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Elm House Farm Saughton Lane, Saughton Chester CH3 6EN		
Date 27 August 2008 16:46 File 1188 080827 100ycc No...	Designed By weetwood Checked By	
Micro Drainage	Source Control W.11.3	

Summary of Results for 100 year Return Period (+20%)

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	20.7	20.7	1.5407	0.5407	102.0	O K
30 Summer	23.5	23.5	1.7063	0.7063	133.3	O K
60 Summer	25.5	25.5	1.8273	0.8273	156.1	O K
120 Summer	26.4	26.4	1.8883	0.8883	167.6	O K
180 Summer	26.3	26.3	1.8798	0.8798	166.0	O K
240 Summer	25.8	25.8	1.8473	0.8473	159.9	O K
360 Summer	24.7	24.7	1.7768	0.7768	146.6	O K
480 Summer	23.5	23.5	1.7063	0.7063	133.2	O K
600 Summer	22.4	22.4	1.6398	0.6398	120.8	O K
720 Summer	21.4	21.4	1.5793	0.5792	109.3	O K
960 Summer	20.5	20.5	1.4687	0.4687	88.4	O K
1440 Summer	20.2	20.2	1.2937	0.2937	55.4	O K
2160 Summer	16.9	16.9	1.2062	0.2062	38.9	O K
2880 Summer	14.1	14.1	1.1753	0.1752	33.0	O K
4320 Summer	10.5	10.5	1.1403	0.1403	26.5	O K
5760 Summer	8.4	8.4	1.1208	0.1208	22.8	O K
7200 Summer	7.2	7.2	1.1083	0.1083	20.4	O K
8640 Summer	6.2	6.2	1.0988	0.0988	18.6	O K
10080 Summer	5.5	5.5	1.0878	0.0878	16.6	O K
15 Winter	21.9	21.9	1.6108	0.6108	115.3	O K
30 Winter	25.1	25.1	1.7998	0.7998	150.9	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	101.21	20
30 Summer	69.85	32
60 Summer	46.10	54
120 Summer	29.32	88
180 Summer	22.10	122
240 Summer	17.94	156
360 Summer	13.39	224
480 Summer	10.85	290
600 Summer	9.21	354
720 Summer	8.05	418
960 Summer	6.51	544
1440 Summer	4.81	764
2160 Summer	3.54	1108
2880 Summer	2.84	1472
4320 Summer	2.09	2204
5760 Summer	1.68	2936
7200 Summer	1.41	3672
8640 Summer	1.23	4400
10080 Summer	1.10	5136
15 Winter	101.21	20
30 Winter	69.85	33

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Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m ³)	Status
60 Winter	27.2	27.2	1.9413	0.9413	177.6	O K
120 Winter	28.0	28.0	1.9993	0.9993	188.5	O K
180 Winter	27.7	27.7	1.9733	0.9733	183.6	O K
240 Winter	26.9	26.9	1.9188	0.9188	173.4	O K
360 Winter	25.2	25.2	1.8068	0.8068	152.2	O K
480 Winter	23.4	23.4	1.7008	0.7008	132.2	O K
600 Winter	21.8	21.8	1.6048	0.6048	114.1	O K
720 Winter	20.5	20.5	1.5162	0.5162	97.4	O K
960 Winter	20.5	20.5	1.3322	0.3322	62.7	O K
1440 Winter	17.0	17.0	1.2093	0.2092	39.4	O K
2160 Winter	12.8	12.8	1.1633	0.1633	30.8	O K
2880 Winter	10.4	10.4	1.1393	0.1393	26.3	O K
4320 Winter	7.6	7.6	1.1128	0.1128	21.3	O K
5760 Winter	6.1	6.1	1.0973	0.0973	18.3	O K
7200 Winter	5.2	5.2	1.0823	0.0823	15.5	O K
8640 Winter	4.5	4.5	1.0718	0.0718	13.5	O K
10080 Winter	4.0	4.0	1.0638	0.0637	12.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
60 Winter	46.10	58
120 Winter	29.32	94
180 Winter	22.10	132
240 Winter	17.94	168
360 Winter	13.39	240
480 Winter	10.85	308
600 Winter	9.21	376
720 Winter	8.05	442
960 Winter	6.51	550
1440 Winter	4.81	762
2160 Winter	3.54	1108
2880 Winter	2.84	1472
4320 Winter	2.09	2204
5760 Winter	1.68	2936
7200 Winter	1.41	3656
8640 Winter	1.23	4376
10080 Winter	1.10	5072

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Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	19.000	Summer Storms	Yes
Ratio-R	0.300	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+20
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.620

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.310	4	8	0.310

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Tank/Pond Details

Invert Level (m) 1.000 Ground Level (m) 2.500

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)
0.00	188.7	2.40	188.7	4.80	188.7	7.20	188.7	9.60	188.7
0.40	188.7	2.80	188.7	5.20	188.7	7.60	188.7	10.00	188.7
0.80	188.7	3.20	188.7	5.60	188.7	8.00	188.7		
1.20	188.7	3.60	188.7	6.00	188.7	8.40	188.7		
1.60	188.7	4.00	188.7	6.40	188.7	8.80	188.7		
2.00	188.7	4.40	188.7	6.80	188.7	9.20	188.7		

Hydro-Brake Outflow Control

Design Head (m) 1.000 Hydro-Brake Type MD1 Invert Level (m) 1.000
Design Flow (l/s) 28.1 Diameter (mm) 159

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	6.3	0.80	25.1	2.00	39.7	4.00	56.1	7.00	74.2
0.20	16.6	1.00	28.1	2.20	41.6	4.50	59.5	7.50	76.8
0.30	20.5	1.20	30.7	2.40	43.5	5.00	62.7	8.00	79.4
0.40	19.1	1.40	33.2	2.60	45.2	5.50	65.8	8.50	81.8
0.50	20.0	1.60	35.5	3.00	48.6	6.00	68.7	9.00	84.2
0.60	21.8	1.80	37.6	3.50	52.5	6.50	71.5	9.50	86.5