STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SURFACE WATER.SWS

Pipe Sizes SURFACE 001 Manhole Sizes SURFACE 001

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.357	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
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

Network Design Table for SURFACE WATER.SWS

- 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
1.000	10.961	0.109	100.6	0.033	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	15.831	0.275	57.5	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	22.845	1.510	15.1	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	27.504	1.709	16.1	0.094	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	8.593	0.667	12.9	0.038	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	12.582	1.145	11.0	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	9.133	0.091	100.4	0.042	5.00	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	48.40	5.18	111.600	0.033	0.0	0.0	0.0	1.00	17.7	4.3
1.001	47.63	5.38	111.491	0.053	0.0	0.0	0.0	1.33	23.5	6.8
1.002	47.08	5.53	111.216	0.073	0.0	0.0	0.0	2.60	46.0	9.3
1.003	46.41	5.71	109.705	0.167	0.0	0.0	0.0	2.52	44.6	21.0
2.000	48.93	5.05	109.164	0.038	0.0	0.0	0.0	2.82	49.9	5.0
1.004	46.17	5.78	107.997	0.219	0.0	0.0	0.0	3.06	54.0	27.4
3.000	48.52	5.15	107.300	0.042	0.0	0.0	0.0	1.00	17.7	5.5

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Network Design Table for SURFACE WATER.SWS

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
3.001	27.393	0.357	76.7	0.094	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	25.896	1.824	14.2	0.083	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.006	23.024	0.939	24.5	0.016	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	34.629	0.401	86.3	0.108	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.007	19.748	0.330	59.9	0.073	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.008	15.816	0.191	82.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	21.836	0.791	27.6	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.010	16.056	0.828	19.4	0.112	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	7.236	0.072	100.5	0.044	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	31.322	0.310	101.0	0.071	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.002	10.733	0.106	101.3	0.014	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	15.004	1.209	12.4	0.068	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	16.021	0.859	18.7	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.004	31.511	1.912	16.5	0.057	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.011	13.964	0.734	19.0	0.045	0.00	0.0	0.600	o	300	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)
3.001	47.00	5.55	107.209	0.136	0.0	0.0	0.0	1.15	20.3	17.2
1.005	45.73	5.90	106.777	0.437	0.0	0.0	0.0	3.49	138.8	54.1
1.006	45.23	6.05	104.952	0.453	0.0	0.0	0.0	2.65	105.5	55.5
4.000	47.05	5.53	104.991	0.108	0.0	0.0	0.0	1.08	19.1	13.8
1.007	44.69	6.21	103.939	0.634	0.0	0.0	0.0	2.04	143.9	76.7
1.008	44.20	6.36	103.609	0.634	0.0	0.0	0.0	1.73	122.3	76.7
1.009	43.81	6.48	103.418	0.654	0.0	0.0	0.0	3.00	212.3	77.5
1.010	43.58	6.56	102.627	0.766	0.0	0.0	0.0	3.59	253.5	90.3
5.000	48.76	5.09	105.634	0.044	0.0	0.0	0.0	1.30	51.9	5.8
5.001	47.20	5.49	105.562	0.115	0.0	0.0	0.0	1.30	51.7	14.7
5.002	46.69	5.63	105.252	0.129	0.0	0.0	0.0	1.30	51.7	16.3
6.000	48.79	5.09	106.835	0.068	0.0	0.0	0.0	2.88	50.8	8.9
5.003	46.37	5.72	105.146	0.239	0.0	0.0	0.0	3.04	121.0	30.0
5.004	45.80	5.88	104.287	0.296	0.0	0.0	0.0	3.24	128.8	36.7
1.011	43.38	6.62	101.799	1.106	0.0	0.0	0.0	3.62	256.0	129.9

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Network Design Table for SURFACE WATER.SWS

