

Priestley Johnson Ltd			Page 1																																																																																																																																																																																																																			
Bank House 105-109 New St, Blackrod Bolton BL6 5AG		LINCOLN WAY JAMES ALPE BUILDING 5																																																																																																																																																																																																																				
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 (+30%) Half Drain Time : 194 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>94.543</td><td>1.543</td><td>6.0</td><td>54.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>94.717</td><td>1.717</td><td>6.0</td><td>74.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>94.893</td><td>1.893</td><td>6.0</td><td>94.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>95.022</td><td>2.022</td><td>6.0</td><td>108.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>95.041</td><td>2.041</td><td>6.0</td><td>111.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>95.039</td><td>2.039</td><td>6.0</td><td>110.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>95.025</td><td>2.025</td><td>6.0</td><td>109.2</td><td>O K</td></tr><tr><td>480 min Summer</td><td>95.000</td><td>2.000</td><td>6.0</td><td>106.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>94.968</td><td>1.968</td><td>6.0</td><td>102.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>94.931</td><td>1.931</td><td>6.0</td><td>98.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>94.851</td><td>1.851</td><td>6.0</td><td>89.4</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>94.686</td><td>1.686</td><td>6.0</td><td>70.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>94.463</td><td>1.463</td><td>6.0</td><td>45.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>94.294</td><td>1.294</td><td>6.0</td><td>26.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>94.117</td><td>1.117</td><td>6.0</td><td>5.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>94.087</td><td>1.087</td><td>5.2</td><td>2.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>94.074</td><td>1.074</td><td>4.5</td><td>1.5</td><td>O K</td></tr><tr><td>8640 min 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Summer	94.717	1.717	6.0	74.2	O K	60 min Summer	94.893	1.893	6.0	94.2	O K	120 min Summer	95.022	2.022	6.0	108.9	O K	180 min Summer	95.041	2.041	6.0	111.1	O K	240 min Summer	95.039	2.039	6.0	110.9	O K	360 min Summer	95.025	2.025	6.0	109.2	O K	480 min Summer	95.000	2.000	6.0	106.4	O K	600 min Summer	94.968	1.968	6.0	102.7	O K	720 min Summer	94.931	1.931	6.0	98.5	O K	960 min Summer	94.851	1.851	6.0	89.4	O K	1440 min Summer	94.686	1.686	6.0	70.6	O K	2160 min Summer	94.463	1.463	6.0	45.2	O K	2880 min Summer	94.294	1.294	6.0	26.0	O K	4320 min Summer	94.117	1.117	6.0	5.8	O K	5760 min Summer	94.087	1.087	5.2	2.5	O K	7200 min Summer	94.074	1.074	4.5	1.5	O K	8640 min Summer	94.065	1.065	3.9	1.1	O K	10080 min Summer	94.059	1.059	3.5	0.8	O K	15 min Winter	94.607	1.607	6.0	61.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	103.546	0.0	18	30 min Summer	73.269	0.0	32	60 min Summer	49.663	0.0	62	120 min Summer	32.373	0.0	120	180 min Summer	24.673	0.0	162	240 min 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Bank House 105-109 New St, Blackrod Bolton BL6 5AG		LINCOLN WAY JAMES ALPE BUILDING 5			
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 (+30%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	94.809	1.809	6.0	84.6	O K
60 min Winter	95.018	2.018	6.0	108.5	O K
120 min Winter	95.189	2.189	6.0	127.9	O K
180 min Winter	95.229	2.229	6.0	132.5	O K
240 min Winter	95.223	2.223	6.0	131.8	O K
360 min Winter	95.193	2.193	6.0	128.5	O K
480 min Winter	95.150	2.150	6.0	123.5	O K
600 min Winter	95.095	2.095	6.0	117.2	O K
720 min Winter	95.033	2.033	6.0	110.1	O K
960 min Winter	94.899	1.899	6.0	94.9	O K
1440 min Winter	94.633	1.633	6.0	64.6	O K
2160 min Winter	94.304	1.304	6.0	27.1	O K
2880 min Winter	94.114	1.114	6.0	5.4	O K
4320 min Winter	94.078	1.078	4.7	1.8	O K
5760 min Winter	94.063	1.063	3.8	1.0	O K
7200 min Winter	94.054	1.054	3.2	0.6	O K
8640 min Winter	94.047	1.047	2.8	0.4	O K
10080 min Winter	94.042	1.042	2.5	0.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	73.269	0.0	32		
60 min Winter	49.663	0.0	60		
120 min Winter	32.373	0.0	118		
180 min Winter	24.673	0.0	174		
240 min Winter	20.227	0.0	224		
360 min Winter	15.279	0.0	280		
480 min Winter	12.492	0.0	358		
600 min Winter	10.672	0.0	434		
720 min Winter	9.375	0.0	508		
960 min Winter	7.631	0.0	654		
1440 min Winter	5.692	0.0	922		
2160 min Winter	4.231	0.0	1272		
2880 min Winter	3.424	0.0	1528		
4320 min Winter	2.547	0.0	2176		
5760 min Winter	2.067	0.0	2904		
7200 min Winter	1.759	0.0	3552		
8640 min Winter	1.544	0.0	4400		
10080 min Winter	1.384	0.0	5048		
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Bank House 105-109 New St, Blackrod Bolton BL6 5AG	LINCOLN WAY JAMES ALPE BUILDING 5	
Date 01-Apr-19 File DRAINAGE SOAKAWAY 100 YEA...	Designed by SMJ Checked by	
Micro Drainage	Source Control 2018.1.1	

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 %	+30

Time Area Diagram

Total Area (ha) 0.310

Time (mins)	Area
From: To:	(ha)
0	4 0.310

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Model Details

Storage is Online Cover Level (m) 96.450

Cellular Storage Structure

Invert Level (m) 93.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.36000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.36000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	0.0	0.0	1.300	120.0	120.0
0.100	0.0	0.0	1.400	120.0	120.0
0.200	0.0	0.0	1.500	120.0	120.0
0.300	0.0	0.0	1.600	120.0	120.0
0.400	0.0	0.0	1.700	120.0	120.0
0.500	0.0	0.0	1.800	120.0	120.0
0.600	0.0	0.0	1.900	120.0	120.0
0.700	0.0	0.0	2.000	120.0	120.0
0.800	0.0	0.0	2.100	120.0	120.0
0.900	0.0	0.0	2.200	120.0	120.0
1.000	0.0	0.0	2.300	120.0	120.0
1.100	120.0	120.0	2.400	120.0	120.0
1.200	120.0	120.0	2.500	120.0	120.0

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