

Hydrock Consultants Ltd		Page 1
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.400	Add Flow / Climate Change (%)	40
Ratio R	0.350	Minimum Backdrop Height (m)	0.010
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.812	8-12	0.598

Total Area Contributing (ha) = 1.410

Total Pipe Volume (m³) = 162.356

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	2.928	1.150	2.5	0.005	5.00	0.0	0.600		o	100	Pipe/Conduit	
2.000	11.269	0.141	80.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
2.001	10.001	0.960	10.4	0.020	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.001	15.991	0.700	22.8	0.024	0.00	0.0	0.600		o	225	Pipe/Conduit	
3.000	10.432	0.130	80.2	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
3.001	7.780	0.800	9.7	0.009	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.01	43.600	0.005	0.0	0.0	0.3	4.88	38.4	0.9
2.000	50.00	5.17	43.551	0.000	0.0	0.0	0.0	1.12	19.9	0.0
2.001	50.00	5.22	43.410	0.020	0.0	0.0	1.1	3.14	55.5	3.8
1.001	50.00	5.32	42.375	0.049	0.0	0.0	2.7	2.75	109.3	9.3
3.000	50.00	5.15	42.680	0.000	0.0	0.0	0.0	1.12	19.8	0.0
3.001	50.00	5.19	42.550	0.009	0.0	0.0	0.5	3.25	57.4	1.7

Hydrock Consultants Ltd		Page 2
. . .	Land off Misery Lane SW Calculations Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
4.000	6.397	1.150	5.6	0.005	5.00	0.0	0.600		o	150	Pipe/Conduit	
1.002	18.090	0.710	25.5	0.013	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.003	9.696	0.190	51.0	0.004	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.004	37.766	0.500	75.5	0.052	0.00	0.0	0.600		o	300	Pipe/Conduit	
1.005	33.381	0.111	300.7	0.071	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.006	43.282	0.144	300.6	0.074	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.007	15.283	0.051	300.6	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
5.000	4.819	0.060	80.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
5.001	9.506	2.396	4.0	0.013	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.008	30.977	0.607	51.0	0.044	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.009	31.711	1.600	19.8	0.052	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.010	35.333	1.770	20.0	0.080	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.011	9.983	0.459	21.7	0.030	0.00	0.0	0.600		o	375	Pipe/Conduit	
6.000	9.204	0.089	103.2	0.013	5.00	0.0	0.600		o	150	Pipe/Conduit	
6.001	10.198	0.700	14.6	0.010	0.00	0.0	0.600		o	150	Pipe/Conduit	
6.002	10.626	1.300	8.2	0.025	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.012	7.690	0.321	24.0	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
1.013	41.040	1.434	28.6	0.008	0.00	0.0	0.600		o	375	Pipe/Conduit	
7.000	9.593	0.120	79.9	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
7.001	15.770	0.700	22.5	0.007	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.000	50.00	5.02	42.900	0.005	0.0	0.0	0.3	4.30	76.0	0.9
1.002	50.00	5.43	41.675	0.076	0.0	0.0	4.1	2.60	103.5	14.4
1.003	50.00	5.52	40.965	0.080	0.0	0.0	4.3	1.84	73.0	15.2
1.004	50.00	5.87	40.700	0.132	0.0	0.0	7.1	1.81	128.0	25.0
1.005	50.00	6.40	40.125	0.203	0.0	0.0	11.0	1.04	114.8	38.5
1.006	50.00	7.10	40.014	0.277	0.0	0.0	15.0	1.04	114.8	52.5
1.007	50.00	7.34	39.870	0.277	0.0	0.0	15.0	1.04	114.8	52.5
5.000	50.00	5.07	42.500	0.000	0.0	0.0	0.0	1.12	19.9	0.0
5.001	50.00	5.10	42.440	0.013	0.0	0.0	0.7	5.10	90.1	2.5
1.008	50.00	7.55	39.819	0.334	0.0	0.0	18.1	2.54	280.7	63.3
1.009	50.00	7.67	39.212	0.386	0.0	0.0	20.9	4.09	451.3	73.2
1.010	50.00	7.82	37.612	0.466	0.0	0.0	25.2	4.07	449.7	88.3
1.011	50.00	7.86	35.842	0.496	0.0	0.0	26.9	3.90	430.7	94.0
6.000	50.00	5.16	37.739	0.013	0.0	0.0	0.7	0.99	17.5	2.5
6.001	50.00	5.22	37.650	0.023	0.0	0.0	1.2	2.65	46.9	4.4
6.002	50.00	5.27	36.950	0.048	0.0	0.0	2.6	3.55	62.7	9.1
1.012	50.00	7.90	35.383	0.544	0.0	0.0	29.5	3.72	410.4	103.1
1.013	50.00	8.10	35.062	0.552	0.0	0.0	29.9	3.40	375.3	104.6
7.000	50.00	5.14	36.020	0.000	0.0	0.0	0.0	1.13	19.9	0.0
7.001	50.00	5.27	35.900	0.007	0.0	0.0	0.4	2.13	37.7	1.3

Hydrock Consultants Ltd		Page 3
. . .	Land off Misery Lane SW Calculations Revised Discharge Rates	
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File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
7.002	15.406	0.350	44.0	0.013	0.00	0.0	0.600		o	150	Pipe/Conduit	
7.003	5.506	1.000	5.5	0.005	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.014	18.975	1.503	12.6	0.033	0.00	0.0	0.600		o	375	Pipe/Conduit	
8.000	4.399	0.055	80.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
8.001	5.830	0.790	7.4	0.034	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.002	15.360	0.102	150.0	0.034	0.00	0.0	0.600		o	225	Pipe/Conduit	
9.000	5.224	0.066	79.1	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
9.001	5.856	1.452	4.0	0.034	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.003	24.203	0.161	150.0	0.065	0.00	0.0	0.600		o	225	Pipe/Conduit	
10.000	5.095	0.057	88.8	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
10.001	7.052	2.013	3.5	0.011	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.004	20.119	0.134	150.0	0.031	0.00	0.0	0.600		o	225	Pipe/Conduit	
11.000	4.371	0.060	72.8	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
11.001	5.523	1.066	5.2	0.012	0.00	0.0	0.600		o	150	Pipe/Conduit	
11.002	12.192	0.691	17.6	0.024	0.00	0.0	0.600		o	225	Pipe/Conduit	
11.003	9.333	0.629	14.8	0.010	0.00	0.0	0.600		o	225	Pipe/Conduit	
12.000	4.794	0.060	80.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
12.001	4.037	0.806	5.0	0.015	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
7.002	50.00	5.43	35.200	0.020	0.0	0.0	1.1	1.52	26.9	3.8
7.003	50.00	5.46	34.850	0.025	0.0	0.0	1.4	4.32	76.4	4.7
1.014	50.00	8.16	33.628	0.610	0.0	0.0	33.0	5.12	565.8	115.6
8.000	50.00	5.07	36.495	0.000	0.0	0.0	0.0	1.12	19.9	0.0
8.001	50.00	5.09	36.440	0.034	0.0	0.0	1.8	3.73	66.0	6.4
8.002	50.00	5.33	35.575	0.068	0.0	0.0	3.7	1.07	42.4	12.9
9.000	50.00	5.08	37.066	0.000	0.0	0.0	0.0	1.13	20.0	0.0
9.001	50.00	5.10	37.000	0.034	0.0	0.0	1.8	5.05	89.3	6.4
8.003	50.00	5.71	35.473	0.167	0.0	0.0	9.0	1.07	42.4	31.7
10.000	50.00	5.08	37.457	0.000	0.0	0.0	0.0	1.07	18.9	0.0
10.001	50.00	5.10	37.400	0.011	0.0	0.0	0.6	5.42	95.8	2.1
8.004	50.00	6.02	35.312	0.209	0.0	0.0	11.3	1.07	42.4	39.6
11.000	50.00	5.06	44.350	0.000	0.0	0.0	0.0	1.18	20.8	0.0
11.001	50.00	5.08	44.290	0.012	0.0	0.0	0.6	4.46	78.8	2.3
11.002	50.00	5.15	43.149	0.036	0.0	0.0	1.9	3.13	124.5	6.8
11.003	50.00	5.19	42.458	0.046	0.0	0.0	2.5	3.41	135.8	8.7
12.000	50.00	5.07	42.770	0.000	0.0	0.0	0.0	1.12	19.9	0.0
12.001	50.00	5.09	42.710	0.015	0.0	0.0	0.8	4.53	80.1	2.8

