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5 Manchester Square London W1U 3PD	Ratby Phase 2 Reserved Matters Submission SWS Drainage Results	
Date 21/02/2025 File 250219 Combined Network...	Designed by J.Nicholson Checked by L. Hulka	
Innovyze	Network 2020.1	

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)	2	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
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.	1.000	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	0.744	4-8	0.912	8-12	0.032

Total Area Contributing (ha) = 1.688

Total Pipe Volume (m³) = 80.051

Network Design Table for Storm

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	5.592	0.080	69.9	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	13.299	0.170	78.2	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	12.655	0.165	76.7	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	12.059	0.175	68.9	0.035	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)
S1.000	50.00	5.08	109.615	0.020	0.0	0.0	0.0	1.20	21.3	3.6
S1.001	50.00	5.27	109.535	0.035	0.0	0.0	0.0	1.14	20.1	6.3
S1.002	50.00	5.46	109.365	0.064	0.0	0.0	0.0	1.15	20.3	11.6
S1.003	50.00	5.58	109.125	0.099	0.0	0.0	0.0	1.58	62.7	17.9

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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)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.000	9.105	0.055	165.5	0.039	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	10.453	0.070	149.3	0.038	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.002	9.905	0.110	90.0	0.009	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.003	19.829	0.200	99.1	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.004	15.753	0.160	98.5	0.076	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.005	24.732	1.945	12.7	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	13.447	0.135	99.6	0.055	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	12.191	0.125	97.5	0.022	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.002	21.829	0.135	161.7	0.023	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.003	6.865	0.280	24.5	0.018	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.023	13.160	0.100	131.6	0.034	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.024	35.784	0.250	143.1	0.040	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.025	5.000#	0.250	20.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S5.000	60.778	0.425	143.0	0.044	5.00	0.0	0.600	o	225	Pipe/Conduit	
S6.000	13.481	0.100	134.8	0.033	5.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	17.933	0.300	59.8	0.074	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)
S3.000	50.00	5.15	109.760	0.039	0.0	0.0	0.0	1.01	40.3	7.0
S3.001	50.00	5.31	109.705	0.077	0.0	0.0	0.0	1.07	42.5	13.9
S3.002	50.00	5.43	109.635	0.086	0.0	0.0	0.0	1.38	54.8	15.5
S3.003	50.00	5.64	109.450	0.140	0.0	0.0	0.0	1.58	111.6	25.3
S3.004	50.00	5.81	109.250	0.216	0.0	0.0	0.0	1.58	112.0	39.0
S3.005	50.00	5.90	109.045	0.297	0.0	0.0	0.0	4.43	313.3	53.6
S4.000	50.00	5.22	107.925	0.055	0.0	0.0	0.0	1.01	17.8	9.9
S4.001	50.00	5.42	107.790	0.077	0.0	0.0	0.0	1.02	18.0	13.9
S4.002	50.00	5.78	107.590	0.100	0.0	0.0	0.0	1.03	40.8	18.1
S4.003	50.00	5.82	107.455	0.118	0.0	0.0	0.0	2.65	105.5	21.3
S1.023	50.00	9.22	106.800	0.864	0.0	0.0	0.0	2.12	599.8	156.0
S1.024	50.00	9.52	106.700	0.904	0.0	0.0	0.0	2.03	575.0	163.2
S1.025	50.00	9.53	106.450	0.904	0.0	0.0	0.0	5.46	1544.3	163.2
S5.000	50.00	5.93	109.925	0.044	0.0	0.0	0.0	1.09	43.4	7.9
S6.000	50.00	5.20	109.600	0.033	0.0	0.0	0.0	1.12	44.7	6.0
S5.001	50.00	6.10	109.500	0.151	0.0	0.0	0.0	1.69	67.4	27.3

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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)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.002	20.151	0.090	223.9	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.003	11.713	0.050	234.3	0.024	0.00	0.0	0.600	o	300	Pipe/Conduit	
S7.000	15.363	0.205	74.9	0.055	5.00	0.0	0.600	o	225	Pipe/Conduit	
S7.001	22.207	0.125	177.7	0.036	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.004	26.577	0.535	49.7	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.005	22.206	1.110	20.0	0.036	0.00	0.0	0.600	o	300	Pipe/Conduit	
S8.000	6.469	0.040	161.7	0.035	5.00	0.0	0.600	o	225	Pipe/Conduit	
S8.001	11.328	0.070	161.8	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.002	7.768	0.380	20.4	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.003	10.510	0.500	21.0	0.025	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.004	11.609	0.070	165.8	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.005	13.250	0.080	165.6	0.029	0.00	0.0	0.600	o	225	Pipe/Conduit	
S9.000	17.974	0.270	66.6	0.012	5.00	0.0	0.600	o	150	Pipe/Conduit	
S9.001	12.161	0.410	29.7	0.033	0.00	0.0	0.600	o	150	Pipe/Conduit	
S9.002	22.325	0.740	30.2	0.018	0.00	0.0	0.600	o	225	Pipe/Conduit	
S9.003	5.785	0.435	13.3	0.020	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.006	10.207	0.050	204.1	0.012	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.002	50.00	6.43	109.125	0.177	0.0	0.0	0.0	1.05	74.0	32.0
S5.003	50.00	6.62	109.035	0.201	0.0	0.0	0.0	1.02	72.3	36.3
S7.000	50.00	5.17	109.390	0.055	0.0	0.0	0.0	1.51	60.1	9.9
S7.001	50.00	5.55	109.185	0.091	0.0	0.0	0.0	0.98	38.9	16.4
S5.004	50.00	6.81	108.985	0.325	0.0	0.0	0.0	2.24	158.1	58.7
S5.005	50.00	6.92	108.450	0.361	0.0	0.0	0.0	3.53	249.6	65.2
S8.000	50.00	5.11	108.605	0.035	0.0	0.0	0.0	1.03	40.8	6.3
S8.001	50.00	5.29	108.565	0.069	0.0	0.0	0.0	1.03	40.8	12.5
S8.002	50.00	5.33	108.495	0.095	0.0	0.0	0.0	2.91	115.6	17.2
S8.003	50.00	5.39	108.115	0.120	0.0	0.0	0.0	2.87	114.0	21.7
S8.004	50.00	5.59	107.615	0.154	0.0	0.0	0.0	1.01	40.3	27.8
S8.005	50.00	5.80	107.545	0.183	0.0	0.0	0.0	1.01	40.3	33.0
S9.000	50.00	5.24	109.395	0.012	0.0	0.0	0.0	1.23	21.8	2.2
S9.001	50.00	5.35	109.125	0.045	0.0	0.0	0.0	1.86	32.8	8.1
S9.002	50.00	5.51	108.640	0.063	0.0	0.0	0.0	2.39	95.1	11.4
S9.003	50.00	5.53	107.900	0.083	0.0	0.0	0.0	3.61	143.4	15.0
S8.006	50.00	5.94	107.315	0.278	0.0	0.0	0.0	1.26	139.6	50.2

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PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.006	8.326	0.100	83.3	0.051	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.007	30.730	0.520	59.1	0.027	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.000	16.744	0.415	40.3	0.033	5.00	0.0	0.600	o	150	Pipe/Conduit	
S10.001	10.237	0.130	78.7	0.034	0.00	0.0	0.600	o	150	Pipe/Conduit	
S5.008	24.889	0.070	355.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.009	5.000#	0.300	16.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.026	7.078	0.100	70.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.027	95.626	5.150	18.6	0.000	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)
S5.006	50.00	6.99	107.265	0.690	0.0	0.0	0.0	1.99	219.4	124.6
S5.007	50.00	7.18	107.090	0.717	0.0	0.0	0.0	2.65	421.2	129.5
S10.000	50.00	5.18	107.415	0.033	0.0	0.0	0.0	1.59	28.1	6.0
S10.001	50.00	5.33	107.000	0.067	0.0	0.0	0.0	1.13	20.0	12.1
S5.008	50.00	7.57	106.570	0.784	0.0	0.0	0.0	1.07	170.5	141.6
S5.009	50.00	7.59	106.500	0.784	0.0	0.0	0.0	5.00	795.0	141.6
S1.026	50.00	9.63	106.200	1.688	0.0	0.0	0.0	1.20	21.1«	304.8
S1.027	49.46	10.31	106.100	1.688	0.0	0.0	0.0	2.35	41.5«	304.8

