

CFA Civils		Page 1
Harrisfield	CFC24034	
Blackmoor Road	99 Bury New Road	
Mawdesley, L40 2QF	Sub-base Attenuation	
Date Jul 2024	Designed By TMC	
File TANK SIZING.SRCX	Checked By	
Micro Drainage	Source Control W.12.5	

Model Details

Storage is Online Cover Level (m) 175.000

Cellular Storage Structure

Invert Level (m) 174.650 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.30
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	17.0	100.0	0.225	17.0	116.0	0.230	0.0	116.0

Orifice Outflow Control

Diameter (m) 0.064 Discharge Coefficient 0.600 Invert Level (m) 174.500

Weir Overflow Control

Discharge Coef 0.544 Width (m) 0.500 Invert Level (m) 174.900

CFA Civils		Page 2
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Rainfall Details

Rainfall Model	FSR	Ratio R	0.260	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Shortest Storm (mins)	15
Region	England and Wales	Winter Storms	Yes	Longest Storm (mins)	1440
M5-60 (mm)	19.200	Cv (Summer)	0.750	Climate Change %	+40

Pipe Network

Volume in Pipe Network (m³) 1 Slope of Outfall Pipe (1:X) 100 Dia of Outfall Pipe (m) 0.1 Roughness of Outfall Pipe (mm) 0.600

Time / Area Diagram

Total Area (ha) 0.020

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.007	8-12	0.007	12-16	0.006

CFA Civils		Page 3
Harrisfield	CFC24034	
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File TANK SIZING.SRCX	Checked By	
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Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 3 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	174.782	0.132	0.0	4.3	0.0	4.3	0.7	Flood Risk
30 min Summer	174.836	0.186	0.0	4.7	0.0	4.7	1.0	Flood Risk
60 min Summer	174.832	0.182	0.0	4.7	0.0	4.7	0.9	Flood Risk
120 min Summer	174.766	0.116	0.0	4.1	0.0	4.1	0.6	Flood Risk
180 min Summer	174.708	0.058	0.0	3.6	0.0	3.6	0.3	Flood Risk
240 min Summer	174.670	0.020	0.0	3.2	0.0	3.2	0.1	O K
360 min Summer	174.650	0.000	0.0	2.6	0.0	2.6	0.0	O K
480 min Summer	174.650	0.000	0.0	2.2	0.0	2.2	0.0	O K
600 min Summer	174.650	0.000	0.0	1.9	0.0	1.9	0.0	O K
720 min Summer	174.650	0.000	0.0	1.7	0.0	1.7	0.0	O K
960 min Summer	174.650	0.000	0.0	1.4	0.0	1.4	0.0	O K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	113.610	0.0	23
30 min Summer	80.324	0.0	31
60 min Summer	54.368	0.0	46
120 min Summer	35.359	0.0	76
180 min Summer	26.896	0.0	106
240 min Summer	22.054	0.0	136
360 min Summer	16.648	0.0	0
480 min Summer	13.606	0.0	0
600 min Summer	11.619	0.0	0
720 min Summer	10.205	0.0	0
960 min Summer	8.303	0.0	0

CFA Civils		Page 4
Harrisfield	CFC24034	
Blackmoor Road	99 Bury New Road	
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Date Jul 2024	Designed By TMC	
File TANK SIZING.SRCX	Checked By	
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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Winter	174.821	0.171	0.0	4.6	0.0	4.6	0.9	Flood Risk
30 min Winter	174.870	0.220	0.0	5.0	0.0	5.0	1.1	Flood Risk
60 min Winter	174.829	0.179	0.0	4.7	0.0	4.7	0.9	Flood Risk
120 min Winter	174.721	0.071	0.0	3.7	0.0	3.7	0.4	Flood Risk
180 min Winter	174.658	0.008	0.0	3.0	0.0	3.0	0.0	O K
240 min Winter	174.650	0.000	0.0	2.6	0.0	2.6	0.0	O K
360 min Winter	174.650	0.000	0.0	2.0	0.0	2.0	0.0	O K
480 min Winter	174.650	0.000	0.0	1.6	0.0	1.6	0.0	O K
600 min Winter	174.650	0.000	0.0	1.4	0.0	1.4	0.0	O K
720 min Winter	174.650	0.000	0.0	1.2	0.0	1.2	0.0	O K
960 min Winter	174.650	0.000	0.0	1.0	0.0	1.0	0.0	O K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
15 min Winter	113.610	0.0	23
30 min Winter	80.324	0.0	32
60 min Winter	54.368	0.0	48
120 min Winter	35.359	0.0	78
180 min Winter	26.896	0.0	106
240 min Winter	22.054	0.0	0
360 min Winter	16.648	0.0	0
480 min Winter	13.606	0.0	0
600 min Winter	11.619	0.0	0
720 min Winter	10.205	0.0	0
960 min Winter	8.303	0.0	0