Hydrock Consultants Ltd		Page 4
. . .	Land off Misery Lane SW Calculations Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
11.004	32.691	2.175	15.0	0.053	0.00	0.0	0.600		o	225	Pipe/Conduit	
11.005	12.470	0.823	15.2	0.033	0.00	0.0	0.600		o	300	Pipe/Conduit	
11.006	8.617	0.566	15.2	0.035	0.00	0.0	0.600		o	300	Pipe/Conduit	
13.000	12.379	0.155	80.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
13.001	5.461	0.980	5.6	0.053	0.00	0.0	0.600		o	150	Pipe/Conduit	
11.007	29.886	1.503	19.9	0.086	0.00	0.0	0.600		o	300	Pipe/Conduit	
11.008	11.607	1.597	7.3	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
8.005	24.324	0.065	375.0	0.042	0.00	0.0	0.600		o	450	Pipe/Conduit	
8.006	7.892	0.021	375.0	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
14.000	4.776	0.050	95.5	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
14.001	13.089	2.033	6.4	0.014	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.007	15.625	0.042	375.0	0.028	0.00	0.0	0.600		o	450	Pipe/Conduit	
15.000	4.749	0.050	95.0	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
15.001	8.524	2.075	4.1	0.012	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.008	16.374	0.044	375.0	0.011	0.00	0.0	0.600		o	450	Pipe/Conduit	
8.009	7.803	0.393	19.9	0.010	0.00	0.0	0.600		o	450	Pipe/Conduit	
8.010	14.682	0.039	375.0	0.010	0.00	0.0	0.600		o	450	Pipe/Conduit	
8.011	28.813	0.077	375.0	0.051	0.00	0.0	0.600		o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
11.004	50.00	5.35	41.829	0.114	0.0	0.0	6.2	3.39	134.9	21.6
11.005	50.00	5.40	39.579	0.147	0.0	0.0	8.0	4.06	286.9	27.9
11.006	50.00	5.44	38.756	0.182	0.0	0.0	9.9	4.05	286.3	34.5
13.000	50.00	5.18	39.475	0.000	0.0	0.0	0.0	1.12	19.9	0.0
13.001	50.00	5.20	39.320	0.053	0.0	0.0	2.9	4.30	75.9	10.0
11.007	50.00	5.58	38.190	0.321	0.0	0.0	17.4	3.54	250.4	60.9
11.008	50.00	5.61	36.625	0.321	0.0	0.0	17.4	6.76	746.2	60.9
8.005	50.00	6.41	34.953	0.572	0.0	0.0	31.0	1.04	166.0	108.4
8.006	50.00	6.54	34.888	0.572	0.0	0.0	31.0	1.04	166.0	108.4
14.000	50.00	5.08	37.250	0.000	0.0	0.0	0.0	1.03	18.2	0.0
14.001	50.00	5.13	37.200	0.014	0.0	0.0	0.8	4.00	70.6	2.7
8.007	50.00	6.79	34.867	0.614	0.0	0.0	33.3	1.04	166.0	116.4
15.000	50.00	5.08	37.250	0.000	0.0	0.0	0.0	1.03	18.2	0.0
15.001	50.00	5.11	37.200	0.012	0.0	0.0	0.6	5.01	88.5	2.3
8.008	50.00	7.05	34.825	0.637	0.0	0.0	34.5	1.04	166.0	120.8
8.009	50.00	7.08	34.781	0.647	0.0	0.0	35.0	4.58	728.2	122.7
8.010	50.00	7.31	34.388	0.657	0.0	0.0	35.6	1.04	166.0	124.6
8.011	50.00	7.77	34.349	0.708	0.0	0.0	38.3	1.04	166.0	134.2

Hydrock Consultants Ltd				Page 5			
.				Land off Misery Lane			
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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
8.012	24.268	0.472	51.4	0.061	0.00	0.0	0.600		o	450	Pipe/Conduit	
16.000	5.581	0.100	55.8	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
16.001	6.051	1.150	5.3	0.018	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.013	8.506	0.178	47.8	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
17.000	4.861	0.100	48.6	0.000	5.00	0.0	0.600		o	150	Pipe/Conduit	
17.001	3.310	0.978	3.4	0.013	0.00	0.0	0.600		o	150	Pipe/Conduit	
8.014	21.686	1.572	13.8	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
1.015	14.663	4.150	3.5	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
1.016	4.584	0.050	91.7	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
1.017	21.161	0.000	0.0	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
1.018	6.804	0.050	136.1	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
1.019	29.883	5.270	5.7	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.020	7.399	0.049	151.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.021	20.596	0.107	193.0	0.000	0.00	0.0		0.045 3 \=/	500	1:3 Swale		
1.022	19.647	0.092	213.6	0.000	0.00	0.0		0.045 3 \=/	500	1:3 Swale		
1.023	6.201	0.182	34.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.024	9.959	0.100	99.6	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
8.012	50.00	7.92	34.272	0.769	0.0	0.0	41.7	2.84	451.8	145.8
16.000	50.00	5.07	35.350	0.000	0.0	0.0	0.0	1.35	23.8	0.0
16.001	50.00	5.09	35.250	0.018	0.0	0.0	1.0	4.42	78.2	3.4
8.013	50.00	7.96	33.800	0.787	0.0	0.0	42.6	2.95	468.7	149.2
17.000	50.00	5.06	35.000	0.000	0.0	0.0	0.0	1.45	25.6	0.0
17.001	50.00	5.07	34.900	0.013	0.0	0.0	0.7	5.52	97.5	2.5
8.014	50.00	8.03	33.622	0.800	0.0	0.0	43.3	5.50	874.1	151.7
1.015	50.00	8.18	32.050	1.410	0.0	0.0	76.4	10.87	1729.2	267.3
1.016	50.00	8.21	27.750	1.410	0.0	0.0	76.4	2.54	719.4	267.3
1.017	50.00	9.71	27.350	1.410	0.0	0.0	76.4	0.23	66.4	267.3
1.018	50.00	9.77	27.350	1.410	0.0	0.0	76.4	2.09	589.8	267.3
1.019	50.00	9.86	27.300	1.410	0.0	0.0	76.4	5.53	219.9	267.3
1.020	50.00	9.97	22.030	1.410	0.0	0.0	76.4	1.06	42.2	267.3
1.021	50.00	10.98	21.981	1.410	0.0	0.0	76.4	0.34	48.6	267.3
1.022	50.00	11.99	21.874	1.410	0.0	0.0	76.4	0.32	46.2	267.3
1.023	50.00	12.04	21.782	1.410	0.0	0.0	76.4	2.25	89.4	267.3
1.024	50.00	12.16	21.600	1.410	0.0	0.0	76.4	1.31	52.1	267.3