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW01	110.965	1.350	Open Manhole	1200	S1.000	109.615	150				
SW02	110.885	1.350	Open Manhole	1200	S1.001	109.535	150	S1.000	109.535	150	
SW03	110.715	1.350	Open Manhole	1200	S1.002	109.365	150	S1.001	109.365	150	
SW04	110.550	1.425	Open Manhole	1200	S1.003	109.125	225	S1.002	109.200	150	
SW05	110.375	1.425	Open Manhole	1200	S1.004	108.950	225	S1.003	108.950	225	
SW06	110.215	1.425	Open Manhole	1200	S1.005	108.790	225	S1.004	108.790	225	
SW07	110.375	1.645	Open Manhole	1200	S1.006	108.730	225	S1.005	108.730	225	
SW08	110.210	1.545	Open Manhole	1200	S1.007	108.665	225	S1.006	108.665	225	
SW09	110.000	1.500	Open Manhole	1200	S1.008	108.500	300	S1.007	108.575	225	
SW10	109.755	1.500	Open Manhole	1200	S1.009	108.255	300	S1.008	108.255	300	
SW11	109.510	1.500	Open Manhole	1200	S1.010	108.010	300	S1.009	108.010	300	
SW12	110.385	1.350	Open Manhole	1200	S2.000	109.035	150				
SW13	109.610	1.745	Open Manhole	1500	S1.011	107.865	375	S1.010	107.940	300	
								S2.000	108.090	150	
SW14	109.465	1.665	Open Manhole	1500	S1.012	107.800	375	S1.011	107.800	375	
SW15	109.415	1.635	Open Manhole	1500	S1.013	107.780	375	S1.012	107.780	375	
SW16	109.320	1.590	Open Manhole	1500	S1.014	107.730	375	S1.013	107.730	375	
SW17	109.450	1.760	Open Manhole	1500	S1.015	107.690	375	S1.014	107.690	375	
SW18	109.435	1.790	Open Manhole	1500	S1.016	107.645	375	S1.015	107.645	375	
SW19	109.310	1.700	Open Manhole	1500	S1.017	107.610	375	S1.016	107.610	375	
SW20	109.080	1.650	Open Manhole	1500	S1.018	107.430	450	S1.017	107.505	375	
SW21	108.500	1.350	Open Manhole	1500	S1.019	107.150	450	S1.018	107.150	450	
SW22	108.780	1.675	Open Manhole	1500	S1.020	107.105	450	S1.019	107.105	450	
SW23	109.075	2.005	Open Manhole	1500	S1.021	107.070	450	S1.020	107.070	450	
SW24	109.665	2.660	Open Manhole	1500	S1.022	107.005	450	S1.021	107.005	450	
SW25	111.185	1.425	Open Manhole	1200	S3.000	109.760	225				
SW26	111.175	1.470	Open Manhole	1200	S3.001	109.705	225	S3.000	109.705	225	
SW27	111.060	1.425	Open Manhole	1200	S3.002	109.635	225	S3.001	109.635	225	
SW28	110.950	1.500	Open Manhole	1200	S3.003	109.450	300	S3.002	109.525	225	
SW29	110.750	1.500	Open Manhole	1200	S3.004	109.250	300	S3.003	109.250	300	
SW30	110.595	1.550	Open Manhole	1200	S3.005	109.045	300	S3.004	109.090	300	
SW31	109.275	1.350	Open Manhole	1200	S4.000	107.925	150				
SW32	109.450	1.660	Open Manhole	1200	S4.001	107.790	150	S4.000	107.790	150	
SW33	109.575	1.985	Open Manhole	1200	S4.002	107.590	225	S4.001	107.665	150	
SW34	109.775	2.320	Open Manhole	1200	S4.003	107.455	225	S4.002	107.455	225	
SW35	109.690	2.890	Open Manhole	1500	S1.023	106.800	600	S1.022	106.950	450	
								S3.005	107.100	300	
								S4.003	107.175	225	

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MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW36	109.200	2.500	Open Manhole	1500	S1.024	106.700	600	S1.023	106.700	600	
SW37	107.800	1.350	Open Manhole	1500	S1.025	106.450	600	S1.024	106.450	600	
HD38	111.350	1.425	Open Manhole	1200	S5.000	109.925	225				
HD39	111.025	1.425	Open Manhole	1200	S6.000	109.600	225				
HD40	110.925	1.425	Open Manhole	1200	S5.001	109.500	225	S5.000	109.500	225	
								S6.000	109.500	225	
SW41	110.625	1.500	Open Manhole	1200	S5.002	109.125	300	S5.001	109.200	225	
SW42	110.685	1.650	Open Manhole	1200	S5.003	109.035	300	S5.002	109.035	300	
SW43	110.815	1.425	Open Manhole	1200	S7.000	109.390	225				
SW44	110.610	1.425	Open Manhole	1200	S7.001	109.185	225	S7.000	109.185	225	
SW45	110.535	1.550	Open Manhole	1200	S5.004	108.985	300	S5.003	108.985	300	
								S7.001	109.060	225	
SW46	109.950	1.500	Open Manhole	1200	S5.005	108.450	300	S5.004	108.450	300	
SW47	110.510	1.905	Open Manhole	1200	S8.000	108.605	225				
SW48	110.350	1.785	Open Manhole	1200	S8.001	108.565	225	S8.000	108.565	225	
SW49	110.085	1.590	Open Manhole	1200	S8.002	108.495	225	S8.001	108.495	225	
SW50	109.905	1.790	Open Manhole	1200	S8.003	108.115	225	S8.002	108.115	225	
SW51	109.660	2.045	Open Manhole	1200	S8.004	107.615	225	S8.003	107.615	225	
SW52	109.425	1.880	Open Manhole	1200	S8.005	107.545	225	S8.004	107.545	225	
SW53	110.795	1.400	Open Manhole	1200	S9.000	109.395	150				
SW54	110.475	1.350	Open Manhole	1200	S9.001	109.125	150	S9.000	109.125	150	
SW55	110.065	1.425	Open Manhole	1200	S9.002	108.640	225	S9.001	108.715	150	
SW56	109.325	1.425	Open Manhole	1200	S9.003	107.900	225	S9.002	107.900	225	
SW57	109.040	1.725	Open Manhole	1500	S8.006	107.315	375	S8.005	107.465	225	
								S9.003	107.465	225	
SW58	109.175	1.910	Open Manhole	1500	S5.006	107.265	375	S5.005	107.340	300	
								S8.006	107.265	375	
SW59	108.925	1.835	Open Manhole	1500	S5.007	107.090	450	S5.006	107.165	375	
SW60	108.765	1.350	Open Manhole	1200	S10.000	107.415	150				
SW61	108.255	1.255	Open Manhole	1200	S10.001	107.000	150	S10.000	107.000	150	
SW62	107.950	1.380	Open Manhole	1500	S5.008	106.570	450	S5.007	106.570	450	
								S10.001	106.870	150	
SW63	107.800	1.300	Open Manhole	1500	S5.009	106.500	450	S5.008	106.500	450	
SW64	107.800	1.600	Open Manhole	1500	S1.026	106.200	150	S1.025	106.200	600	
								S5.009	106.200	450	
SW65	107.800	1.700	Open Manhole	1200	S1.027	106.100	150	S1.026	106.100	150	
	102.500	1.550	Open Manhole	0		OUTFALL		S1.027	100.950	150	

Ratby Phase 2
Reserved Matters Submission
SWS Drainage Results



Designed by J.Nicholson
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Network 2020.1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW01	450514.620	306450.664	450514.620	306450.664	Required	
SW02	450509.357	306452.555	450509.357	306452.555	Required	
SW03	450496.959	306457.368	450496.959	306457.368	Required	
SW04	450485.235	306462.132	450485.235	306462.132	Required	
SW05	450474.089	306466.736	450474.089	306466.736	Required	
SW06	450465.532	306444.336	450465.532	306444.336	Required	
SW07	450469.647	306435.260	450469.647	306435.260	Required	
SW08	450466.742	306425.567	450466.742	306425.567	Required	
SW09	450463.100	306413.500	450463.100	306413.500	Required	
SW10	450460.791	306403.470	450460.791	306403.470	Required	
SW11	450460.955	306395.912	450460.955	306395.912	Required	
SW12	450495.462	306386.986	450495.462	306386.986	Required	
SW13	450464.061	306380.612	450464.061	306380.612	Required	
SW14	450467.104	306365.621	450467.104	306365.621	Required	
SW15	450470.265	306361.884	450470.265	306361.884	Required	

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London
W1U 3PD

Ratby Phase 2
Reserved Matters Submission
SWS Drainage Results



Date	21/02/2025
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File 250219 Combined Network...