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
1.012	13.884	0.730	19.0	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	
7.000	46.995	0.466	100.8	0.120	5.00	0.0	0.600	o	150	Pipe/Conduit	
7.001	11.674	0.116	100.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.013	7.834	0.020	391.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.014	30.470	1.071	28.4	0.135	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.015	25.279	1.270	19.9	0.020	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.016	13.613	0.423	32.2	0.055	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.017	18.097	0.183	98.9	0.104	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.018	32.635	0.066	494.5	0.032	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.019	8.339	0.040	208.5	0.020	0.00	0.0	0.600	o	750	Pipe/Conduit	
8.000	13.551	0.564	24.0	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
8.001	19.479	1.017	19.2	0.040	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.002	16.106	0.373	43.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.003	22.406	0.562	39.9	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.004	63.307	4.976	12.7	0.091	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.005	10.249	0.500	20.5	0.079	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	24.574	1.241	19.8	0.075	5.00	0.0	0.600	o	150	Pipe/Conduit	
9.001	16.670	1.095	15.2	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)
1.012	43.18	6.68	101.065	1.153	0.0	0.0	0.0	3.62	256.1	134.8
7.000	46.15	5.78	100.400	0.120	0.0	0.0	0.0	1.00	17.7	15.0
7.001	45.47	5.98	99.934	0.120	0.0	0.0	0.0	1.00	17.7	15.0
1.013	42.80	6.81	99.518	1.273	0.0	0.0	0.0	1.02	162.4	147.6
1.014	42.41	6.94	99.498	1.408	0.0	0.0	0.0	3.82	608.0	161.7
1.015	42.14	7.04	98.427	1.428	0.0	0.0	0.0	4.57	727.3	163.0
1.016	41.96	7.10	97.157	1.483	0.0	0.0	0.0	3.59	571.6	168.5
1.017	41.55	7.25	96.734	1.587	0.0	0.0	0.0	2.04	325.2	178.6
1.018	40.38	7.68	96.251	1.619	0.0	0.0	0.0	1.25	553.0	178.6
1.019	40.19	7.75	96.185	1.639	0.0	0.0	0.0	1.93	854.6	178.6
8.000	48.69	5.11	108.642	0.040	0.0	0.0	0.0	2.06	36.4	5.3
8.001	48.14	5.25	108.078	0.080	0.0	0.0	0.0	2.31	40.9	10.4
8.002	47.46	5.42	107.061	0.080	0.0	0.0	0.0	1.54	27.1	10.4
8.003	46.59	5.66	106.688	0.109	0.0	0.0	0.0	1.60	28.3	13.8
8.004	45.29	6.03	106.126	0.200	0.0	0.0	0.0	2.84	50.2	24.5
8.005	45.09	6.09	101.075	0.279	0.0	0.0	0.0	2.90	115.4	34.0
9.000	48.41	5.18	105.949	0.075	0.0	0.0	0.0	2.27	40.2	9.8
9.001	47.99	5.29	104.708	0.075	0.0	0.0	0.0	2.59	45.9	9.8

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Network Design Table for SURFACE WATER.SWS

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
9.002	35.359	2.426	14.6	0.059	0.00	0.0	0.600	o	150	Pipe/Conduit	
10.000	8.635	0.086	100.4	0.065	5.00	0.0	0.600	o	300	Pipe/Conduit	
9.003	8.527	0.051	167.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.004	34.383	0.204	168.5	0.023	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.006	38.163	1.550	24.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.007	27.923	1.260	22.2	0.089	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.000	18.812	0.626	30.1	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
11.001	34.197	1.738	19.7	0.102	0.00	0.0	0.600	o	150	Pipe/Conduit	
11.002	28.774	1.445	19.9	0.070	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.003	10.554	0.497	21.2	0.043	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.004	11.534	0.307	37.6	0.058	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.005	32.666	0.365	89.5	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.000	9.602	0.095	100.9	0.050	5.00	0.0	0.600	o	150	Pipe/Conduit	
12.001	26.203	0.156	168.2	0.123	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.002	26.118	0.155	168.2	0.083	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.006	39.204	0.122	321.3	0.130	0.00	0.0	0.600	o	375	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)
9.002	47.14	5.51	103.613	0.134	0.0	0.0	0.0	2.65	46.9	17.0
10.000	48.77	5.09	100.840	0.065	0.0	0.0	0.0	1.57	110.9	8.6
9.003	46.71	5.63	100.754	0.199	0.0	0.0	0.0	1.21	85.8	25.1
9.004	45.05	6.10	100.703	0.222	0.0	0.0	0.0	1.21	85.4	27.0
8.006	44.39	6.30	100.499	0.500	0.0	0.0	0.0	3.18	224.9	60.1
8.007	43.94	6.44	98.949	0.589	0.0	0.0	0.0	3.35	237.1	70.1
11.000	48.45	5.17	105.389	0.040	0.0	0.0	0.0	1.84	32.6	5.2
11.001	47.48	5.42	104.764	0.142	0.0	0.0	0.0	2.28	40.3	18.3
11.002	46.87	5.58	102.951	0.212	0.0	0.0	0.0	2.95	117.1	26.9
11.003	46.64	5.64	101.506	0.255	0.0	0.0	0.0	2.85	113.4	32.2
11.004	46.32	5.73	101.009	0.313	0.0	0.0	0.0	2.14	85.1	39.3
11.005	44.96	6.13	100.702	0.347	0.0	0.0	0.0	1.38	55.0	42.2
12.000	48.49	5.16	100.018	0.050	0.0	0.0	0.0	1.00	17.7	6.6
12.001	46.83	5.59	99.848	0.173	0.0	0.0	0.0	1.01	40.0	21.9
12.002	45.30	6.03	99.692	0.256	0.0	0.0	0.0	1.01	40.0	31.4
11.006	42.90	6.78	99.386	0.733	0.0	0.0	0.0	1.01	111.0	85.2