Hydrock Consultants Ltd		Page 6
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

Online Controls for Storm

Orifice Manhole: 13b, DS/PN: 2.001, Volume (m³): 0.9

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 43.410

Orifice Manhole: 14b, DS/PN: 3.001, Volume (m³): 0.8

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 42.550

Orifice Manhole: 30a, DS/PN: 5.001, Volume (m³): 0.9

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 42.440

Orifice Manhole: 34b, DS/PN: 6.001, Volume (m³): 0.8

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 37.650

Orifice Manhole: 34a, DS/PN: 6.002, Volume (m³): 0.8

Diameter (m) 0.056 Discharge Coefficient 0.600 Invert Level (m) 36.950

Orifice Manhole: 36c, DS/PN: 7.001, Volume (m³): 0.8

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 35.900

Orifice Manhole: 36b, DS/PN: 7.002, Volume (m³): 0.9

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 35.200

Orifice Manhole: 36a, DS/PN: 7.003, Volume (m³): 0.9

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 34.850

Orifice Manhole: 11a, DS/PN: 8.001, Volume (m³): 1.1

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 36.440

Orifice Manhole: 10a, DS/PN: 9.001, Volume (m³): 0.9

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 37.000

Orifice Manhole: 9a, DS/PN: 10.001, Volume (m³): 1.0

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 37.400

Orifice Manhole: 1a, DS/PN: 11.001, Volume (m³): 0.8

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 44.290

Orifice Manhole: 3a, DS/PN: 12.001, Volume (m³): 1.1

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 42.710

Hydrock Consultants Ltd		Page 7
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

Orifice Manhole: 6a, DS/PN: 13.001, Volume (m³): 1.5

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 39.320

Orifice Manhole: 23a, DS/PN: 14.001, Volume (m³): 1.3

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 37.200

Orifice Manhole: 37a, DS/PN: 15.001, Volume (m³): 0.9

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 37.200

Orifice Manhole: 41a, DS/PN: 16.001, Volume (m³): 0.8

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 35.250

Orifice Manhole: 42a, DS/PN: 17.001, Volume (m³): 0.8

Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 34.900

Complex Manhole: 47 FC, DS/PN: 1.019, Volume (m³): 12.2

Hydro-Brake® Optimum

Unit Reference MD-SHE-0119-7700-1700-7700
Design Head (m) 1.700
Design Flow (l/s) 7.7
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 119
Invert Level (m) 27.300
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	7.7	Kick-Flo®	1.039	6.1
Flush-Flo™	0.507	7.7	Mean Flow over Head Range	-	6.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	0.800	7.3	2.000	8.3	4.000	11.5	7.000	15.0
0.200	6.7	1.000	6.4	2.200	8.7	4.500	12.2	7.500	15.6
0.300	7.3	1.200	6.5	2.400	9.0	5.000	12.8	8.000	16.0
0.400	7.6	1.400	7.0	2.600	9.4	5.500	13.4	8.500	16.5
0.500	7.7	1.600	7.5	3.000	10.1	6.000	14.0	9.000	17.0
0.600	7.7	1.800	7.9	3.500	10.8	6.500	14.5	9.500	17.4

Hydro-Brake® Optimum

Unit Reference MD-SHE-0102-4300-0750-4300
Design Head (m) 0.750
Design Flow (l/s) 4.3



Micro
Drainage

Network 2020.1.3

Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	102
Invert Level (m)	28.462
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.750	4.3	Kick-Flo®	0.503	3.6
Flush-Flo™	0.225	4.3	Mean Flow over Head Range	-	3.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.4	0.800	4.4	2.000	6.8	4.000	9.4	7.000	12.3
0.200	4.3	1.000	4.9	2.200	7.1	4.500	10.0	7.500	12.7
0.300	4.2	1.200	5.3	2.400	7.4	5.000	10.5	8.000	13.1
0.400	4.1	1.400	5.7	2.600	7.7	5.500	11.0	8.500	13.5
0.500	3.6	1.600	6.1	3.000	8.2	6.000	11.4	9.000	13.9
0.600	3.9	1.800	6.5	3.500	8.8	6.500	11.9	9.500	14.3

Hydrock Consultants Ltd		Page 9
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

Storage Structures for Storm

Porous Car Park Manhole: 13a, DS/PN: 1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	43.600	Membrane Depth (mm)	130

Porous Car Park Manhole: 13b, DS/PN: 2.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	30.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	43.410	Membrane Depth (mm)	130

Porous Car Park Manhole: 14b, DS/PN: 3.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	30.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	42.550	Membrane Depth (mm)	130

Porous Car Park Manhole: 14a, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	30.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	42.900	Membrane Depth (mm)	130

Porous Car Park Manhole: 30a, DS/PN: 5.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.4
Membrane Percolation (mm/hr)	1000	Length (m)	4.8
Max Percolation (l/s)	7.2	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	42.440	Membrane Depth (mm)	130

Porous Car Park Manhole: 34b, DS/PN: 6.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	8.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.8
Max Percolation (l/s)	10.7	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	37.650	Membrane Depth (mm)	130

Hydrock Consultants Ltd		Page 10
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	
<u>Porous Car Park Manhole: 34a, DS/PN: 6.002</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 8.0 Membrane Percolation (mm/hr) 1000 Length (m) 5.0 Max Percolation (l/s) 11.1 Slope (1:X) 100.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 36.950 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 36c, DS/PN: 7.001</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8 Membrane Percolation (mm/hr) 1000 Length (m) 9.6 Max Percolation (l/s) 12.8 Slope (1:X) 30.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 35.900 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 36b, DS/PN: 7.002</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8 Membrane Percolation (mm/hr) 1000 Length (m) 9.6 Max Percolation (l/s) 12.8 Slope (1:X) 30.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 35.200 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 36a, DS/PN: 7.003</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 9.6 Membrane Percolation (mm/hr) 1000 Length (m) 4.8 Max Percolation (l/s) 12.8 Slope (1:X) 100.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 34.850 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 11a, DS/PN: 8.001</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 9.6 Membrane Percolation (mm/hr) 1000 Length (m) 4.8 Max Percolation (l/s) 12.8 Slope (1:X) 100.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 36.440 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 10a, DS/PN: 9.001</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 12.0 Membrane Percolation (mm/hr) 1000 Length (m) 4.8 Max Percolation (l/s) 16.0 Slope (1:X) 100.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 37.000 Membrane Depth (mm) 130 <u>Porous Car Park Manhole: 9a, DS/PN: 10.001</u> Infiltration Coefficient Base (m/hr) 0.00000 Invert Level (m) 37.400 Membrane Percolation (mm/hr) 1000 Width (m) 4.8 Max Percolation (l/s) 6.4 Length (m) 4.8 Safety Factor 2.0 Slope (1:X) 100.0 Porosity 0.30 Depression Storage (mm) 5		
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Hydrock Consultants Ltd		Page 11
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

Porous Car Park Manhole: 9a, DS/PN: 10.001

Evaporation (mm/day) 3 Membrane Depth (mm) 130

Porous Car Park Manhole: 1a, DS/PN: 11.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	11.6
Max Percolation (l/s)	15.5	Slope (1:X)	33.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	44.290	Membrane Depth (mm)	130

