173	0.0773	0.0	2.8	O K
4320 Summer	1.6	0.0	1.6	178.3982	0.0582	0.0	2.1	O K
5760 Summer	1.4	0.0	1.4	178.3877	0.0477	0.0	1.7	O K
7200 Summer	1.2	0.0	1.2	178.3802	0.0402	0.0	1.5	O K
8640 Summer	1.1	0.0	1.1	178.3752	0.0352	0.0	1.3	O K
10080 Summer	1.0	0.0	1.0	178.3712	0.0312	0.0	1.1	O K
15 Winter	3.0	0.0	3.0	178.6032	0.2632	0.0	9.5	O K
30 Winter	3.0	0.0	3.0	178.6962	0.3562	0.0	12.8	O K
60 Winter	3.0	0.0	3.0	178.7772	0.4372	0.0	15.7	O K
120 Winter	3.0	0.0	3.0	178.8267	0.4867	0.0	17.5	O K
180 Winter	3.0	0.0	3.0	178.8202	0.4802	0.0	17.3	O K
240 Winter	3.0	0.0	3.0	178.7982	0.4582	0.0	16.5	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	60.15	16
30 Summer	43.86	30
60 Summer	30.81	48
120 Summer	20.86	84
180 Summer	16.34	120
240 Summer	13.72	154
360 Summer	10.69	220
480 Summer	8.93	286
600 Summer	7.76	348
720 Summer	6.92	408
960 Summer	5.76	528
1440 Summer	4.44	764
2160 Summer	3.43	1104
2880 Summer	2.85	1468
4320 Summer	2.21	2200
5760 Summer	1.86	2936
7200 Summer	1.63	3672
8640 Summer	1.46	4344
10080 Summer	1.33	5120
15 Winter	60.15	16
30 Winter	43.86	30
60 Winter	30.81	52
120 Winter	20.86	92
180 Winter	16.34	130
240 Winter	13.72	168

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360 Winter	3.0	0.0	3.0	178.7352	0.3952	0.0	14.2	O K
480 Winter	3.0	0.0	3.0	178.6702	0.3302	0.0	11.9	O K
600 Winter	3.0	0.0	3.0	178.6117	0.2717	0.0	9.8	O K
720 Winter	2.9	0.0	2.9	178.5618	0.2217	0.0	8.0	O K
960 Winter	2.7	0.0	2.7	178.4957	0.1558	0.0	5.6	O K
1440 Winter	2.3	0.0	2.3	178.4277	0.0878	0.0	3.2	O K
2160 Winter	1.8	0.0	1.8	178.4063	0.0663	0.0	2.4	O K
2880 Winter	1.5	0.0	1.5	178.3938	0.0537	0.0	1.9	O K
4320 Winter	1.2	0.0	1.2	178.3797	0.0397	0.0	1.4	O K
5760 Winter	1.0	0.0	1.0	178.3717	0.0317	0.0	1.1	O K
7200 Winter	0.9	0.0	0.9	178.3667	0.0267	0.0	1.0	O K
8640 Winter	0.8	0.0	0.8	178.3627	0.0227	0.0	0.8	O K
10080 Winter	0.7	0.0	0.7	178.3597	0.0197	0.0	0.7	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	10.69	236
480 Winter	8.93	302
600 Winter	7.76	362
720 Winter	6.92	420
960 Winter	5.76	538
1440 Winter	4.44	748
2160 Winter	3.43	1104
2880 Winter	2.85	1468
4320 Winter	2.21	2200
5760 Winter	1.86	2880
7200 Winter	1.63	3616
8640 Winter	1.46	4368
10080 Winter	1.33	5136

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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	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.091

Time	(mins)	Area
from:	to:	(ha)
0	4	0.091

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Tank/Pond Details

Invert Level (m) 178.340 Ground Level (m) 180.500

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	36.0	0.50	36.0	1.00	36.0	1.50	36.0	2.00	36.0	2.50	36.0
0.10	36.0	0.60	36.0	1.10	36.0	1.60	36.0	2.10	36.0		
0.20	36.0	0.70	36.0	1.20	36.0	1.70	36.0	2.20	36.0		
0.30	36.0	0.80	36.0	1.30	36.0	1.80	36.0	2.30	36.0		
0.40	36.0	0.90	36.0	1.40	36.0	1.90	36.0	2.40	36.0		

Depth / Flow Outflow Control

Invert Level of Control 178.330

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	2.4	0.80	2.6	2.00	4.1	4.00	5.9	7.00	7.7
0.20	2.9	1.00	2.9	2.20	4.3	4.50	6.2	7.50	8.0
0.30	3.0	1.20	3.1	2.40	4.5	5.00	6.5	8.00	8.3
0.40	3.0	1.40	3.5	2.60	4.7	5.50	6.9	8.50	8.5
0.50	2.9	1.60	3.7	3.00	5.1	6.00	7.2	9.00	8.8
0.60	2.7	1.80	3.9	3.50	5.5	6.50	7.5	9.50	9.0

Pipe Overflow Control

Pipe Diameter (m)	0.150	Entry Loss Coef	0.500
Slope (1:x)	60.0	Coef of Contraction	0.600
Length (m)	2.000	Invert Level (m)	179.420
Roughness (mm)	0.600		