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Network 2020.1

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW16	450479.097	306351.444	450479.097	306351.444	Required	
SW17	450486.444	306341.607	450486.444	306341.607	Required	
SW18	450494.478	306331.099	450494.478	306331.099	Required	
SW19	450499.780	306322.395	450499.780	306322.395	Required	
SW20	450498.924	306315.889	450498.924	306315.889	Required	
SW21	450513.361	306296.750	450513.361	306296.750	Required	
SW22	450526.794	306306.871	450526.794	306306.871	Required	
SW23	450536.568	306314.194	450536.568	306314.194	Required	
SW24	450555.574	306328.564	450555.574	306328.564	Required	
SW25	450525.519	306412.792	450525.519	306412.792	Required	
SW26	450523.499	306403.914	450523.499	306403.914	Required	
SW27	450525.277	306393.613	450525.277	306393.613	Required	
SW28	450529.855	306384.829	450529.855	306384.829	Required	
SW29	450541.725	306368.945	450541.725	306368.945	Required	
SW30	450550.886	306356.130	450550.886	306356.130	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW31	450609.086	306368.769	450609.086	306368.769	Required	
SW32	450597.946	306361.238	450597.946	306361.238	Required	
SW33	450588.228	306353.877	450588.228	306353.877	Required	
SW34	450570.994	306340.479	450570.994	306340.479	Required	
SW35	450565.591	306336.244	450565.591	306336.244	Required	
SW36	450573.635	306325.829	450573.635	306325.829	Required	
SW37	450609.393	306324.450	450609.393	306324.450	Required	
HD38	450558.632	306511.515	450558.632	306511.515	Required	
HD39	450538.990	306440.237	450538.990	306440.237	Required	
HD40	450545.065	306452.271	450545.065	306452.271	Required	
SW41	450561.391	306444.850	450561.391	306444.850	Required	
SW42	450579.659	306436.344	450579.659	306436.344	Required	
SW43	450570.078	306401.323	450570.078	306401.323	Required	
SW44	450582.097	306410.891	450582.097	306410.891	Required	
SW45	450590.330	306431.515	450590.330	306431.515	Required	

Ratby Phase 2
Reserved Matters Submission
SWS Drainage Results



Designed by J.Nicholson
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Network 2020.1

	MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
	SW46	450614.446	306420.345	450614.446	306420.345	Required	
	SW47	450633.971	306475.844	450633.971	306475.844	Required	
	SW48	450636.669	306469.964	450636.669	306469.964	Required	
	SW49	450641.375	306459.660	450641.375	306459.660	Required	
	SW50	450644.694	306452.637	450644.694	306452.637	Required	
	SW51	450648.979	306443.040	450648.979	306443.040	Required	
	SW52	450644.305	306432.413	450644.305	306432.413	Required	
	SW53	450586.084	306444.874	450586.084	306444.874	Required	
	SW54	450602.274	306437.066	450602.274	306437.066	Required	
	SW55	450613.329	306431.999	450613.329	306431.999	Required	
	SW56	450633.598	306422.641	450633.598	306422.641	Required	
	SW57	450638.896	306420.317	450638.896	306420.317	Required	
	SW58	450634.614	306411.052	450634.614	306411.052	Required	
	SW59	450642.161	306407.535	450642.161	306407.535	Required	
	SW60	450654.574	306412.611	450654.574	306412.611	Required	

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5 Manchester Square London W1U 3PD	Ratby Phase 2 Reserved Matters Submission SWS Drainage Results	
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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW61	450669.707	306405.445	450669.707	306405.445	Required	
SW62	450670.318	306395.226	450670.318	306395.226	Required	
SW63	450670.854	306370.342	450670.854	306370.342	Required	
SW64	450631.834	306316.740	450631.834	306316.740	Required	
SW65	450634.264	306310.092	450634.264	306310.092	Required	
	450707.730	306248.880			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	SW01	110.965	109.615	1.200	Open Manhole	1200
S1.001	o	150	SW02	110.885	109.535	1.200	Open Manhole	1200
S1.002	o	150	SW03	110.715	109.365	1.200	Open Manhole	1200
S1.003	o	225	SW04	110.550	109.125	1.200	Open Manhole	1200
S1.004	o	225	SW05	110.375	108.950	1.200	Open Manhole	1200
S1.005	o	225	SW06	110.215	108.790	1.200	Open Manhole	1200
S1.006	o	225	SW07	110.375	108.730	1.420	Open Manhole	1200
S1.007	o	225	SW08	110.210	108.665	1.320	Open Manhole	1200
S1.008	o	300	SW09	110.000	108.500	1.200	Open Manhole	1200
S1.009	o	300	SW10	109.755	108.255	1.200	Open Manhole	1200
S1.010	o	300	SW11	109.510	108.010	1.200	Open Manhole	1200
S2.000	o	150	SW12	110.385	109.035	1.200	Open Manhole	1200
S1.011	o	375	SW13	109.610	107.865	1.370	Open Manhole	1500
S1.012	o	375	SW14	109.465	107.800	1.290	Open Manhole	1500
S1.013	o	375	SW15	109.415	107.780	1.260	Open Manhole	1500
S1.014	o	375	SW16	109.320	107.730	1.215	Open Manhole	1500
S1.015	o	375	SW17	109.450	107.690	1.385	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	5.592	69.9	SW02	110.885	109.535	1.200	Open Manhole	1200
S1.001	13.299	78.2	SW03	110.715	109.365	1.200	Open Manhole	1200
S1.002	12.655	76.7	SW04	110.550	109.200	1.200	Open Manhole	1200
S1.003	12.059	68.9	SW05	110.375	108.950	1.200	Open Manhole	1200
S1.004	23.979	149.9	SW06	110.215	108.790	1.200	Open Manhole	1200
S1.005	9.965	166.1	SW07	110.375	108.730	1.420	Open Manhole	1200
S1.006	10.119	155.7	SW08	110.210	108.665	1.320	Open Manhole	1200
S1.007	12.605	140.1	SW09	110.000	108.575	1.200	Open Manhole	1200
S1.008	10.292	42.0	SW10	109.755	108.255	1.200	Open Manhole	1200
S1.009	7.560	30.9	SW11	109.510	108.010	1.200	Open Manhole	1200
S1.010	15.612	223.0	SW13	109.610	107.940	1.370	Open Manhole	1500
S2.000	32.041	33.9	SW13	109.610	108.090	1.370	Open Manhole	1500
S1.011	15.297	235.3	SW14	109.465	107.800	1.290	Open Manhole	1500
S1.012	4.895	244.8	SW15	109.415	107.780	1.260	Open Manhole	1500
S1.013	13.675	273.5	SW16	109.320	107.730	1.215	Open Manhole	1500
S1.014	12.278	307.0	SW17	109.450	107.690	1.385	Open Manhole	1500
S1.015	13.227	293.9	SW18	109.435	107.645	1.415	Open Manhole	1500

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.016	o	375	SW18	109.435	107.645	1.415	Open Manhole	1500
S1.017	o	375	SW19	109.310	107.610	1.325	Open Manhole	1500
S1.018	o	450	SW20	109.080	107.430	1.200	Open Manhole	1500
S1.019	o	450	SW21	108.500	107.150	0.900	Open Manhole	1500
S1.020	o	450	SW22	108.780	107.105	1.225	Open Manhole	1500
S1.021	o	450	SW23	109.075	107.070	1.555	Open Manhole	1500
S1.022	o	450	SW24	109.665	107.005	2.210	Open Manhole	1500
S3.000	o	225	SW25	111.185	109.760	1.200	Open Manhole	1200
S3.001	o	225	SW26	111.175	109.705	1.245	Open Manhole	1200
S3.002	o	225	SW27	111.060	109.635	1.200	Open Manhole	1200
S3.003	o	300	SW28	110.950	109.450	1.200	Open Manhole	1200
S3.004	o	300	SW29	110.750	109.250	1.200	Open Manhole	1200
S3.005	o	300	SW30	110.595	109.045	1.250	Open Manhole	1200
S4.000	o	150	SW31	109.275	107.925	1.200	Open Manhole	1200
S4.001	o	150	SW32	109.450	107.790	1.510	Open Manhole	1200
S4.002	o	225	SW33	109.575	107.590	1.760	Open Manhole	1200
S4.003	o	225	SW34	109.775	107.455	2.095	Open Manhole	1200
S1.023	o	600	SW35	109.690	106.800	2.290	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.016	10.192	291.2	SW19	109.310	107.610	1.325	Open Manhole	1500
S1.017	6.562	62.5	SW20	109.080	107.505	1.200	Open Manhole	1500
S1.018	23.973	85.6	SW21	108.500	107.150	0.900	Open Manhole	1500
S1.019	16.819	373.8	SW22	108.780	107.105	1.225	Open Manhole	1500
S1.020	12.213	348.9	SW23	109.075	107.070	1.555	Open Manhole	1500
S1.021	23.827	366.6	SW24	109.665	107.005	2.210	Open Manhole	1500
S1.022	12.622	229.5	SW35	109.690	106.950	2.290	Open Manhole	1500
S3.000	9.105	165.5	SW26	111.175	109.705	1.245	Open Manhole	1200
S3.001	10.453	149.3	SW27	111.060	109.635	1.200	Open Manhole	1200
S3.002	9.905	90.0	SW28	110.950	109.525	1.200	Open Manhole	1200
S3.003	19.829	99.1	SW29	110.750	109.250	1.200	Open Manhole	1200
S3.004	15.753	98.5	SW30	110.595	109.090	1.205	Open Manhole	1200
S3.005	24.732	12.7	SW35	109.690	107.100	2.290	Open Manhole	1500
S4.000	13.447	99.6	SW32	109.450	107.790	1.510	Open Manhole	1200
S4.001	12.191	97.5	SW33	109.575	107.665	1.760	Open Manhole	1200
S4.002	21.829	161.7	SW34	109.775	107.455	2.095	Open Manhole	1200
S4.003	6.865	24.5	SW35	109.690	107.175	2.290	Open Manhole	1500
S1.023	13.160	131.6	SW36	109.200	106.700	1.900	Open Manhole	1500