Porous Car Park Manhole: 3a, DS/PN: 12.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.8
Max Percolation (l/s)	8.0	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	42.710	Membrane Depth (mm)	130

Porous Car Park Manhole: 6a, DS/PN: 13.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	42.7	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	39.320	Membrane Depth (mm)	130

Porous Car Park Manhole: 23a, DS/PN: 14.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.8
Max Percolation (l/s)	8.0	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	37.200	Membrane Depth (mm)	130

Porous Car Park Manhole: 37a, DS/PN: 15.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.4
Membrane Percolation (mm/hr)	1000	Length (m)	4.8
Max Percolation (l/s)	7.2	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	37.200	Membrane Depth (mm)	130

Porous Car Park Manhole: 41a, DS/PN: 16.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	5.0
Max Percolation (l/s)	6.7	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	35.250	Membrane Depth (mm)	130

Porous Car Park Manhole: 42a, DS/PN: 17.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	7.2
Membrane Percolation (mm/hr)	1000	Length (m)	5.0
Max Percolation (l/s)	10.0	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	34.900	Membrane Depth (mm)	130

Tank or Pond Manhole: 46 HW, DS/PN: 1.018

Invert Level (m) 27.350

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	340.0	1.950	652.0

Hydrock Consultants Ltd		Page 13
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 19 Number of Storage Structures 21 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

 Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status ON

 Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	13a	30 Winter	1	+0%					43.608	-0.092
2.000	dummy13	15 Summer	1	+0%	100/15 Summer				43.551	-0.150
2.001	13b	30 Winter	1	+0%	30/15 Summer				43.540	-0.020
1.001	13	30 Winter	1	+0%					42.403	-0.197
3.000	14c	15 Summer	1	+0%	100/60 Winter				42.680	-0.150
3.001	14b	60 Winter	1	+0%	30/15 Winter				42.628	-0.072
4.000	14a	30 Summer	1	+0%					42.906	-0.144
1.002	14	30 Winter	1	+0%					41.711	-0.189
1.003	15	30 Winter	1	+0%					41.012	-0.178
1.004	16	15 Winter	1	+0%					40.761	-0.239
1.005	17	15 Winter	1	+0%	100/15 Summer				40.232	-0.268
1.006	18	15 Winter	1	+0%	100/15 Summer				40.140	-0.249
1.007	19	15 Winter	1	+0%	100/15 Summer				40.002	-0.243
5.000	dummy30	60 Winter	1	+0%	30/60 Winter				42.525	-0.125
5.001	30a	60 Winter	1	+0%	30/15 Summer				42.525	-0.065
1.008	30	15 Winter	1	+0%					39.904	-0.290
1.009	31	15 Winter	1	+0%					39.285	-0.302
1.010	32	15 Winter	1	+0%					37.692	-0.295
1.011	33	15 Winter	1	+0%					35.944	-0.273
6.000	dummy34	15 Winter	1	+0%	30/30 Winter				37.772	-0.117
6.001	34b	60 Winter	1	+0%	30/15 Summer	100/60 Winter			37.744	-0.056
6.002	34a	30 Winter	1	+0%	30/15 Summer	100/30 Winter			37.050	-0.050
1.012	34	15 Winter	1	+0%					35.497	-0.261
1.013	35	15 Winter	1	+0%					35.152	-0.285
7.000	36d	15 Summer	1	+0%					36.020	-0.150
7.001	36c	60 Winter	1	+0%	100/15 Summer				35.959	-0.091
7.002	36b	30 Winter	1	+0%	30/15 Summer				35.302	-0.048
7.003	36a	120 Winter	1	+0%	30/60 Winter				34.923	-0.077
1.014	36	15 Winter	1	+0%					33.708	-0.295
8.000	dummy11	60 Winter	1	+0%	30/15 Summer				36.571	-0.074

Hydrock Consultants Ltd		Page 14
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Half Drain		Pipe	Level	
		Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status	Exceeded	
1.000	13a	0.000	0.02		4	0.5	OK	
2.000	dummy13	0.000	0.00			0.0	OK	
2.001	13b	0.000	0.02		12	1.0	OK	
1.001	13	0.000	0.04			3.5	OK	
3.000	14c	0.000	0.00			0.0	OK	
3.001	14b	0.000	0.01		16	0.4	OK	
4.000	14a	0.000	0.01		2	0.5	OK	
1.002	14	0.000	0.06			5.4	OK	
1.003	15	0.000	0.10			5.8	OK	
1.004	16	0.000	0.09			10.8	OK	
1.005	17	0.000	0.18			18.1	OK	
1.006	18	0.000	0.24			25.3	OK	
1.007	19	0.000	0.27			25.0	OK	
5.000	dummy30	0.000	0.00			0.0	OK	
5.001	30a	0.000	0.00		27	0.4	OK	
1.008	30	0.000	0.12			29.0	OK	
1.009	31	0.000	0.08			33.5	OK	
1.010	32	0.000	0.10			40.5	OK	
1.011	33	0.000	0.16			43.2	OK	
6.000	dummy34	0.000	0.11			1.7	OK	
6.001	34b	0.000	0.02		23	0.8	OK	1
6.002	34a	0.000	0.03		18	1.8	OK	2
1.012	34	0.000	0.20			44.8	OK	
1.013	35	0.000	0.13			45.5	OK	
7.000	36d	0.000	0.00			0.0	OK	
7.001	36c	0.000	0.01		14	0.3	OK	
7.002	36b	0.000	0.03		13	0.8	OK	
7.003	36a	0.000	0.01		28	0.7	OK	
1.014	36	0.000	0.10			48.5	OK	
8.000	dummy11	0.000	0.00			0.0	OK	

