

Appendix H – QBAR

Rennard Consulting Limited		Page 1
Ebenezer House Ryecroft Newcastle ST5 2BE	Royal Oak QBar	
Date 13/01/2024 13:54 File	Designed by F.Gennard Checked by	
Innovyze	Source Control 2020.1.3	
ICP SUDS Mean Annual Flood Input Return Period (years) 100 Soil 0.450 Area (ha) 0.286 Urban 0.000 SAAR (mm) 800 Region Number Region 4 Results 1/s QBAR Rural 1.5 QBAR Urban 1.5 Q100 years 3.8 Q1 year 1.2 Q30 years 2.9 Q100 years 3.8		
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Appendix I – Whole Site Area

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Ebenezer House Ryecroft Newcastle ST5 2BE		Royal Oak Whole Site Attenuation 1 in 100 30CC			
Date 13/12/2024 14:25 File 2024.12.13 WHOLE SITE A...		Designed by F. Gennard Checked by			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+30%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.238	0.238	5.0	29.8	O K
30 min Summer	9.306	0.306	5.0	38.3	O K
60 min Summer	9.361	0.361	5.0	45.1	O K
120 min Summer	9.386	0.386	5.0	48.3	O K
180 min Summer	9.385	0.385	5.0	48.1	O K
240 min Summer	9.373	0.373	5.0	46.7	O K
360 min Summer	9.337	0.337	5.0	42.2	O K
480 min Summer	9.302	0.302	5.0	37.7	O K
600 min Summer	9.268	0.268	5.0	33.5	O K
720 min Summer	9.238	0.238	5.0	29.7	O K
960 min Summer	9.188	0.188	5.0	23.5	O K
1440 min Summer	9.129	0.129	4.9	16.1	O K
2160 min Summer	9.101	0.101	3.9	12.6	O K
2880 min Summer	9.087	0.087	3.3	10.9	O K
4320 min Summer	9.071	0.071	2.4	8.9	O K
5760 min Summer	9.063	0.063	2.0	7.8	O K
7200 min Summer	9.057	0.057	1.6	7.1	O K
8640 min Summer	9.052	0.052	1.4	6.5	O K
10080 min Summer	9.049	0.049	1.3	6.1	O K
15 min Winter	9.269	0.269	5.0	33.6	O K
30 min Winter	9.347	0.347	5.0	43.4	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	109.711	0.0	32.6	17	
30 min Summer	73.592	0.0	43.8	32	
60 min Summer	47.182	0.0	56.5	60	
120 min Summer	29.277	0.0	70.1	98	
180 min Summer	21.853	0.0	78.5	130	
240 min Summer	17.648	0.0	84.5	166	
360 min Summer	12.948	0.0	93.0	232	
480 min Summer	10.400	0.0	99.7	296	
600 min Summer	8.767	0.0	105.0	360	
720 min Summer	7.621	0.0	109.6	420	
960 min Summer	6.104	0.0	117.0	538	
1440 min Summer	4.457	0.0	128.1	754	
2160 min Summer	3.247	0.0	140.2	1108	
2880 min Summer	2.591	0.0	149.1	1472	
4320 min Summer	1.881	0.0	162.3	2204	
5760 min Summer	1.497	0.0	172.4	2936	
7200 min Summer	1.253	0.0	180.4	3672	
8640 min Summer	1.083	0.0	187.1	4392	
10080 min Summer	0.958	0.0	192.8	5104	
15 min Winter	109.711	0.0	36.6	17	
30 min Winter	73.592	0.0	49.1	32	
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Ebenezer House Ryecroft Newcastle ST5 2BE		Royal Oak Whole Site Attenuation 1 in 100 30CC			
Date 13/12/2024 14:25 File 2024.12.13 WHOLE SITE A...		Designed by F. Gennard Checked by			
Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	9.413	0.413	5.0	51.6	O K
120 min Winter	9.439	0.439	5.0	54.8	O K
180 min Winter	9.434	0.434	5.0	54.2	O K
240 min Winter	9.417	0.417	5.0	52.1	O K
360 min Winter	9.364	0.364	5.0	45.5	O K
480 min Winter	9.305	0.305	5.0	38.2	O K
600 min Winter	9.253	0.253	5.0	31.6	O K
720 min Winter	9.208	0.208	5.0	25.9	O K
960 min Winter	9.144	0.144	5.0	18.0	O K
1440 min Winter	9.103	0.103	4.1	12.9	O K
2160 min Winter	9.082	0.082	3.0	10.3	O K
2880 min Winter	9.072	0.072	2.4	8.9	O K
4320 min Winter	9.059	0.059	1.8	7.4	O K
5760 min Winter	9.052	0.052	1.4	6.5	O K
7200 min Winter	9.047	0.047	1.2	5.9	O K
8640 min Winter	9.044	0.044	1.0	5.4	O K
10080 min Winter	9.041	0.041	0.9	5.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	47.182	0.0	63.3	60	
120 min Winter	29.277	0.0	78.5	112	
180 min Winter	21.853	0.0	87.9	140	
240 min Winter	17.648	0.0	94.7	178	
360 min Winter	12.948	0.0	104.2	254	
480 min Winter	10.400	0.0	111.6	320	
600 min Winter	8.767	0.0	117.6	382	
720 min Winter	7.621	0.0	122.7	440	
960 min Winter	6.104	0.0	131.1	542	
1440 min Winter	4.457	0.0	143.5	764	
2160 min Winter	3.247	0.0	157.0	1124	
2880 min Winter	2.591	0.0	167.0	1468	
4320 min Winter	1.881	0.0	181.8	2204	
5760 min Winter	1.497	0.0	193.1	2928	
7200 min Winter	1.253	0.0	202.0	3624	
8640 min Winter	1.083	0.0	209.5	4344	
10080 min Winter	0.958	0.0	216.0	5016	
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