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.024	o	600	SW36	109.200	106.700	1.900	Open Manhole	1500
S1.025	o	600	SW37	107.800	106.450	0.750	Open Manhole	1500
S5.000	o	225	HD38	111.350	109.925	1.200	Open Manhole	1200
S6.000	o	225	HD39	111.025	109.600	1.200	Open Manhole	1200
S5.001	o	225	HD40	110.925	109.500	1.200	Open Manhole	1200
S5.002	o	300	SW41	110.625	109.125	1.200	Open Manhole	1200
S5.003	o	300	SW42	110.685	109.035	1.350	Open Manhole	1200
S7.000	o	225	SW43	110.815	109.390	1.200	Open Manhole	1200
S7.001	o	225	SW44	110.610	109.185	1.200	Open Manhole	1200
S5.004	o	300	SW45	110.535	108.985	1.250	Open Manhole	1200
S5.005	o	300	SW46	109.950	108.450	1.200	Open Manhole	1200
S8.000	o	225	SW47	110.510	108.605	1.680	Open Manhole	1200
S8.001	o	225	SW48	110.350	108.565	1.560	Open Manhole	1200
S8.002	o	225	SW49	110.085	108.495	1.365	Open Manhole	1200
S8.003	o	225	SW50	109.905	108.115	1.565	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.024	35.784	143.1	SW37	107.800	106.450	0.750	Open Manhole	1500
S1.025	5.000#	20.0	SW64	107.800	106.200	1.000	Open Manhole	1500
S5.000	60.778	143.0	HD40	110.925	109.500	1.200	Open Manhole	1200
S6.000	13.481	134.8	HD40	110.925	109.500	1.200	Open Manhole	1200
S5.001	17.933	59.8	SW41	110.625	109.200	1.200	Open Manhole	1200
S5.002	20.151	223.9	SW42	110.685	109.035	1.350	Open Manhole	1200
S5.003	11.713	234.3	SW45	110.535	108.985	1.250	Open Manhole	1200
S7.000	15.363	74.9	SW44	110.610	109.185	1.200	Open Manhole	1200
S7.001	22.207	177.7	SW45	110.535	109.060	1.250	Open Manhole	1200
S5.004	26.577	49.7	SW46	109.950	108.450	1.200	Open Manhole	1200
S5.005	22.206	20.0	SW58	109.175	107.340	1.535	Open Manhole	1500
S8.000	6.469	161.7	SW48	110.350	108.565	1.560	Open Manhole	1200
S8.001	11.328	161.8	SW49	110.085	108.495	1.365	Open Manhole	1200
S8.002	7.768	20.4	SW50	109.905	108.115	1.565	Open Manhole	1200
S8.003	10.510	21.0	SW51	109.660	107.615	1.820	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S8.004	o	225	SW51	109.660	107.615	1.820	Open Manhole	1200
S8.005	o	225	SW52	109.425	107.545	1.655	Open Manhole	1200
S9.000	o	150	SW53	110.795	109.395	1.250	Open Manhole	1200
S9.001	o	150	SW54	110.475	109.125	1.200	Open Manhole	1200
S9.002	o	225	SW55	110.065	108.640	1.200	Open Manhole	1200
S9.003	o	225	SW56	109.325	107.900	1.200	Open Manhole	1200
S8.006	o	375	SW57	109.040	107.315	1.350	Open Manhole	1500
S5.006	o	375	SW58	109.175	107.265	1.535	Open Manhole	1500
S5.007	o	450	SW59	108.925	107.090	1.385	Open Manhole	1500
S10.000	o	150	SW60	108.765	107.415	1.200	Open Manhole	1200
S10.001	o	150	SW61	108.255	107.000	1.105	Open Manhole	1200
S5.008	o	450	SW62	107.950	106.570	0.930	Open Manhole	1500
S5.009	o	450	SW63	107.800	106.500	0.850	Open Manhole	1500
S1.026	o	150	SW64	107.800	106.200	1.450	Open Manhole	1500
S1.027	o	150	SW65	107.800	106.100	1.550	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S8.004	11.609	165.8	SW52	109.425	107.545	1.655	Open Manhole	1200
S8.005	13.250	165.6	SW57	109.040	107.465	1.350	Open Manhole	1500
S9.000	17.974	66.6	SW54	110.475	109.125	1.200	Open Manhole	1200
S9.001	12.161	29.7	SW55	110.065	108.715	1.200	Open Manhole	1200
S9.002	22.325	30.2	SW56	109.325	107.900	1.200	Open Manhole	1200
S9.003	5.785	13.3	SW57	109.040	107.465	1.350	Open Manhole	1500
S8.006	10.207	204.1	SW58	109.175	107.265	1.535	Open Manhole	1500
S5.006	8.326	83.3	SW59	108.925	107.165	1.385	Open Manhole	1500
S5.007	30.730	59.1	SW62	107.950	106.570	0.930	Open Manhole	1500
S10.000	16.744	40.3	SW61	108.255	107.000	1.105	Open Manhole	1200
S10.001	10.237	78.7	SW62	107.950	106.870	0.930	Open Manhole	1500
S5.008	24.889	355.6	SW63	107.800	106.500	0.850	Open Manhole	1500
S5.009	5.000#	16.7	SW64	107.800	106.200	1.150	Open Manhole	1500
S1.026	7.078	70.8	SW65	107.800	106.100	1.550	Open Manhole	1200
S1.027	95.626	18.6		102.500	100.950	1.400	Open Manhole	0

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Innovyze				Network 2020.1		
Area Summary for Storm						
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.020	0.020	0.020
1.001	-	-	100	0.015	0.015	0.015
1.002	-	-	100	0.029	0.029	0.029
1.003	-	-	100	0.035	0.035	0.035
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.035	0.035	0.035
1.008	-	-	100	0.027	0.027	0.027
1.009	-	-	100	0.025	0.025	0.025
1.010	-	-	100	0.016	0.016	0.016
2.000	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.017	0.017	0.017
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.036	0.036	0.036
1.014	-	-	100	0.012	0.012	0.012
1.015	-	-	100	0.016	0.016	0.016
1.016	-	-	100	0.029	0.029	0.029
1.017	-	-	100	0.011	0.011	0.011
1.018	-	-	100	0.000	0.000	0.000
1.019	-	-	100	0.006	0.006	0.006
1.020	-	-	100	0.033	0.033	0.033
1.021	-	-	100	0.036	0.036	0.036
1.022	-	-	100	0.017	0.017	0.017
3.000	-	-	100	0.039	0.039	0.039
3.001	-	-	100	0.038	0.038	0.038
3.002	-	-	100	0.009	0.009	0.009
3.003	-	-	100	0.054	0.054	0.054
3.004	-	-	100	0.076	0.076	0.076
3.005	-	-	100	0.081	0.081	0.081
4.000	-	-	100	0.055	0.055	0.055
4.001	-	-	100	0.022	0.022	0.022
4.002	-	-	100	0.023	0.023	0.023
4.003	-	-	100	0.018	0.018	0.018
1.023	-	-	100	0.034	0.034	0.034
1.024	-	-	100	0.040	0.040	0.040
1.025	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.044	0.044	0.044
6.000	-	-	100	0.033	0.033	0.033
5.001	-	-	100	0.074	0.074	0.074
5.002	-	-	100	0.026	0.026	0.026
5.003	-	-	100	0.024	0.024	0.024
7.000	-	-	100	0.055	0.055	0.055
7.001	-	-	100	0.036	0.036	0.036
5.004	-	-	100	0.033	0.033	0.033
5.005	-	-	100	0.036	0.036	0.036
8.000	-	-	100	0.035	0.035	0.035
8.001	-	-	100	0.034	0.034	0.034
8.002	-	-	100	0.026	0.026	0.026
8.003	-	-	100	0.025	0.025	0.025
8.004	-	-	100	0.034	0.034	0.034
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
8.005	-	-	100	0.029	0.029	0.029
9.000	-	-	100	0.012	0.012	0.012
9.001	-	-	100	0.033	0.033	0.033
9.002	-	-	100	0.018	0.018	0.018
9.003	-	-	100	0.020	0.020	0.020
8.006	-	-	100	0.012	0.012	0.012
5.006	-	-	100	0.051	0.051	0.051
5.007	-	-	100	0.027	0.027	0.027
10.000	-	-	100	0.033	0.033	0.033
10.001	-	-	100	0.034	0.034	0.034
5.008	-	-	100	0.000	0.000	0.000
5.009	-	-	100	0.000	0.000	0.000
1.026	-	-	100	0.000	0.000	0.000
1.027	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.688	1.688	1.688