Hydrock Consultants Ltd		Page 15
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
8.001	11a	60 Winter	1	+0%	30/15 Summer				36.571	-0.019
8.002	11	15 Winter	1	+0%	100/15 Summer				35.626	-0.174
9.000	dummy10	60 Winter	1	+0%	30/15 Winter				37.115	-0.101
9.001	10a	60 Winter	1	+0%	30/15 Summer				37.115	-0.035
8.003	10	15 Winter	1	+0%	100/15 Summer				35.558	-0.140
10.000	dummy9	60 Winter	1	+0%	100/15 Summer				37.476	-0.131
10.001	9a	60 Winter	1	+0%	30/15 Winter				37.476	-0.074
8.004	9	15 Winter	1	+0%	30/15 Summer				35.411	-0.126
11.000	dummy1	60 Winter	1	+0%	30/30 Winter				44.391	-0.109
11.001	1a	60 Winter	1	+0%	30/15 Summer				44.391	-0.049
11.002	1	15 Winter	1	+0%					43.173	-0.201
11.003	2	15 Winter	1	+0%					42.485	-0.198
12.000	dummy3	60 Winter	1	+0%	30/30 Winter				42.804	-0.116
12.001	3a	60 Winter	1	+0%	30/15 Summer				42.804	-0.056
11.004	3	15 Winter	1	+0%					41.871	-0.183
11.005	4	15 Winter	1	+0%					39.626	-0.253
11.006	5	15 Winter	1	+0%					38.817	-0.239
13.000	dummy6	15 Summer	1	+0%	100/15 Winter				39.475	-0.150
13.001	6a	240 Winter	1	+0%	30/15 Summer				39.459	-0.011
11.007	6	15 Winter	1	+0%					38.259	-0.231
11.008	7	15 Winter	1	+0%					36.681	-0.319
8.005	8	15 Winter	1	+0%	30/15 Summer				35.157	-0.246
8.006	12	15 Winter	1	+0%	30/15 Summer				35.106	-0.232
14.000	dummy23	60 Winter	1	+0%	30/30 Winter				37.287	-0.113
14.001	23a	60 Winter	1	+0%	30/15 Summer				37.287	-0.063
8.007	37a	15 Winter	1	+0%	30/15 Summer				35.074	-0.243
15.000	dummy37	60 Winter	1	+0%	100/15 Summer				37.276	-0.124
15.001	37a	60 Winter	1	+0%	30/15 Winter				37.277	-0.073
8.008	37	15 Winter	1	+0%	30/15 Summer				35.025	-0.250
8.009	38	15 Winter	1	+0%	100/15 Summer				34.894	-0.337
8.010	39	15 Winter	1	+0%	30/15 Winter				34.600	-0.238
8.011	40	15 Winter	1	+0%	100/15 Summer				34.543	-0.256
8.012	41	15 Winter	1	+0%					34.390	-0.332
16.000	dummy41	15 Summer	1	+0%	30/30 Winter				35.350	-0.150
16.001	41a	30 Winter	1	+0%	30/15 Summer	100/60 Winter			35.346	-0.054
8.013	41 J	15 Winter	1	+0%					33.952	-0.298
17.000	dummy42	15 Summer	1	+0%	100/15 Winter				35.000	-0.150
17.001	42a	60 Winter	1	+0%	30/30 Winter				34.973	-0.077
8.014	42	15 Winter	1	+0%					33.710	-0.362
1.015	43	15 Winter	1	+0%					32.142	-0.358
1.016	44	15 Winter	1	+0%	30/360 Winter				27.978	-0.372
1.017	45 HW	360 Winter	1	+0%	30/15 Summer				27.743	-0.207
1.018	46 HW	360 Winter	1	+0%	30/60 Summer				27.742	-0.208
1.019	47 FC	360 Winter	1	+0%	1/15 Winter				27.778	0.253
1.020	48	360 Winter	1	+0%					22.105	-0.150
1.021	49 HW	360 Winter	1	+0%					22.038	-0.712
1.022	dummy77	360 Winter	1	+0%					21.932	-0.568
1.023	50 HW	360 Winter	1	+0%					21.835	-0.172
1.024	51	360 Winter	1	+0%					21.663	-0.162

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)			
8.001	11a	0.000	0.02		28	1.0		OK	
8.002	11	0.000	0.11			4.3		OK	

Hydrock Consultants Ltd		Page 16
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)				
9.000	dummy10	0.000	0.00		0.0	OK	
9.001	10a	0.000	0.01	31	0.9	OK	
8.003	10	0.000	0.30		11.9	OK	
10.000	dummy9	0.000	0.00		0.0	OK	
10.001	9a	0.000	0.00	23	0.4	OK	
8.004	9	0.000	0.40		15.4	OK	
11.000	dummy1	0.000	0.00		0.0	OK	
11.001	1a	0.000	0.01	19	0.4	OK	
11.002	1	0.000	0.03		2.8	OK	
11.003	2	0.000	0.03		3.8	OK	
12.000	dummy3	0.000	0.00		0.0	OK	
12.001	3a	0.000	0.01	29	0.4	OK	
11.004	3	0.000	0.08		9.8	OK	
11.005	4	0.000	0.06		13.4	OK	
11.006	5	0.000	0.09		17.2	OK	
13.000	dummy6	0.000	0.00		0.0	OK	
13.001	6a	0.000	0.01	122	0.5	OK	
11.007	6	0.000	0.12		26.8	OK	
11.008	7	0.000	0.05		26.8	OK	
8.005	8	0.000	0.33		45.8	OK	
8.006	12	0.000	0.47		45.9	OK	
14.000	dummy23	0.000	0.00		0.0	OK	
14.001	23a	0.000	0.01	28	0.4	OK	
8.007	37a	0.000	0.41		48.2	OK	
15.000	dummy37	0.000	0.00		0.0	OK	
15.001	37a	0.000	0.00	27	0.4	OK	
8.008	37	0.000	0.41		49.5	OK	
8.009	38	0.000	0.14		50.1	OK	
8.010	39	0.000	0.45		51.0	OK	
8.011	40	0.000	0.38		54.3	OK	
8.012	41	0.000	0.16		58.4	OK	
16.000	dummy41	0.000	0.00		0.0	OK	
16.001	41a	0.000	0.01	14	0.8	OK	1
8.013	41 J	0.000	0.25		59.3	OK*	
17.000	dummy42	0.000	0.00		0.0	OK	
17.001	42a	0.000	0.01	28	0.3	OK	
8.014	42	0.000	0.08		59.8	OK	
1.015	43	0.000	0.09		105.5	OK	
1.016	44	0.000	0.31		105.5	OK	
1.017	45 HW	0.000	0.21		29.7	OK*	
1.018	46 HW	0.000	0.05		19.0	OK*	
1.019	47 FC	0.000	0.04		7.7	SURCHARGED	
1.020	48	0.000	0.25		7.7	OK	
1.021	49 HW	0.000	0.00		7.7	OK	
1.022	dummy77	0.000	0.01		7.7	OK	
1.023	50 HW	0.000	0.13		7.7	OK*	
1.024	51	0.000	0.18		7.7	OK	

Hydrock Consultants Ltd		Page 17
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 19 Number of Storage Structures 21 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	13a	15 Winter	30	+0%					43.615	-0.085
2.000	dummy13	30 Winter	30	+0%	100/15 Summer				43.688	-0.013
2.001	13b	30 Winter	30	+0%	30/15 Summer				43.688	0.128
1.001	13	15 Winter	30	+0%					42.425	-0.175
3.000	14c	60 Winter	30	+0%	100/60 Winter				42.730	-0.100
3.001	14b	60 Winter	30	+0%	30/15 Winter				42.730	0.030
4.000	14a	15 Winter	30	+0%					42.916	-0.134
1.002	14	15 Winter	30	+0%					41.741	-0.159
1.003	15	15 Winter	30	+0%					41.051	-0.139
1.004	16	15 Winter	30	+0%					40.813	-0.187
1.005	17	15 Winter	30	+0%	100/15 Summer				40.335	-0.165
1.006	18	15 Winter	30	+0%	100/15 Summer				40.260	-0.129
1.007	19	15 Winter	30	+0%	100/15 Summer				40.128	-0.117
5.000	dummy30	60 Winter	30	+0%	30/60 Winter				42.662	0.012
5.001	30a	60 Winter	30	+0%	30/15 Summer				42.662	0.072
1.008	30	15 Winter	30	+0%					39.971	-0.223
1.009	31	15 Winter	30	+0%					39.338	-0.249
1.010	32	15 Winter	30	+0%					37.752	-0.235
1.011	33	15 Winter	30	+0%					36.025	-0.192
6.000	dummy34	60 Winter	30	+0%	30/30 Winter				37.902	0.013
6.001	34b	60 Winter	30	+0%	30/15 Summer	100/60 Winter			37.899	0.099
6.002	34a	60 Winter	30	+0%	30/15 Summer	100/30 Winter			37.202	0.102
1.012	34	15 Winter	30	+0%					35.588	-0.170
1.013	35	15 Winter	30	+0%					35.221	-0.216
7.000	36d	60 Winter	30	+0%					36.043	-0.127
7.001	36c	60 Winter	30	+0%	100/15 Summer				36.045	-0.005
7.002	36b	60 Winter	30	+0%	30/15 Summer				35.433	0.083
7.003	36a	120 Winter	30	+0%	30/60 Winter				35.020	0.020
1.014	36	15 Winter	30	+0%					33.766	-0.237
8.000	dummy11	60 Winter	30	+0%	30/15 Summer				36.792	0.147

