

Priestley Johnson Ltd				Page 1	
Bank House 105-109 New St, Blackrod Bolton BL6 5AG		LINCOLN WAY JAMES ALPE BUILDING 7			
Date 01-Apr-19 File DRAINAGE SOAKAWAY 100 YEA...		Designed by SMJ Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period					
Half Drain Time : 341 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	94.247	0.747	0.8	10.6	O K
30 min Summer	94.534	1.034	0.8	14.7	O K
60 min Summer	94.845	1.345	0.8	19.2	O K
120 min Summer	95.128	1.628	0.8	23.2	O K
180 min Summer	95.233	1.733	0.8	24.7	O K
240 min Summer	95.267	1.767	0.8	25.2	O K
360 min Summer	95.269	1.769	0.8	25.2	O K
480 min Summer	95.254	1.754	0.8	25.0	O K
600 min Summer	95.232	1.732	0.8	24.7	O K
720 min Summer	95.206	1.706	0.8	24.3	O K
960 min Summer	95.139	1.639	0.8	23.4	O K
1440 min Summer	94.978	1.478	0.8	21.1	O K
2160 min Summer	94.716	1.216	0.8	17.3	O K
2880 min Summer	94.465	0.965	0.8	13.8	O K
4320 min Summer	94.057	0.557	0.8	7.9	O K
5760 min Summer	93.776	0.276	0.8	3.9	O K
7200 min Summer	93.613	0.113	0.8	1.6	O K
8640 min Summer	93.549	0.049	0.7	0.7	O K
10080 min Summer	93.544	0.044	0.7	0.6	O K
15 min Winter	94.343	0.843	0.8	12.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	79.651	0.0	18		
30 min Summer	56.360	0.0	33		
60 min Summer	38.202	0.0	62		
120 min Summer	24.903	0.0	122		
180 min Summer	18.979	0.0	180		
240 min Summer	15.559	0.0	240		
360 min Summer	11.753	0.0	308		
480 min Summer	9.609	0.0	374		
600 min Summer	8.209	0.0	438		
720 min Summer	7.212	0.0	506		
960 min Summer	5.870	0.0	646		
1440 min Summer	4.379	0.0	922		
2160 min Summer	3.254	0.0	1320		
2880 min Summer	2.634	0.0	1700		
4320 min Summer	1.959	0.0	2420		
5760 min Summer	1.590	0.0	3104		
7200 min Summer	1.353	0.0	3744		
8640 min Summer	1.187	0.0	4296		
10080 min Summer	1.064	0.0	5024		
15 min Winter	79.651	0.0	18		
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Summary of Results for 100 year Return Period					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	94.670	1.170	0.8	16.7	O K
60 min Winter	95.032	1.532	0.8	21.8	O K
120 min Winter	95.376	1.876	0.8	26.7	O K
180 min Winter	95.521	2.021	0.8	28.8	O K
240 min Winter	95.585	2.085	0.8	29.7	O K
360 min Winter	95.614	2.114	0.8	30.1	O K
480 min Winter	95.573	2.073	0.8	29.5	O K
600 min Winter	95.539	2.039	0.8	29.1	O K
720 min Winter	95.497	1.997	0.8	28.5	O K
960 min Winter	95.388	1.888	0.8	26.9	O K
1440 min Winter	95.120	1.620	0.8	23.1	O K
2160 min Winter	94.694	1.194	0.8	17.0	O K
2880 min Winter	94.307	0.807	0.8	11.5	O K
4320 min Winter	93.736	0.236	0.8	3.4	O K
5760 min Winter	93.548	0.048	0.7	0.7	O K
7200 min Winter	93.541	0.041	0.6	0.6	O K
8640 min Winter	93.536	0.036	0.5	0.5	O K
10080 min Winter	93.532	0.032	0.5	0.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	56.360	0.0	33		
60 min Winter	38.202	0.0	62		
120 min Winter	24.903	0.0	120		
180 min Winter	18.979	0.0	176		
240 min Winter	15.559	0.0	234		
360 min Winter	11.753	0.0	342		
480 min Winter	9.609	0.0	434		
600 min Winter	8.209	0.0	472		
720 min Winter	7.212	0.0	550		
960 min Winter	5.870	0.0	704		
1440 min Winter	4.379	0.0	998		
2160 min Winter	3.254	0.0	1408		
2880 min Winter	2.634	0.0	1788		
4320 min Winter	1.959	0.0	2424		
5760 min Winter	1.590	0.0	2896		
7200 min Winter	1.353	0.0	3592		
8640 min Winter	1.187	0.0	4400		
10080 min Winter	1.064	0.0	5048		
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.900	Shortest Storm (mins)	15
Ratio R	0.259	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.076

Time (mins)	Area
From: To:	(ha)
0	4 0.076

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<u>Model Details</u> Storage is Online Cover Level (m) 96.450 <u>Cellular Storage Structure</u> Invert Level (m) 93.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.36000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.36000 <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr><td>0.000</td><td>15.0</td><td>15.0</td><td>1.300</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.100</td><td>15.0</td><td>15.0</td><td>1.400</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.200</td><td>15.0</td><td>15.0</td><td>1.500</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.300</td><td>15.0</td><td>15.0</td><td>1.600</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.400</td><td>15.0</td><td>15.0</td><td>1.700</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.500</td><td>15.0</td><td>15.0</td><td>1.800</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.600</td><td>15.0</td><td>15.0</td><td>1.900</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.700</td><td>15.0</td><td>15.0</td><td>2.000</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.800</td><td>15.0</td><td>15.0</td><td>2.100</td><td>15.0</td><td>15.0</td></tr> <tr><td>0.900</td><td>15.0</td><td>15.0</td><td>2.200</td><td>15.0</td><td>15.0</td></tr> <tr><td>1.000</td><td>15.0</td><td>15.0</td><td>2.300</td><td>15.0</td><td>15.0</td></tr> <tr><td>1.100</td><td>15.0</td><td>15.0</td><td>2.400</td><td>15.0</td><td>15.0</td></tr> <tr><td>1.200</td><td>15.0</td><td>15.0</td><td>2.500</td><td>15.0</td><td>15.0</td></tr> </tbody> </table>			Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	0.000	15.0	15.0	1.300	15.0	15.0	0.100	15.0	15.0	1.400	15.0	15.0	0.200	15.0	15.0	1.500	15.0	15.0	0.300	15.0	15.0	1.600	15.0	15.0	0.400	15.0	15.0	1.700	15.0	15.0	0.500	15.0	15.0	1.800	15.0	15.0	0.600	15.0	15.0	1.900	15.0	15.0	0.700	15.0	15.0	2.000	15.0	15.0	0.800	15.0	15.0	2.100	15.0	15.0	0.900	15.0	15.0	2.200	15.0	15.0	1.000	15.0	15.0	2.300	15.0	15.0	1.100	15.0	15.0	2.400	15.0	15.0	1.200	15.0	15.0	2.500	15.0	15.0
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