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.027		102.500	100.950	0.000	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SW64, DS/PN: S1.026, Volume (m³): 4.4

Unit Reference	MD-SHE-0141-9900-1300-9900
Design Head (m)	1.300
Design Flow (l/s)	9.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	106.200
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	9.9
Flush-Flo™	0.382	9.9
Kick-Flo®	0.825	8.0
Mean Flow over Head Range	-	8.6

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)
0.100	5.1	1.200	9.5	3.000	14.7	7.000	22.1
0.200	9.2	1.400	10.3	3.500	15.8	7.500	22.8
0.300	9.8	1.600	10.9	4.000	16.9	8.000	23.5
0.400	9.9	1.800	11.5	4.500	17.8	8.500	24.2
0.500	9.8	2.000	12.1	5.000	18.8	9.000	24.9
0.600	9.5	2.200	12.7	5.500	19.6	9.500	25.6
0.800	8.3	2.400	13.2	6.000	20.5		
1.000	8.8	2.600	13.7	6.500	21.3		

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Storage Structures for Storm

Tank or Pond Manhole: SW64, DS/PN: S1.026

Invert Level (m) 106.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	784.0	1.600	1834.0

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

PN	US/MH Name	Surcharged Flooded		Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)					
S1.000	SW01	-0.104	0.000	0.20		3.5	OK	
S1.001	SW02	-0.092	0.000	0.31		5.7	OK	
S1.002	SW03	-0.070	0.000	0.54		10.0	OK	
S1.003	SW04	-0.143	0.000	0.28		15.1	OK	
S1.004	SW05	-0.127	0.000	0.39		15.2	OK	
S1.005	SW06	-0.119	0.000	0.45		15.0	OK	
S1.006	SW07	-0.121	0.000	0.44		15.1	OK	
S1.007	SW08	-0.108	0.000	0.52		19.7	OK	
S1.008	SW09	-0.211	0.000	0.19		23.1	OK	
S1.009	SW10	-0.205	0.000	0.21		26.4	OK	
S1.010	SW11	-0.157	0.000	0.46		28.6	OK	
S2.000	SW12	-0.150	0.000	0.00		0.0	OK	
S1.011	SW13	-0.232	0.000	0.29		30.6	OK	
S1.012	SW14	-0.211	0.000	0.39		30.4	OK	
S1.013	SW15	-0.214	0.000	0.36		34.4	OK	
S1.014	SW16	-0.205	0.000	0.41		35.6	OK	
S1.015	SW17	-0.202	0.000	0.40		36.8	OK	
S1.016	SW18	-0.196	0.000	0.46		39.9	OK	
S1.017	SW19	-0.229	0.000	0.32		41.0	OK	
S1.018	SW20	-0.338	0.000	0.14		40.9	OK	
S1.019	SW21	-0.260	0.000	0.33		41.2	OK	

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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.
S1.020	SW22	15 Summer	1	+0%	100/15 Summer			
S1.021	SW23	15 Summer	1	+0%	100/15 Summer			
S1.022	SW24	15 Summer	1	+0%	100/15 Summer			
S3.000	SW25	15 Summer	1	+0%	100/15 Summer			
S3.001	SW26	15 Summer	1	+0%	100/15 Summer			
S3.002	SW27	15 Summer	1	+0%	100/15 Summer			
S3.003	SW28	15 Summer	1	+0%	100/15 Summer			
S3.004	SW29	15 Summer	1	+0%	30/15 Summer			
S3.005	SW30	15 Summer	1	+0%				
S4.000	SW31	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S4.001	SW32	15 Summer	1	+0%	30/15 Summer			
S4.002	SW33	15 Summer	1	+0%	30/15 Summer			
S4.003	SW34	15 Summer	1	+0%	100/15 Summer			
S1.023	SW35	30 Summer	1	+0%	100/15 Summer			
S1.024	SW36	30 Summer	1	+0%	100/360 Summer			
S1.025	SW37	30 Summer	1	+0%	100/60 Summer			
S5.000	HD38	15 Summer	1	+0%	100/15 Summer			
S6.000	HD39	15 Summer	1	+0%	100/15 Summer			
S5.001	HD40	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S5.002	SW41	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S5.003	SW42	15 Summer	1	+0%	30/15 Summer			
S7.000	SW43	15 Summer	1	+0%	100/15 Summer			
S7.001	SW44	15 Summer	1	+0%	30/15 Summer			
S5.004	SW45	15 Summer	1	+0%	100/15 Summer			
S5.005	SW46	15 Summer	1	+0%	100/15 Summer			
S8.000	SW47	15 Summer	1	+0%	100/15 Summer			
S8.001	SW48	15 Summer	1	+0%	30/15 Summer			
S8.002	SW49	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S8.003	SW50	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S8.004	SW51	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S8.005	SW52	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S9.000	SW53	15 Summer	1	+0%	100/15 Summer			
S9.001	SW54	15 Summer	1	+0%	100/15 Summer			
S9.002	SW55	15 Summer	1	+0%	100/15 Summer			
S9.003	SW56	15 Summer	1	+0%	30/15 Summer			
S8.006	SW57	15 Summer	1	+0%	30/15 Summer			
S5.006	SW58	15 Summer	1	+0%	30/15 Summer			
S5.007	SW59	15 Summer	1	+0%	30/15 Summer			
S10.000	SW60	15 Summer	1	+0%	30/15 Summer			
S10.001	SW61	15 Summer	1	+0%	30/15 Summer	100/15 Summer		
S5.008	SW62	15 Summer	1	+0%	30/15 Summer			
S5.009	SW63	15 Summer	1	+0%	100/15 Summer			
S1.026	SW64	480 Summer	1	+0%	1/30 Summer			
S1.027	SW65	480 Summer	1	+0%				
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<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>									
		Water Surcharged Flooded	Half Drain Pipe						
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Pipe Flow (l/s)	Status
S1.020	SW22	107.295	-0.260	0.000	0.37			43.7	OK
S1.021	SW23	107.250	-0.270	0.000	0.33			45.8	OK
S1.022	SW24	107.174	-0.281	0.000	0.30			47.1	OK
S3.000	SW25	109.830	-0.155	0.000	0.21			6.9	OK
S3.001	SW26	109.798	-0.132	0.000	0.35			12.5	OK
S3.002	SW27	109.720	-0.140	0.000	0.30			13.8	OK
S3.003	SW28	109.547	-0.203	0.000	0.22			21.7	OK
S3.004	SW29	109.373	-0.177	0.000	0.35			32.9	OK
S3.005	SW30	109.126	-0.219	0.000	0.16			44.7	OK
S4.000	SW31	108.009	-0.066	0.000	0.60			9.7	OK
S4.001	SW32	107.893	-0.047	0.000	0.79			12.9	OK
S4.002	SW33	107.695	-0.120	0.000	0.44			16.3	OK
S4.003	SW34	107.532	-0.148	0.000	0.25			18.9	OK
S1.023	SW35	107.016	-0.384	0.000	0.28			96.9	OK
S1.024	SW36	106.886	-0.414	0.000	0.21			101.5	OK
S1.025	SW37	106.633	-0.417	0.000	0.20			101.1	OK
S5.000	HD38	109.991	-0.159	0.000	0.18			7.5	OK
S6.000	HD39	109.658	-0.167	0.000	0.15			5.8	OK
S5.001	HD40	109.599	-0.126	0.000	0.40			24.0	OK
S5.002	SW41	109.263	-0.162	0.000	0.43			27.8	OK
S5.003	SW42	109.191	-0.144	0.000	0.53			30.9	OK
S7.000	SW43	109.455	-0.160	0.000	0.18			9.7	OK
S7.001	SW44	109.288	-0.122	0.000	0.42			15.0	OK
S5.004	SW45	109.109	-0.176	0.000	0.35			50.3	OK
S5.005	SW46	108.552	-0.198	0.000	0.25			55.0	OK
S8.000	SW47	108.675	-0.155	0.000	0.21			6.2	OK
S8.001	SW48	108.654	-0.136	0.000	0.32			11.2	OK
S8.002	SW49	108.558	-0.162	0.000	0.17			15.0	OK
S8.003	SW50	108.183	-0.157	0.000	0.20			18.7	OK
S8.004	SW51	107.755	-0.085	0.000	0.69			23.8	OK
S8.005	SW52	107.699	-0.071	0.000	0.80			28.0	OK
S9.000	SW53	109.427	-0.118	0.000	0.10			2.1	OK
S9.001	SW54	109.175	-0.100	0.000	0.24			7.0	OK
S9.002	SW55	108.690	-0.175	0.000	0.11			9.7	OK
S9.003	SW56	107.955	-0.170	0.000	0.14			12.6	OK
S8.006	SW57	107.548	-0.142	0.000	0.40			41.6	OK
S5.006	SW58	107.531	-0.109	0.000	0.84			103.4	OK
S5.007	SW59	107.258	-0.282	0.000	0.30			107.3	OK
S10.000	SW60	107.463	-0.102	0.000	0.22			5.8	OK
S10.001	SW61	107.086	-0.064	0.000	0.61			10.9	OK
S5.008	SW62	106.880	-0.140	0.000	0.81			115.8	OK
S5.009	SW63	106.691	-0.259	0.000	0.38			115.8	OK
S1.026	SW64	106.495	0.145	0.000	0.54			9.8	SURCHARGED
S1.027	SW65	106.149	-0.101	0.000	0.24			9.8	OK
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Pell Frischmann