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)		
1.000	13a	0.000	0.05			5 1.6	OK	
2.000	dummy13	0.000	0.00			0.0	OK	
2.001	13b	0.000	0.03		20	1.5	SURCHARGED	
1.001	13	0.000	0.11			10.8	OK	
3.000	14c	0.000	0.00			0.0	OK	
3.001	14b	0.000	0.01		27	0.6	SURCHARGED	
4.000	14a	0.000	0.02		4	1.6	OK	
1.002	14	0.000	0.18			17.1	OK	
1.003	15	0.000	0.30			18.3	OK	
1.004	16	0.000	0.29			34.7	OK	
1.005	17	0.000	0.55			56.8	OK	
1.006	18	0.000	0.73			76.3	OK	
1.007	19	0.000	0.81			74.7	OK	
5.000	dummy30	0.000	0.00			0.0	SURCHARGED	
5.001	30a	0.000	0.01		39	0.6	SURCHARGED	
1.008	30	0.000	0.34			84.4	OK	
1.009	31	0.000	0.24			95.6	OK	
1.010	32	0.000	0.29			115.7	OK	
1.011	33	0.000	0.47			123.9	OK	
6.000	dummy34	0.000	0.14			2.2	SURCHARGED	
6.001	34b	0.000	0.03		33	1.4	SURCHARGED	1
6.002	34a	0.000	0.06		30	3.1	FLOOD RISK	2
1.012	34	0.000	0.57			125.6	OK	
1.013	35	0.000	0.37			127.9	OK	
7.000	36d	0.000	0.00			0.0	OK	
7.001	36c	0.000	0.01		24	0.5	OK	
7.002	36b	0.000	0.05		27	1.3	SURCHARGED	
7.003	36a	0.000	0.02		38	1.1	SURCHARGED	
1.014	36	0.000	0.29			136.4	OK	
8.000	dummy11	0.000	0.00			0.0	SURCHARGED	

Hydrock Consultants Ltd		Page 19
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Climate		First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
			Period	Change					Level (m)	Depth (m)
8.001	11a	60 Winter	30	+0%	30/15 Summer				36.792	0.202
8.002	11	15 Winter	30	+0%	100/15 Summer				35.708	-0.092
9.000	dummy10	60 Winter	30	+0%	30/15 Winter				37.299	0.083
9.001	10a	60 Winter	30	+0%	30/15 Summer				37.299	0.149
8.003	10	15 Winter	30	+0%	100/15 Summer				35.686	-0.012
10.000	dummy9	60 Winter	30	+0%	100/15 Summer				37.597	-0.010
10.001	9a	60 Winter	30	+0%	30/15 Winter				37.597	0.047
8.004	9	15 Winter	30	+0%	30/15 Summer				35.569	0.032
11.000	dummy1	60 Winter	30	+0%	30/30 Winter				44.513	0.013
11.001	1a	60 Winter	30	+0%	30/15 Summer				44.513	0.073
11.002	1	15 Winter	30	+0%					43.192	-0.182
11.003	2	15 Winter	30	+0%					42.507	-0.176
12.000	dummy3	60 Winter	30	+0%	30/30 Winter				42.954	0.034
12.001	3a	60 Winter	30	+0%	30/15 Summer				42.954	0.094
11.004	3	15 Winter	30	+0%					41.903	-0.151
11.005	4	15 Winter	30	+0%					39.665	-0.214
11.006	5	15 Winter	30	+0%					38.864	-0.192
13.000	dummy6	240 Winter	30	+0%	100/15 Winter				39.624	-0.001
13.001	6a	240 Winter	30	+0%	30/15 Summer				39.624	0.154
11.007	6	15 Winter	30	+0%					38.315	-0.175
11.008	7	15 Winter	30	+0%					36.727	-0.273
8.005	8	15 Winter	30	+0%	30/15 Summer				35.414	0.011
8.006	12	15 Winter	30	+0%	30/15 Summer				35.357	0.019
14.000	dummy23	60 Winter	30	+0%	30/30 Winter				37.426	0.026
14.001	23a	60 Winter	30	+0%	30/15 Summer				37.426	0.076
8.007	37a	15 Summer	30	+0%	30/15 Summer				35.327	0.010
15.000	dummy37	60 Winter	30	+0%	100/15 Summer				37.391	-0.009
15.001	37a	60 Winter	30	+0%	30/15 Winter				37.391	0.041
8.008	37	15 Summer	30	+0%	30/15 Summer				35.275	0.000
8.009	38	15 Winter	30	+0%	100/15 Summer				34.978	-0.253
8.010	39	15 Winter	30	+0%	30/15 Winter				34.842	0.004
8.011	40	15 Winter	30	+0%	100/15 Summer				34.797	-0.002
8.012	41	15 Winter	30	+0%					34.471	-0.251
16.000	dummy41	30 Winter	30	+0%	30/30 Winter				35.505	0.005
16.001	41a	30 Winter	30	+0%	30/15 Summer	100/60 Winter			35.505	0.105
8.013	41 J	15 Winter	30	+0%					34.064	-0.186
17.000	dummy42	60 Winter	30	+0%	100/15 Winter				35.080	-0.070
17.001	42a	60 Winter	30	+0%	30/30 Winter				35.080	0.030
8.014	42	15 Winter	30	+0%					33.763	-0.309
1.015	43	15 Winter	30	+0%					32.198	-0.302
1.016	44	480 Winter	30	+0%	30/360 Winter				28.394	0.044
1.017	45 HW	720 Winter	30	+0%	30/15 Summer				28.300	0.350
1.018	46 HW	480 Winter	30	+0%	30/60 Summer				28.393	0.443
1.019	47 FC	480 Winter	30	+0%	1/15 Winter				28.435	0.910
1.020	48	1440 Winter	30	+0%					22.105	-0.150
1.021	49 HW	720 Winter	30	+0%					22.038	-0.712
1.022	dummy77	1440 Winter	30	+0%					21.932	-0.568
1.023	50 HW	720 Winter	30	+0%					21.835	-0.172
1.024	51	960 Winter	30	+0%					21.663	-0.162

PN	US/MH Name	Flooded		Half Drain		Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)			
8.001	11a	0.000	0.03		41 1.6	SURCHARGED		
8.002	11	0.000	0.32		12.0	OK		