CFA Civils		Page 5
Harrisfield Blackmoor Road Mawdesley, L40 2QF	CFC24034 99 Bury New Road Sub-base Attenuation	
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<u>Flood Routing through Storage Facility</u> <u>Event: 30 min Winter</u> Total Volume over Overflow (Spill Flow) 0.0m³								
Time (mins)	Level (m)	Depth (m)	Σ Inflow (l/s)	Filtration (l/s)	Control (l/s)	Overflow (l/s)	Σ Outflow (l/s)	Volume (m³)
1	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
2	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
3	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
4	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
5	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
6	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
7	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0
8	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
9	174.650	0.000	0.2	0.0	0.2	0.0	0.2	0.0
10	174.650	0.000	0.3	0.0	0.3	0.0	0.3	0.0
11	174.650	0.000	0.4	0.0	0.4	0.0	0.4	0.0
12	174.650	0.000	0.6	0.0	0.6	0.0	0.6	0.0
13	174.650	0.000	0.8	0.0	0.8	0.0	0.8	0.0
14	174.650	0.000	1.0	0.0	1.0	0.0	1.0	0.0
15	174.650	0.000	1.3	0.0	1.3	0.0	1.3	0.0
16	174.650	0.000	1.7	0.0	1.7	0.0	1.7	0.0
17	174.650	0.000	2.2	0.0	2.2	0.0	2.2	0.0
18	174.650	0.000	2.6	0.0	2.6	0.0	2.6	0.0
19	174.652	0.002	3.3	0.0	3.0	0.0	3.0	0.0
20	174.659	0.009	3.9	0.0	3.0	0.0	3.0	0.0
21	174.672	0.022	4.5	0.0	3.2	0.0	3.2	0.1
22	174.690	0.040	5.1	0.0	3.4	0.0	3.4	0.2
23	174.712	0.062	5.6	0.0	3.6	0.0	3.6	0.3
24	174.736	0.086	6.0	0.0	3.9	0.0	3.9	0.4
25	174.761	0.111	6.3	0.0	4.1	0.0	4.1	0.6
26	174.786	0.136	6.4	0.0	4.3	0.0	4.3	0.7
27	174.809	0.159	6.4	0.0	4.5	0.0	4.5	0.8
28	174.830	0.180	6.4	0.0	4.7	0.0	4.7	0.9

CFA Civils		Page 6
Harrisfield Blackmoor Road Mawdesley, L40 2QF	CFC24034 99 Bury New Road Sub-base Attenuation	
Date Jul 2024 File TANK SIZING.SRCX	Designed By TMC Checked By	
Micro Drainage	Source Control W.12.5	

Flood Routing through Storage Facility

Event: 30 min Winter

Time (mins)	Level (m)	Depth (m)	Σ Inflow (l/s)	Filtration (l/s)	Control (l/s)	Overflow (l/s)	Σ Outflow (l/s)	Volume (m³)
29	174.848	0.198	6.2	0.0	4.8	0.0	4.8	1.0
30	174.862	0.212	5.8	0.0	4.9	0.0	4.9	1.1
31	174.869	0.219	5.4	0.0	5.0	0.0	5.0	1.1
32	174.870	0.220	4.8	0.0	5.0	0.0	5.0	1.1
33	174.865	0.215	4.2	0.0	4.9	0.0	4.9	1.1
34	174.854	0.204	3.6	0.0	4.8	0.0	4.8	1.0
35	174.837	0.187	3.1	0.0	4.7	0.0	4.7	1.0
36	174.816	0.166	2.6	0.0	4.6	0.0	4.6	0.8
37	174.791	0.141	2.2	0.0	4.4	0.0	4.4	0.7
38	174.765	0.115	1.8	0.0	4.1	0.0	4.1	0.6
39	174.737	0.087	1.5	0.0	3.9	0.0	3.9	0.4
40	174.709	0.059	1.2	0.0	3.6	0.0	3.6	0.3
41	174.681	0.031	1.0	0.0	3.3	0.0	3.3	0.2
42	174.655	0.005	0.8	0.0	3.0	0.0	3.0	0.0
43	174.650	0.000	0.7	0.0	0.7	0.0	0.7	0.0
44	174.650	0.000	0.5	0.0	0.5	0.0	0.5	0.0
45	174.650	0.000	0.4	0.0	0.4	0.0	0.4	0.0
46	174.650	0.000	0.3	0.0	0.3	0.0	0.3	0.0
47	174.650	0.000	0.2	0.0	0.2	0.0	0.2	0.0
48	174.650	0.000	0.2	0.0	0.2	0.0	0.2	0.0
49	174.650	0.000	0.2	0.0	0.2	0.0	0.2	0.0
50	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
51	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
52	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
53	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
54	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
55	174.650	0.000	0.1	0.0	0.1	0.0	0.1	0.0
56	174.650	0.000	0.0	0.0	0.0	0.0	0.0	0.0

CFA Civils		Page 7
Harrisfield	CFC24034	
Blackmoor Road	99 Bury New Road	
Mawdesley, L40 2QF	Sub-base Attenuation	
Date Jul 2024	Designed By TMC	
File TANK SIZING.SRCX	Checked By	
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