5 Manchester Square
London
W1U 3PD

Date 21/02/2025
File 250219 Combined Network...

Innovyze

Ratby Phase 2
Reserved Matters Submission
SWS Drainage Results

Designed by J.Nicholson
Checked by L. Hulka

Network 2020.1

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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 2.000

Hot Start Level (mm) 0

Inlet Coeffiecient 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 Storage Structures 1

Number of Online Controls 1

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

FSR

Ratio R 0.400

Region England and Wales Cv (Summer) 1.000

M5-60 (mm)

20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

DVD Status OFF

Analysis Timestep

Fine Inertia Status OFF

DTS Status

OFF

Profile(s)

Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 0, 40

	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
PN	Name	Storm	Period	Change	Surchage	Flood	Overflow	Act.	Level
									(m)
S1.000	SW01	15 Summer	30	+0%	30/15 Summer				109.793
S1.001	SW02	15 Summer	30	+0%	30/15 Summer				109.774
S1.002	SW03	15 Summer	30	+0%	30/15 Summer				109.679
S1.003	SW04	15 Summer	30	+0%	100/15 Summer				109.331
S1.004	SW05	15 Summer	30	+0%	30/15 Summer				109.238
S1.005	SW06	15 Summer	30	+0%	30/15 Summer				109.085
S1.006	SW07	15 Summer	30	+0%	30/15 Summer				109.013
S1.007	SW08	15 Summer	30	+0%	30/15 Summer				108.943
S1.008	SW09	15 Summer	30	+0%	100/15 Summer				108.647
S1.009	SW10	15 Summer	30	+0%	100/15 Summer				108.419
S1.010	SW11	15 Summer	30	+0%	30/15 Summer				108.330
S2.000	SW12	15 Summer	30	+0%					109.035
S1.011	SW13	15 Summer	30	+0%	100/15 Summer				108.215
S1.012	SW14	15 Summer	30	+0%	100/15 Summer				108.171
S1.013	SW15	15 Summer	30	+0%	100/15 Summer				108.151
S1.014	SW16	15 Summer	30	+0%	30/15 Summer				108.108
S1.015	SW17	15 Summer	30	+0%	30/15 Summer				108.067
S1.016	SW18	30 Summer	30	+0%	100/15 Summer				108.020
S1.017	SW19	15 Summer	30	+0%	100/15 Summer				107.865
S1.018	SW20	15 Summer	30	+0%	100/15 Summer				107.612
S1.019	SW21	15 Summer	30	+0%	100/15 Summer				107.481

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
S1.000	SW01	0.028	0.000	0.50			8.8	SURCHARGED	
S1.001	SW02	0.089	0.000	0.79			14.6	SURCHARGED	
S1.002	SW03	0.164	0.000	1.41			26.1	SURCHARGED	
S1.003	SW04	-0.019	0.000	0.76			40.9	OK	
S1.004	SW05	0.063	0.000	0.97			37.9	SURCHARGED	
S1.005	SW06	0.070	0.000	1.13			37.9	SURCHARGED	
S1.006	SW07	0.058	0.000	1.11			38.5	SURCHARGED	
S1.007	SW08	0.053	0.000	1.27			47.9	SURCHARGED	
S1.008	SW09	-0.153	0.000	0.47			58.8	OK	
S1.009	SW10	-0.136	0.000	0.56			69.2	OK	
S1.010	SW11	0.020	0.000	1.21			75.7	SURCHARGED	
S2.000	SW12	-0.150	0.000	0.00			0.0	OK	
S1.011	SW13	-0.025	0.000	0.74			76.7	OK	
S1.012	SW14	-0.004	0.000	1.00			76.8	OK	
S1.013	SW15	-0.004	0.000	0.90			85.6	OK	
S1.014	SW16	0.003	0.000	1.02			88.0	SURCHARGED	
S1.015	SW17	0.002	0.000	0.99			90.1	SURCHARGED	
S1.016	SW18	0.000	0.000	1.04			89.5	OK	
S1.017	SW19	-0.120	0.000	0.78			98.8	OK	
S1.018	SW20	-0.268	0.000	0.34			99.5	OK	
S1.019	SW21	-0.119	0.000	0.80			99.0	OK	