Hydrock Consultants Ltd		Page 20
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Flow / Cap.	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Cap.					
9.000	dummy10	0.000	0.00			0.0	SURCHARGED	
9.001	10a	0.000	0.02		46	1.5	SURCHARGED	
8.003	10	0.000	0.84			32.6	OK	
10.000	dummy9	0.000	0.00			0.0	OK	
10.001	9a	0.000	0.01		35	0.6	SURCHARGED	
8.004	9	0.000	1.08			41.6	SURCHARGED	
11.000	dummy1	0.000	0.00			0.0	SURCHARGED	
11.001	1a	0.000	0.01		33	0.6	SURCHARGED	
11.002	1	0.000	0.08			8.6	OK	
11.003	2	0.000	0.11			12.0	OK	
12.000	dummy3	0.000	0.00			0.0	SURCHARGED	
12.001	3a	0.000	0.01		44	0.7	SURCHARGED	
11.004	3	0.000	0.24			30.4	OK	
11.005	4	0.000	0.18			41.5	OK	
11.006	5	0.000	0.28			53.3	OK	
13.000	dummy6	0.000	0.00			0.0	OK	
13.001	6a	0.000	0.01		201	0.8	SURCHARGED	
11.007	6	0.000	0.36			82.7	OK	
11.008	7	0.000	0.17			82.4	OK	
8.005	8	0.000	0.96			133.4	SURCHARGED	
8.006	12	0.000	1.37			132.3	SURCHARGED	
14.000	dummy23	0.000	0.00			0.0	SURCHARGED	
14.001	23a	0.000	0.01		43	0.7	SURCHARGED	
8.007	37a	0.000	1.14			133.4	SURCHARGED	
15.000	dummy37	0.000	0.00			0.1	OK	
15.001	37a	0.000	0.01		40	0.6	SURCHARGED	
8.008	37	0.000	1.12			135.3	SURCHARGED	
8.009	38	0.000	0.40			141.5	OK	
8.010	39	0.000	1.23			139.6	SURCHARGED	
8.011	40	0.000	1.01			142.7	OK	
8.012	41	0.000	0.40			150.2	OK	
16.000	dummy41	0.000	0.00			0.0	SURCHARGED	
16.001	41a	0.000	0.02		21	1.4	SURCHARGED	1
8.013	41 J	0.000	0.64			152.4	OK*	
17.000	dummy42	0.000	0.00			0.0	OK	
17.001	42a	0.000	0.01		44	0.6	SURCHARGED	
8.014	42	0.000	0.22			153.0	OK	
1.015	43	0.000	0.24			275.2	OK	
1.016	44	0.000	0.15			51.6	SURCHARGED	
1.017	45 HW	0.000	0.28			38.8	SURCHARGED*	
1.018	46 HW	0.000	0.05			18.4	SURCHARGED*	
1.019	47 FC	0.000	0.04			7.7	SURCHARGED	
1.020	48	0.000	0.25			7.7	OK	
1.021	49 HW	0.000	0.00			7.7	OK	
1.022	dummy77	0.000	0.01			7.7	OK	
1.023	50 HW	0.000	0.13			7.7	OK*	
1.024	51	0.000	0.18			7.7	OK	

Hydrock Consultants Ltd		Page 21
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 19 Number of Storage Structures 21 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	13a	15 Winter	100	+40%					43.621	-0.079
2.000	dummy13	60 Winter	100	+40%	100/15 Summer				43.874	0.173
2.001	13b	60 Winter	100	+40%	30/15 Summer				43.874	0.314
1.001	13	15 Winter	100	+40%					42.443	-0.157
3.000	14c	60 Winter	100	+40%	100/60 Winter				42.842	0.012
3.001	14b	60 Winter	100	+40%	30/15 Winter				42.842	0.142
4.000	14a	15 Winter	100	+40%					42.920	-0.130
1.002	14	15 Winter	100	+40%					41.764	-0.136
1.003	15	15 Winter	100	+40%					41.084	-0.106
1.004	16	15 Winter	100	+40%					40.858	-0.142
1.005	17	15 Winter	100	+40%	100/15 Summer				40.623	0.123
1.006	18	15 Winter	100	+40%	100/15 Summer				40.524	0.135
1.007	19	15 Winter	100	+40%	100/15 Summer				40.290	0.045
5.000	dummy30	60 Winter	100	+40%	30/60 Winter				42.884	0.234
5.001	30a	60 Winter	100	+40%	30/15 Summer				42.884	0.294
1.008	30	15 Winter	100	+40%					40.033	-0.161
1.009	31	15 Winter	100	+40%					39.387	-0.200
1.010	32	15 Winter	100	+40%					37.807	-0.180
1.011	33	15 Winter	100	+40%					36.104	-0.113
6.000	dummy34	60 Winter	100	+40%	30/30 Winter				38.255	0.366
6.001	34b	60 Winter	100	+40%	30/15 Summer	100/60 Winter			38.250	0.450
6.002	34a	60 Winter	100	+40%	30/15 Summer	100/30 Winter			37.501	0.401
1.012	34	15 Winter	100	+40%					35.680	-0.078
1.013	35	15 Winter	100	+40%					35.282	-0.155
7.000	36d	60 Winter	100	+40%					36.134	-0.036
7.001	36c	60 Winter	100	+40%	100/15 Summer				36.134	0.084
7.002	36b	60 Winter	100	+40%	30/15 Summer				35.572	0.222
7.003	36a	180 Winter	100	+40%	30/60 Winter				35.144	0.144
1.014	36	15 Winter	100	+40%					33.817	-0.186
8.000	dummy11	60 Winter	100	+40%	30/15 Summer				37.143	0.498

Hydrock Consultants Ltd		Page 22
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)		
1.000	13a	0.000	0.10		5	2.8	OK	
2.000	dummy13	0.000	0.00			0.0	FLOOD RISK	
2.001	13b	0.000	0.04		36	1.9	FLOOD RISK	
1.001	13	0.000	0.20			19.0	OK	
3.000	14c	0.000	0.00			0.0	SURCHARGED	
3.001	14b	0.000	0.02		41	0.7	SURCHARGED	
4.000	14a	0.000	0.04		5	2.9	OK	
1.002	14	0.000	0.33			30.3	OK	
1.003	15	0.000	0.54			32.6	OK	
1.004	16	0.000	0.54			63.7	OK	
1.005	17	0.000	0.94			96.9	SURCHARGED	
1.006	18	0.000	1.24			130.1	SURCHARGED	
1.007	19	0.000	1.42			131.2	SURCHARGED	
5.000	dummy30	0.000	0.00			0.0	SURCHARGED	
5.001	30a	0.000	0.01		53	0.9	FLOOD RISK	
1.008	30	0.000	0.60			149.6	OK	
1.009	31	0.000	0.42			170.2	OK	
1.010	32	0.000	0.50			202.1	OK	
1.011	33	0.000	0.81			214.5	OK	
6.000	dummy34	0.000	0.26			4.0	SURCHARGED	
6.001	34b	0.008	0.05		43	2.2	FLOOD	1
6.002	34a	0.538	0.08		37	4.7	FLOOD	2
1.012	34	0.000	0.98			217.6	OK	
1.013	35	0.000	0.64			219.7	OK	
7.000	36d	0.000	0.00			0.1	OK	
7.001	36c	0.000	0.02		36	0.7	SURCHARGED	
7.002	36b	0.000	0.07		41	1.7	FLOOD RISK	
7.003	36a	0.000	0.02		61	1.5	SURCHARGED	
1.014	36	0.000	0.50			237.4	OK	
8.000	dummy11	0.000	0.00			0.0	SURCHARGED	

