

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					
Half Drain Time : 192 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	93.471	0.471	6.0	53.7	O K
30 min Summer	93.648	0.648	6.0	73.8	O K
60 min Summer	93.826	0.826	6.0	94.2	O K
120 min Summer	93.960	0.960	6.0	109.4	O K
180 min Summer	93.984	0.984	6.0	112.1	O K
240 min Summer	93.982	0.982	6.0	112.0	O K
360 min Summer	93.969	0.969	6.0	110.4	O K
480 min Summer	93.943	0.943	6.0	107.6	O K
600 min Summer	93.911	0.911	6.0	103.8	O K
720 min Summer	93.874	0.874	6.0	99.7	O K
960 min Summer	93.794	0.794	6.0	90.5	O K
1440 min Summer	93.628	0.628	6.0	71.6	O K
2160 min Summer	93.406	0.406	6.0	46.3	O K
2880 min Summer	93.239	0.239	6.0	27.2	O K
4320 min Summer	93.067	0.067	6.0	7.6	O K
5760 min Summer	93.043	0.043	5.2	4.9	O K
7200 min Summer	93.037	0.037	4.5	4.2	O K
8640 min Summer	93.033	0.033	3.9	3.7	O K
10080 min Summer	93.029	0.029	3.5	3.3	O K
15 min Winter	93.533	0.533	6.0	60.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	79.651	0.0	21		
30 min Summer	56.360	0.0	35		
60 min Summer	38.202	0.0	64		
120 min Summer	24.903	0.0	122		
180 min Summer	18.979	0.0	162		
240 min Summer	15.559	0.0	194		
360 min Summer	11.753	0.0	262		
480 min Summer	9.609	0.0	330		
600 min Summer	8.209	0.0	400		
720 min Summer	7.212	0.0	468		
960 min Summer	5.870	0.0	604		
1440 min Summer	4.379	0.0	866		
2160 min Summer	3.254	0.0	1232		
2880 min Summer	2.634	0.0	1584		
4320 min Summer	1.959	0.0	2208		
5760 min Summer	1.590	0.0	2936		
7200 min Summer	1.353	0.0	3664		
8640 min Summer	1.187	0.0	4368		
10080 min Summer	1.064	0.0	5080		
15 min Winter	79.651	0.0	21		
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Priestley Johnson Ltd				Page 2	
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Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	93.737	0.737	6.0	84.0	O K
60 min Winter	93.949	0.949	6.0	108.2	O K
120 min Winter	94.123	1.123	6.0	128.0	O K
180 min Winter	94.166	1.166	6.0	133.0	O K
240 min Winter	94.162	1.162	6.0	132.4	O K
360 min Winter	94.135	1.135	6.0	129.4	O K
480 min Winter	94.091	1.091	6.0	124.4	O K
600 min Winter	94.036	1.036	6.0	118.1	O K
720 min Winter	93.973	0.973	6.0	110.9	O K
960 min Winter	93.839	0.839	6.0	95.6	O K
1440 min Winter	93.573	0.573	6.0	65.3	O K
2160 min Winter	93.246	0.246	6.0	28.0	O K
2880 min Winter	93.061	0.061	6.0	6.9	O K
4320 min Winter	93.039	0.039	4.6	4.4	O K
5760 min Winter	93.031	0.031	3.8	3.5	O K
7200 min Winter	93.027	0.027	3.2	3.0	O K
8640 min Winter	93.024	0.024	2.9	2.7	O K
10080 min Winter	93.021	0.021	2.5	2.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	56.360	0.0	35		
60 min Winter	38.202	0.0	64		
120 min Winter	24.903	0.0	120		
180 min Winter	18.979	0.0	174		
240 min Winter	15.559	0.0	226		
360 min Winter	11.753	0.0	282		
480 min Winter	9.609	0.0	360		
600 min Winter	8.209	0.0	436		
720 min Winter	7.212	0.0	510		
960 min Winter	5.870	0.0	654		
1440 min Winter	4.379	0.0	922		
2160 min Winter	3.254	0.0	1264		
2880 min Winter	2.634	0.0	1528		
4320 min Winter	1.959	0.0	2172		
5760 min Winter	1.590	0.0	2936		
7200 min Winter	1.353	0.0	3600		
8640 min Winter	1.187	0.0	4384		
10080 min Winter	1.064	0.0	5128		
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Priestley Johnson Ltd		Page 3
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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) 0.400

Time (mins)	Area	Time (mins)	Area
From: To: (ha)		From: To: (ha)	
0 4 0.200		4 8 0.200	

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Priestley Johnson Ltd		Page 4																																																																																				
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<u>Model Details</u> Storage is Online Cover Level (m) 96.450 <u>Cellular Storage Structure</u> Invert Level (m) 93.000 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>120.0</td><td>120.0</td><td>1.300</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.100</td><td>120.0</td><td>120.0</td><td>1.400</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.200</td><td>120.0</td><td>120.0</td><td>1.500</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.300</td><td>120.0</td><td>120.0</td><td>1.600</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.400</td><td>120.0</td><td>120.0</td><td>1.700</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.500</td><td>120.0</td><td>120.0</td><td>1.800</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.600</td><td>120.0</td><td>120.0</td><td>1.900</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.700</td><td>120.0</td><td>120.0</td><td>2.000</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.800</td><td>120.0</td><td>120.0</td><td>2.100</td><td>120.0</td><td>120.0</td></tr> <tr><td>0.900</td><td>120.0</td><td>120.0</td><td>2.200</td><td>120.0</td><td>120.0</td></tr> <tr><td>1.000</td><td>120.0</td><td>120.0</td><td>2.300</td><td>120.0</td><td>120.0</td></tr> <tr><td>1.100</td><td>120.0</td><td>120.0</td><td>2.400</td><td>120.0</td><td>120.0</td></tr> <tr><td>1.200</td><td>120.0</td><td>120.0</td><td>2.500</td><td>120.0</td><td>120.0</td></tr> </tbody> </table>			Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	0.000	120.0	120.0	1.300	120.0	120.0	0.100	120.0	120.0	1.400	120.0	120.0	0.200	120.0	120.0	1.500	120.0	120.0	0.300	120.0	120.0	1.600	120.0	120.0	0.400	120.0	120.0	1.700	120.0	120.0	0.500	120.0	120.0	1.800	120.0	120.0	0.600	120.0	120.0	1.900	120.0	120.0	0.700	120.0	120.0	2.000	120.0	120.0	0.800	120.0	120.0	2.100	120.0	120.0	0.900	120.0	120.0	2.200	120.0	120.0	1.000	120.0	120.0	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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