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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.020	SW22	15 Summer	30	+0%	100/15 Summer			
S1.021	SW23	30 Summer	30	+0%	100/15 Summer			
S1.022	SW24	30 Summer	30	+0%	100/15 Summer			
S3.000	SW25	15 Summer	30	+0%	100/15 Summer			
S3.001	SW26	15 Summer	30	+0%	100/15 Summer			
S3.002	SW27	15 Summer	30	+0%	100/15 Summer			
S3.003	SW28	15 Summer	30	+0%	100/15 Summer			
S3.004	SW29	15 Summer	30	+0%	30/15 Summer			
S3.005	SW30	15 Summer	30	+0%				
S4.000	SW31	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S4.001	SW32	15 Summer	30	+0%	30/15 Summer			
S4.002	SW33	15 Summer	30	+0%	30/15 Summer			
S4.003	SW34	15 Summer	30	+0%	100/15 Summer			
S1.023	SW35	15 Summer	30	+0%	100/15 Summer			
S1.024	SW36	15 Summer	30	+0%	100/360 Summer			
S1.025	SW37	480 Summer	30	+0%	100/60 Summer			
S5.000	HD38	15 Summer	30	+0%	100/15 Summer			
S6.000	HD39	15 Summer	30	+0%	100/15 Summer			
S5.001	HD40	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S5.002	SW41	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S5.003	SW42	15 Summer	30	+0%	30/15 Summer			
S7.000	SW43	15 Summer	30	+0%	100/15 Summer			
S7.001	SW44	15 Summer	30	+0%	30/15 Summer			
S5.004	SW45	15 Summer	30	+0%	100/15 Summer			
S5.005	SW46	15 Summer	30	+0%	100/15 Summer			
S8.000	SW47	15 Summer	30	+0%	100/15 Summer			
S8.001	SW48	15 Summer	30	+0%	30/15 Summer			
S8.002	SW49	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S8.003	SW50	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S8.004	SW51	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S8.005	SW52	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S9.000	SW53	15 Summer	30	+0%	100/15 Summer			
S9.001	SW54	15 Summer	30	+0%	100/15 Summer			
S9.002	SW55	15 Summer	30	+0%	100/15 Summer			
S9.003	SW56	15 Summer	30	+0%	30/15 Summer			
S8.006	SW57	15 Summer	30	+0%	30/15 Summer			
S5.006	SW58	15 Summer	30	+0%	30/15 Summer			
S5.007	SW59	15 Summer	30	+0%	30/15 Summer			
S10.000	SW60	15 Summer	30	+0%	30/15 Summer			
S10.001	SW61	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
S5.008	SW62	15 Summer	30	+0%	30/15 Summer			
S5.009	SW63	480 Summer	30	+0%	100/15 Summer			
S1.026	SW64	480 Summer	30	+0%	1/30 Summer			
S1.027	SW65	240 Winter	30	+0%				
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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>								
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.020	SW22	107.436	-0.119	0.000	0.88		103.0	OK
S1.021	SW23	107.370	-0.150	0.000	0.77		107.3	OK
S1.022	SW24	107.287	-0.168	0.000	0.71		110.9	OK
S3.000	SW25	109.906	-0.079	0.000	0.51		16.9	OK
S3.001	SW26	109.885	-0.045	0.000	0.98		35.0	OK
S3.002	SW27	109.798	-0.062	0.000	0.85		38.9	OK
S3.003	SW28	109.642	-0.108	0.000	0.66		64.2	OK
S3.004	SW29	109.556	0.006	0.000	1.02		96.1	SURCHARGED
S3.005	SW30	109.192	-0.153	0.000	0.48		133.5	OK
S4.000	SW31	108.487	0.412	0.000	1.35		21.9	SURCHARGED
S4.001	SW32	108.242	0.302	0.000	1.81		29.5	SURCHARGED
S4.002	SW33	107.817	0.002	0.000	1.02		37.9	SURCHARGED
S4.003	SW34	107.583	-0.097	0.000	0.61		45.2	OK
S1.023	SW35	107.214	-0.186	0.000	0.80		277.7	OK
S1.024	SW36	107.041	-0.259	0.000	0.60		291.0	OK
S1.025	SW37	106.869	-0.181	0.000	0.12		58.9	OK
S5.000	HD38	110.032	-0.118	0.000	0.44		18.4	OK
S6.000	HD39	109.802	-0.023	0.000	0.34		13.4	OK
S5.001	HD40	109.778	0.053	0.000	0.99		59.6	SURCHARGED
S5.002	SW41	109.478	0.053	0.000	1.08		69.6	SURCHARGED
S5.003	SW42	109.373	0.038	0.000	1.36		79.3	SURCHARGED
S7.000	SW43	109.496	-0.119	0.000	0.45		23.9	OK
S7.001	SW44	109.441	0.031	0.000	1.12		40.0	SURCHARGED
S5.004	SW45	109.217	-0.068	0.000	0.94		133.5	OK
S5.005	SW46	108.634	-0.116	0.000	0.68		148.6	OK
S8.000	SW47	108.816	-0.014	0.000	0.50		14.9	OK
S8.001	SW48	108.803	0.013	0.000	0.89		30.8	SURCHARGED
S8.002	SW49	108.763	0.043	0.000	0.45		39.4	SURCHARGED
S8.003	SW50	108.701	0.361	0.000	0.49		46.5	SURCHARGED
S8.004	SW51	108.594	0.754	0.000	1.67		57.4	SURCHARGED
S8.005	SW52	108.402	0.632	0.000	1.94		67.6	SURCHARGED
S9.000	SW53	109.447	-0.098	0.000	0.26		5.2	OK
S9.001	SW54	109.219	-0.056	0.000	0.71		21.3	OK
S9.002	SW55	108.731	-0.134	0.000	0.35		30.0	OK
S9.003	SW56	108.152	0.027	0.000	0.39		36.0	SURCHARGED
S8.006	SW57	108.099	0.409	0.000	1.03		106.0	SURCHARGED
S5.006	SW58	108.047	0.407	0.000	2.20		272.5	SURCHARGED
S5.007	SW59	107.562	0.022	0.000	0.76		277.6	SURCHARGED
S10.000	SW60	107.601	0.036	0.000	0.51		13.2	SURCHARGED
S10.001	SW61	107.502	0.352	0.000	1.41		25.3	SURCHARGED
S5.008	SW62	107.247	0.227	0.000	2.11		301.8	SURCHARGED
S5.009	SW63	106.869	-0.081	0.000	0.17		52.8	OK
S1.026	SW64	106.869	0.519	0.000	0.55		9.9	SURCHARGED
S1.027	SW65	106.150	-0.100	0.000	0.24		9.9	OK
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	<table><thead><tr><th>PN</th><th>US/MH Name</th><th>Level Exceeded</th></tr></thead><tbody><tr><td>S1.020</td><td>SW22</td><td></td></tr><tr><td>S1.021</td><td>SW23</td><td></td></tr><tr><td>S1.022</td><td>SW24</td><td></td></tr><tr><td>S3.000</td><td>SW25</td><td></td></tr><tr><td>S3.001</td><td>SW26</td><td></td></tr><tr><td>S3.002</td><td>SW27</td><td></td></tr><tr><td>S3.003</td><td>SW28</td><td></td></tr><tr><td>S3.004</td><td>SW29</td><td></td></tr><tr><td>S3.005</td><td>SW30</td><td></td></tr><tr><td>S4.000</td><td>SW31</td><td>2</td></tr><tr><td>S4.001</td><td>SW32</td><td></td></tr><tr><td>S4.002</td><td>SW33</td><td></td></tr><tr><td>S4.003</td><td>SW34</td><td></td></tr><tr><td>S1.023</td><td>SW35</td><td></td></tr><tr><td>S1.024</td><td>SW36</td><td></td></tr><tr><td>S1.025</td><td>SW37</td><td></td></tr><tr><td>S5.000</td><td>HD38</td><td></td></tr><tr><td>S6.000</td><td>HD39</td><td></td></tr><tr><td>S5.001</td><td>HD40</td><td>2</td></tr><tr><td>S5.002</td><td>SW41</td><td>1</td></tr><tr><td>S5.003</td><td>SW42</td><td></td></tr><tr><td>S7.000</td><td>SW43</td><td></td></tr><tr><td>S7.001</td><td>SW44</td><td></td></tr><tr><td>S5.004</td><td>SW45</td><td></td></tr><tr><td>S5.005</td><td>SW46</td><td></td></tr><tr><td>S8.000</td><td>SW47</td><td></td></tr><tr><td>S8.001</td><td>SW48</td><td></td></tr><tr><td>S8.002</td><td>SW49</td><td>1</td></tr><tr><td>S8.003</td><td>SW50</td><td>1</td></tr><tr><td>S8.004</td><td>SW51</td><td>2</td></tr><tr><td>S8.005</td><td>SW52</td><td>1</td></tr><tr><td>S9.000</td><td>SW53</td><td></td></tr><tr><td>S9.001</td><td>SW54</td><td></td></tr><tr><td>S9.002</td><td>SW55</td><td></td></tr><tr><td>S9.003</td><td>SW56</td><td></td></tr><tr><td>S8.006</td><td>SW57</td><td></td></tr><tr><td>S5.006</td><td>SW58</td><td></td></tr><tr><td>S5.007</td><td>SW59</td><td></td></tr><tr><td>S10.000</td><td>SW60</td><td></td></tr><tr><td>S10.001</td><td>SW61</td><td>1</td></tr><tr><td>S5.008</td><td>SW62</td><td></td></tr><tr><td>S5.009</td><td>SW63</td><td></td></tr><tr><td>S1.026</td><td>SW64</td><td></td></tr><tr><td>S1.027</td><td>SW65</td><td></td></tr></tbody></table>	PN	US/MH Name	Level Exceeded	S1.020	SW22		S1.021	SW23		S1.022	SW24		S3.000	SW25		S3.001	SW26		S3.002	SW27		S3.003	SW28		S3.004	SW29		S3.005	SW30		S4.000	SW31	2	S4.001	SW32		S4.002	SW33		S4.003	SW34		S1.023	SW35		S1.024	SW36		S1.025	SW37		S5.000	HD38		S6.000	HD39		S5.001	HD40	2	S5.002	SW41	1	S5.003	SW42		S7.000	SW43		S7.001	SW44		S5.004	SW45		S5.005	SW46		S8.000	SW47		S8.001	SW48		S8.002	SW49	1	S8.003	SW50	1	S8.004	SW51	2	S8.005	SW52	1	S9.000	SW53		S9.001	SW54		S9.002	SW55		S9.003	SW56		S8.006	SW57		S5.006	SW58		S5.007	SW59		S10.000	SW60		S10.001	SW61	1	S5.008	SW62		S5.009	SW63		S1.026	SW64		S1.027	SW65		
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
S1.000	SW01	0.995	0.000	0.68			11.9	FLOOD RISK	
S1.001	SW02	1.034	0.000	1.06			19.5	FLOOD RISK	
S1.002	SW03	1.058	0.000	1.73			32.0	FLOOD RISK	
S1.003	SW04	0.722	0.000	1.02			54.5	SURCHARGED	
S1.004	SW05	0.728	0.000	1.28			49.7	SURCHARGED	
S1.005	SW06	0.635	0.000	1.51			50.7	SURCHARGED	
S1.006	SW07	0.573	0.000	1.55			53.8	SURCHARGED	
S1.007	SW08	0.535	0.000	1.74			65.6	SURCHARGED	
S1.008	SW09	0.357	0.000	0.64			79.1	SURCHARGED	
S1.009	SW10	0.497	0.000	0.76			94.0	SURCHARGED	
S1.010	SW11	0.597	0.000	1.62			101.5	SURCHARGED	
S2.000	SW12	-0.150	0.000	0.00			0.0	OK	
S1.011	SW13	0.476	0.000	1.04			108.6	SURCHARGED	
S1.012	SW14	0.474	0.000	1.41			108.4	SURCHARGED	
S1.013	SW15	0.434	0.000	1.32			125.4	SURCHARGED	
S1.014	SW16	0.374	0.000	1.52			131.6	SURCHARGED	
S1.015	SW17	0.300	0.000	1.54			139.6	SURCHARGED	
S1.016	SW18	0.224	0.000	1.78			154.1	SURCHARGED	
S1.017	SW19	0.115	0.000	1.26			159.2	SURCHARGED	
S1.018	SW20	0.065	0.000	0.54			157.0	SURCHARGED	
S1.019	SW21	0.266	0.000	1.30			160.9	SURCHARGED	