Hydrock Consultants Ltd		Page 23
. . .	Land off Misery Lane SW Calculations Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH		Return Period	Climate Change	First (X)		First (Y)		First (Z)		Overflow	Water Level	Surcharged Depth
	Name	Storm			Surcharge	Flood	Overflow	Act.	(m)	(m)			
8.001	11a	60 Winter	100	+40%	30/15 Summer				37.143	0.553			
8.002	11	15 Winter	100	+40%	100/15 Summer				36.721	0.921			
9.000	dummy10	120 Winter	100	+40%	30/15 Winter				37.686	0.470			
9.001	10a	120 Winter	100	+40%	30/15 Summer				37.689	0.539			
8.003	10	15 Winter	100	+40%	100/15 Summer				36.690	0.992			
10.000	dummy9	60 Winter	100	+40%	100/15 Summer				37.798	0.191			
10.001	9a	60 Winter	100	+40%	30/15 Winter				37.798	0.248			
8.004	9	15 Winter	100	+40%	30/15 Summer				36.413	0.876			
11.000	dummy1	60 Winter	100	+40%	30/30 Winter				44.641	0.141			
11.001	1a	60 Winter	100	+40%	30/15 Summer				44.641	0.201			
11.002	1	15 Winter	100	+40%					43.206	-0.168			
11.003	2	15 Winter	100	+40%					42.525	-0.158			
12.000	dummy3	120 Winter	100	+40%	30/30 Winter				43.196	0.276			
12.001	3a	120 Winter	100	+40%	30/15 Summer				43.197	0.337			
11.004	3	15 Winter	100	+40%					41.932	-0.122			
11.005	4	15 Winter	100	+40%					39.697	-0.182			
11.006	5	15 Winter	100	+40%					38.908	-0.148			
13.000	dummy6	240 Winter	100	+40%	100/15 Winter				39.897	0.272			
13.001	6a	240 Winter	100	+40%	30/15 Summer				39.897	0.427			
11.007	6	15 Winter	100	+40%					38.368	-0.122			
11.008	7	15 Winter	100	+40%					36.766	-0.234			
8.005	8	15 Winter	100	+40%	30/15 Summer				36.010	0.607			
8.006	12	15 Winter	100	+40%	30/15 Summer				35.853	0.515			
14.000	dummy23	60 Winter	100	+40%	30/30 Winter				37.649	0.249			
14.001	23a	60 Winter	100	+40%	30/15 Summer				37.649	0.299			
8.007	37a	15 Winter	100	+40%	30/15 Summer				35.702	0.385			
15.000	dummy37	60 Winter	100	+40%	100/15 Summer				37.576	0.176			
15.001	37a	60 Winter	100	+40%	30/15 Winter				37.576	0.226			
8.008	37	15 Winter	100	+40%	30/15 Summer				35.526	0.251			
8.009	38	15 Winter	100	+40%	100/15 Summer				35.343	0.112			
8.010	39	15 Winter	100	+40%	30/15 Winter				35.162	0.324			
8.011	40	15 Winter	100	+40%	100/15 Summer				34.971	0.172			
8.012	41	15 Winter	100	+40%					34.567	-0.155			
16.000	dummy41	60 Winter	100	+40%	30/30 Winter				35.850	0.350			
16.001	41a	60 Winter	100	+40%	30/15 Summer	100/60 Winter			35.850	0.450			
8.013	41 J	15 Summer	100	+40%					34.250	0.000			
17.000	dummy42	120 Winter	100	+40%	100/15 Winter				35.254	0.104			
17.001	42a	120 Winter	100	+40%	30/30 Winter				35.254	0.204			
8.014	42	15 Winter	100	+40%					33.819	-0.253			
1.015	43	15 Winter	100	+40%					32.259	-0.241			
1.016	44	600 Winter	100	+40%	30/360 Winter				29.141	0.791			
1.017	45 HW	1440 Summer	100	+40%	30/15 Summer				28.300	0.350			
1.018	46 HW	600 Winter	100	+40%	30/60 Summer				29.138	1.188			
1.019	47 FC	600 Winter	100	+40%	1/15 Winter				29.177	1.652			
1.020	48	600 Winter	100	+40%					22.127	-0.128			
1.021	49 HW	600 Winter	100	+40%					22.054	-0.696			
1.022	dummy77	600 Winter	100	+40%					21.947	-0.553			
1.023	50 HW	600 Winter	100	+40%					21.850	-0.157			
1.024	51	600 Winter	100	+40%					21.680	-0.145			

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)				
8.001	11a	0.000	0.04		55	2.4	FLOOD RISK		
8.002	11	0.000	0.50			18.5	SURCHARGED		

Hydrock Consultants Ltd		Page 24
.	Land off Misery Lane	
.	SW Calculations	
.	Revised Discharge Rates	
Date 14/02/2025	Designed by JAC	
File 21627-HYD-XX-XX-CA-C-0001_R5.MDX	Checked by -	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Flow / Cap.	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Cap.					
9.000	dummy10	0.000	0.01			0.1	FLOOD RISK	
9.001	10a	0.000	0.03		72	2.3	FLOOD RISK	
8.003	10	0.000	1.33			51.7	SURCHARGED	
10.000	dummy9	0.000	0.00			0.0	SURCHARGED	
10.001	9a	0.000	0.01		47	0.9	SURCHARGED	
8.004	9	0.000	1.72			66.1	SURCHARGED	
11.000	dummy1	0.000	0.00			0.0	FLOOD RISK	
11.001	1a	0.000	0.01		50	0.8	FLOOD RISK	
11.002	1	0.000	0.14			15.3	OK	
11.003	2	0.000	0.19			21.5	OK	
12.000	dummy3	0.000	0.00			0.0	SURCHARGED	
12.001	3a	0.000	0.02		69	1.0	SURCHARGED	
11.004	3	0.000	0.43			54.6	OK	
11.005	4	0.000	0.33			74.8	OK	
11.006	5	0.000	0.51			96.2	OK	
13.000	dummy6	0.000	0.00			0.0	SURCHARGED	
13.001	6a	0.000	0.02		250	1.1	SURCHARGED	
11.007	6	0.000	0.66			149.3	OK	
11.008	7	0.000	0.30			148.9	OK	
8.005	8	0.000	1.65			229.4	SURCHARGED	
8.006	12	0.000	2.34			227.1	SURCHARGED	
14.000	dummy23	0.000	0.00			0.0	SURCHARGED	
14.001	23a	0.000	0.01		56	0.9	SURCHARGED	
8.007	37a	0.000	2.03			237.7	SURCHARGED	
15.000	dummy37	0.000	0.01			0.1	SURCHARGED	
15.001	37a	0.000	0.01		53	0.9	SURCHARGED	
8.008	37	0.000	1.99			240.0	SURCHARGED	
8.009	38	0.000	0.69			243.8	SURCHARGED	
8.010	39	0.000	2.16			244.1	SURCHARGED	
8.011	40	0.000	1.83			260.3	SURCHARGED	
8.012	41	0.000	0.74			278.7	OK	
16.000	dummy41	0.000	0.00			0.1	SURCHARGED	
16.001	41a	0.057	0.03		33	2.2	FLOOD	1
8.013	41 J	0.000	1.09			258.2	SURCHARGED*	
17.000	dummy42	0.000	0.00			0.0	SURCHARGED	
17.001	42a	0.000	0.01		69	0.8	FLOOD RISK	
8.014	42	0.000	0.39			278.4	OK	
1.015	43	0.000	0.44			503.4	OK	
1.016	44	0.000	0.22			77.6	FLOOD RISK	
1.017	45 HW	0.000	0.40			55.5	SURCHARGED*	
1.018	46 HW	0.000	0.08			26.2	FLOOD RISK*	
1.019	47 FC	0.000	0.06			12.0	SURCHARGED	
1.020	48	0.000	0.39			12.0	OK	
1.021	49 HW	0.000	0.01			12.0	OK	
1.022	dummy77	0.000	0.01			12.0	OK	
1.023	50 HW	0.000	0.20			12.0	OK*	
1.024	51	0.000	0.28			12.0	OK	