



J D P Limited		Page 1
Townfoot Longtown, Carlisle Cumbria CA6 5LY	Land at Beckermat, Cumbria Tank Size: 9.6 x 4.8 x 1.68m JDP Project Ref: 2601-a176	
Date 2-2-2026 File 2601-a176 Land at Becke...	Designed by JC Checked by	
Micro Drainage	Source Control 2014.1	

Summary of Results for 100 year Return Period (+50%)

Half Drain Time : 650 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	8.117	0.547	0.0	0.6	0.6	24.0	O K
30 min Summer	8.333	0.763	0.0	0.7	0.7	33.4	O K
60 min Summer	8.578	1.008	0.0	0.9	0.9	44.1	O K
120 min Summer	8.831	1.261	0.0	1.0	1.0	55.2	O K
180 min Summer	8.959	1.389	0.0	1.0	1.0	60.8	O K
240 min Summer	9.041	1.471	0.0	1.0	1.0	64.4	O K
360 min Summer	9.137	1.567	0.0	1.1	1.1	68.6	O K
480 min Summer	9.181	1.611	0.0	1.1	1.1	70.5	O K
600 min Summer	9.208	1.638	0.0	1.1	1.1	71.7	O K
720 min Summer	9.226	1.656	0.0	1.1	1.1	72.5	O K
960 min Summer	9.243	1.673	0.0	1.1	1.1	73.2	O K
1440 min Summer	9.234	1.664	0.0	1.1	1.1	72.9	O K
2160 min Summer	9.173	1.603	0.0	1.1	1.1	70.2	O K
2880 min Summer	9.094	1.524	0.0	1.1	1.1	66.7	O K
4320 min Summer	8.945	1.375	0.0	1.0	1.0	60.2	O K
5760 min Summer	8.813	1.243	0.0	1.0	1.0	54.4	O K
7200 min Summer	8.700	1.130	0.0	0.9	0.9	49.5	O K
8640 min Summer	8.604	1.034	0.0	0.9	0.9	45.3	O K
10080 min Summer	8.522	0.952	0.0	0.8	0.8	41.7	O K
15 min Winter	8.117	0.547	0.0	0.6	0.6	24.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	125.136	0.0	24.1	19
30 min Summer	88.004	0.0	33.8	34
60 min Summer	59.197	0.0	46.1	64
120 min Summer	38.246	0.0	59.6	122
180 min Summer	28.985	0.0	67.7	182
240 min Summer	23.728	0.0	73.9	242
360 min Summer	17.863	0.0	83.4	360
480 min Summer	14.570	0.0	90.7	458
600 min Summer	12.425	0.0	96.6	512
720 min Summer	10.901	0.0	101.6	572
960 min Summer	8.854	0.0	109.6	702
1440 min Summer	6.585	0.0	118.2	980
2160 min Summer	4.880	0.0	137.0	1388
2880 min Summer	3.942	0.0	147.5	1792
4320 min Summer	2.924	0.0	164.1	2596
5760 min Summer	2.368	0.0	177.3	3400
7200 min Summer	2.012	0.0	188.3	4112
8640 min Summer	1.763	0.0	198.0	4920
10080 min Summer	1.578	0.0	206.7	5648
15 min Winter	125.136	0.0	24.1	19

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Summary of Results for 100 year Return Period (+50%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	8.333	0.763	0.0	0.7	0.7	0.7	33.4	O K
60 min Winter	8.579	1.009	0.0	0.9	0.9	0.9	44.2	O K
120 min Winter	8.833	1.263	0.0	1.0	1.0	1.0	55.3	O K
180 min Winter	8.962	1.392	0.0	1.0	1.0	1.0	61.0	O K
240 min Winter	9.046	1.476	0.0	1.0	1.0	1.0	64.6	O K
360 min Winter	9.146	1.576	0.0	1.1	1.1	1.1	69.0	O K
480 min Winter	9.195	1.625	0.0	1.1	1.1	1.1	71.2	O K
600 min Winter	9.216	1.646	0.0	1.1	1.1	1.1	72.1	O K
720 min Winter	9.226	1.656	0.0	1.1	1.1	1.1	72.5	O K
960 min Winter	9.236	1.666	0.0	1.1	1.1	1.1	72.9	O K
1440 min Winter	9.202	1.632	0.0	1.1	1.1	1.1	71.5	O K
2160 min Winter	9.099	1.529	0.0	1.1	1.1	1.1	66.9	O K
2880 min Winter	8.983	1.413	0.0	1.0	1.0	1.0	61.9	O K
4320 min Winter	8.773	1.203	0.0	0.9	0.9	0.9	52.7	O K
5760 min Winter	8.602	1.032	0.0	0.9	0.9	0.9	45.2	O K
7200 min Winter	8.464	0.894	0.0	0.8	0.8	0.8	39.1	O K
8640 min Winter	8.351	0.781	0.0	0.8	0.8	0.8	34.2	O K
10080 min Winter	8.258	0.688	0.0	0.7	0.7	0.7	30.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	88.004	0.0	33.8	33
60 min Winter	59.197	0.0	46.1	62
120 min Winter	38.246	0.0	59.6	120
180 min Winter	28.985	0.0	67.7	178
240 min Winter	23.728	0.0	73.9	236
360 min Winter	17.863	0.0	83.4	348
480 min Winter	14.570	0.0	90.7	458
600 min Winter	12.425	0.0	96.6	560
720 min Winter	10.901	0.0	101.6	586
960 min Winter	8.854	0.0	109.6	734
1440 min Winter	6.585	0.0	118.3	1040
2160 min Winter	4.880	0.0	137.0	1492
2880 min Winter	3.942	0.0	147.5	1928
4320 min Winter	2.924	0.0	164.1	2764
5760 min Winter	2.368	0.0	177.3	3520
7200 min Winter	2.012	0.0	188.3	4320
8640 min Winter	1.763	0.0	198.0	5024
10080 min Winter	1.578	0.0	206.7	5760

J D P Limited		Page 3
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	19.500	Shortest Storm (mins)	15
Ratio R	0.268	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+50

Time Area Diagram


Total Area (ha) 0.078

Time (mins) Area		
From:	To:	(ha)
0	4	0.078

Time Area Diagram

Total Area (ha) 0.000

Time (mins) Area		
From:	To:	(ha)
0	4	0.000

J D P Limited		Page 4
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Model Details

Storage is Online Cover Level (m) 10.000

Cellular Storage Structure

Invert Level (m) 7.570 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	46.1	46.1	1.681	0.0	95.0
1.680	46.1	95.0			

Crown Vortex Valve® Outflow Control

Design Head (m) 1.680 Vortex Valve® Type R1 SW Only Invert Level (m) 7.570
 Design Flow (l/s) 1.1 Diameter (mm) 38

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.3	1.200	0.9	3.000	1.5	7.000	2.3
0.200	0.4	1.400	1.0	3.500	1.6	7.500	2.3
0.300	0.5	1.600	1.1	4.000	1.7	8.000	2.4
0.400	0.5	1.800	1.1	4.500	1.8	8.500	2.5
0.500	0.6	2.000	1.2	5.000	1.9	9.000	2.6
0.600	0.7	2.200	1.3	5.500	2.0	9.500	2.6
0.800	0.8	2.400	1.3	6.000	2.1		
1.000	0.9	2.600	1.4	6.500	2.2		