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<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.020	SW22	15 Summer	100	+40%	100/15 Summer			
S1.021	SW23	15 Summer	100	+40%	100/15 Summer			
S1.022	SW24	15 Summer	100	+40%	100/15 Summer			
S3.000	SW25	15 Summer	100	+40%	100/15 Summer			
S3.001	SW26	15 Summer	100	+40%	100/15 Summer			
S3.002	SW27	15 Summer	100	+40%	100/15 Summer			
S3.003	SW28	15 Summer	100	+40%	100/15 Summer			
S3.004	SW29	15 Summer	100	+40%	30/15 Summer			
S3.005	SW30	15 Summer	100	+40%				
S4.000	SW31	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S4.001	SW32	15 Summer	100	+40%	30/15 Summer			
S4.002	SW33	15 Summer	100	+40%	30/15 Summer			
S4.003	SW34	15 Summer	100	+40%	100/15 Summer			
S1.023	SW35	15 Summer	100	+40%	100/15 Summer			
S1.024	SW36	960 Summer	100	+40%	100/360 Summer			
S1.025	SW37	960 Summer	100	+40%	100/60 Summer			
S5.000	HD38	15 Summer	100	+40%	100/15 Summer			
S6.000	HD39	15 Summer	100	+40%	100/15 Summer			
S5.001	HD40	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S5.002	SW41	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S5.003	SW42	15 Summer	100	+40%	30/15 Summer			
S7.000	SW43	15 Summer	100	+40%	100/15 Summer			
S7.001	SW44	15 Summer	100	+40%	30/15 Summer			
S5.004	SW45	15 Summer	100	+40%	100/15 Summer			
S5.005	SW46	15 Summer	100	+40%	100/15 Summer			
S8.000	SW47	15 Summer	100	+40%	100/15 Summer			
S8.001	SW48	15 Summer	100	+40%	30/15 Summer			
S8.002	SW49	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S8.003	SW50	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S8.004	SW51	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S8.005	SW52	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S9.000	SW53	15 Summer	100	+40%	100/15 Summer			
S9.001	SW54	15 Summer	100	+40%	100/15 Summer			
S9.002	SW55	15 Summer	100	+40%	100/15 Summer			
S9.003	SW56	15 Summer	100	+40%	30/15 Summer			
S8.006	SW57	15 Summer	100	+40%	30/15 Summer			
S5.006	SW58	15 Summer	100	+40%	30/15 Summer			
S5.007	SW59	15 Summer	100	+40%	30/15 Summer			
S10.000	SW60	15 Summer	100	+40%	30/15 Summer			
S10.001	SW61	15 Summer	100	+40%	30/15 Summer	100/15 Summer		
S5.008	SW62	15 Summer	100	+40%	30/15 Summer			
S5.009	SW63	960 Summer	100	+40%	100/15 Summer			
S1.026	SW64	960 Summer	100	+40%	1/30 Summer			
S1.027	SW65	240 Winter	100	+40%				
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<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>									
		Water	Surcharged	Flooded			Half Drain	Pipe	
	US/MH	Level	Depth	Volume	Flow /	Overflow	Time	Flow	
PN	Name	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status
S1.020	SW22	107.800	0.245	0.000	1.47			171.5	SURCHARGED
S1.021	SW23	107.709	0.189	0.000	1.31			182.7	SURCHARGED
S1.022	SW24	107.608	0.153	0.000	1.21			189.3	SURCHARGED
S3.000	SW25	110.518	0.533	0.000	0.98			32.2	SURCHARGED
S3.001	SW26	110.480	0.550	0.000	1.61			57.4	SURCHARGED
S3.002	SW27	110.309	0.449	0.000	1.46			66.6	SURCHARGED
S3.003	SW28	110.115	0.365	0.000	1.07			104.3	SURCHARGED
S3.004	SW29	109.883	0.333	0.000	1.72			163.0	SURCHARGED
S3.005	SW30	109.258	-0.087	0.000	0.82			228.9	OK
S4.000	SW31	109.277	1.202	1.828	2.15			35.1	FLOOD
S4.001	SW32	108.948	1.008	0.000	2.62			42.7	SURCHARGED
S4.002	SW33	108.095	0.280	0.000	1.59			59.1	SURCHARGED
S4.003	SW34	107.762	0.082	0.000	0.93			69.5	SURCHARGED
S1.023	SW35	107.522	0.122	0.000	1.35			467.2	SURCHARGED
S1.024	SW36	107.367	0.067	0.000	0.13			62.9	SURCHARGED
S1.025	SW37	107.366	0.316	0.000	0.12			61.0	SURCHARGED
S5.000	HD38	111.164	1.014	0.000	0.63			26.4	FLOOD RISK
S6.000	HD39	110.969	1.144	0.000	0.55			21.5	FLOOD RISK
S5.001	HD40	110.927	1.202	2.240	1.37			82.6	FLOOD
S5.002	SW41	110.625	1.200	0.017	1.41			90.9	FLOOD
S5.003	SW42	110.497	1.162	0.000	1.71			99.8	FLOOD RISK
S7.000	SW43	110.663	1.048	0.000	0.65			34.5	FLOOD RISK
S7.001	SW44	110.591	1.181	0.000	1.47			52.2	FLOOD RISK
S5.004	SW45	110.355	1.070	0.000	1.13			160.9	FLOOD RISK
S5.005	SW46	109.666	0.916	0.000	0.82			179.7	FLOOD RISK
S8.000	SW47	110.222	1.392	0.000	0.80			23.9	FLOOD RISK
S8.001	SW48	110.200	1.410	0.000	1.20			41.5	FLOOD RISK
S8.002	SW49	110.085	1.365	0.001	0.63			55.0	FLOOD
S8.003	SW50	109.905	1.565	0.130	0.70			66.6	FLOOD
S8.004	SW51	109.662	1.822	2.179	2.34			80.2	FLOOD
S8.005	SW52	109.425	1.655	0.112	2.49			86.8	FLOOD
S9.000	SW53	109.627	0.082	0.000	0.43			8.7	SURCHARGED
S9.001	SW54	109.599	0.324	0.000	1.13			33.7	SURCHARGED
S9.002	SW55	109.272	0.407	0.000	0.53			46.0	SURCHARGED
S9.003	SW56	109.141	1.016	0.000	0.53			49.5	FLOOD RISK
S8.006	SW57	109.028	1.338	0.000	1.31			134.9	FLOOD RISK
S5.006	SW58	108.915	1.275	0.000	2.75			340.0	FLOOD RISK
S5.007	SW59	108.139	0.599	0.000	0.97			353.9	SURCHARGED
S10.000	SW60	108.552	0.987	0.000	0.82			21.5	FLOOD RISK
S10.001	SW61	108.255	1.105	0.108	2.24			40.0	FLOOD
S5.008	SW62	107.633	0.613	0.000	2.73			390.6	SURCHARGED
S5.009	SW63	107.366	0.416	0.000	0.17			53.6	SURCHARGED
S1.026	SW64	107.365	1.015	0.000	0.55			9.8	SURCHARGED
S1.027	SW65	106.150	-0.100	0.000	0.24			9.8	OK
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