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Network Design Table for SURFACE WATER.SWS

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
11.007	17.531	1.346	13.0	0.040	0.00	0.0	0.600	o	375	Pipe/Conduit	
13.000	18.571	0.116	160.1	0.120	5.00	0.0	0.600	o	225	Pipe/Conduit	
13.001	18.680	0.116	161.0	0.025	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.008	26.572	0.065	408.8	0.113	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.009	9.688	0.024	403.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.010	24.758	0.061	405.9	0.114	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.011	11.364	0.028	405.8	0.015	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.012	24.092	0.059	408.3	0.082	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.013	9.519	0.024	396.6	0.028	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.014	13.374	0.033	405.3	0.020	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.008	9.478	0.023	412.1	0.020	0.00	0.0	0.600	o	525	Pipe/Conduit	
8.009	38.544	0.035	1101.3	0.039	0.00	0.0	0.600	o	1050	Pipe/Conduit	
14.000	16.111	0.019	848.0	0.000	5.00	0.0	0.600	o	1050	Pipe/Conduit	
8.010	9.076	0.436	20.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.020	18.380	0.163	112.8	0.101	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.021	14.614	0.652	22.4	0.012	0.00	0.0	0.600	o	750	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)
11.007	42.73	6.84	99.264	0.773	0.0	0.0	0.0	5.04	557.0	89.4
13.000	47.94	5.30	98.300	0.120	0.0	0.0	0.0	1.03	41.0	15.6
13.001	46.80	5.60	98.184	0.145	0.0	0.0	0.0	1.03	40.9	18.4
11.008	41.46	7.28	97.843	1.031	0.0	0.0	0.0	1.00	158.9	115.8
11.009	41.02	7.44	97.778	1.031	0.0	0.0	0.0	1.01	159.9	115.8
11.010	39.94	7.85	97.754	1.145	0.0	0.0	0.0	1.00	159.5	123.9
11.011	39.47	8.04	97.693	1.160	0.0	0.0	0.0	1.00	159.5	124.0
11.012	38.51	8.44	97.655	1.242	0.0	0.0	0.0	1.00	159.0	129.5
11.013	38.15	8.60	97.596	1.270	0.0	0.0	0.0	1.01	161.4	131.2
11.014	37.65	8.82	97.572	1.290	0.0	0.0	0.0	1.00	159.6	131.5
8.008	37.33	8.96	97.464	1.899	0.0	0.0	0.0	1.10	237.5	192.0
8.009	36.04	9.59	96.916	1.938	0.0	0.0	0.0	1.03	891.7	192.0
14.000	48.22	5.23	96.900	0.000	0.0	0.0	0.0	1.18	1017.7	0.0
8.010	35.97	9.62	96.881	1.938	0.0	0.0	0.0	4.47	711.2	192.0
1.020	35.74	9.74	96.145	3.678	0.0	0.0	0.0	2.63	1164.0	356.0
1.021	35.66	9.78	95.982	3.690	0.0	0.0	0.0	5.93	2618.1	356.4

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Network Design Table for SURFACE WATER.SWS

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
15.000	19.402	0.020	970.1	0.000	5.00	0.0	0.600	o	750	Pipe/Conduit	
1.022	28.705	1.770	16.2	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.023	14.877	0.093	160.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
16.000	20.305	0.206	98.6	0.092	5.00	0.0	0.600	o	150	Pipe/Conduit	
16.001	25.558	0.641	39.9	0.043	0.00	0.0	0.600	o	150	Pipe/Conduit	
16.002	30.886	1.435	21.5	0.022	0.00	0.0	0.600	o	150	Pipe/Conduit	
16.003	16.224	0.101	160.6	0.067	0.00	0.0	0.600	o	225	Pipe/Conduit	
16.004	28.016#	0.034	824.0	0.000	0.00	0.0	0.600	4o	-1	Pipe/Conduit	
17.000	14.743	0.773	19.1	0.096	5.00	0.0	0.600	o	150	Pipe/Conduit	
17.001	9.290	0.522	17.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
17.002	6.260#	0.584	10.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
16.005	76.734#	0.034	2256.9	0.000	0.00	0.0	0.600	4o	-1	Pipe/Conduit	
18.000	25.481	2.548	10.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
18.001	40.358#	0.044	917.2	0.000	0.00	0.0	0.600	ooo	-2	Pipe/Conduit	
19.000	24.168	1.665	14.5	0.000	5.00	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)
15.000	47.70	5.36	95.350	0.000	0.0	0.0	0.0	0.89	393.2	0.0
1.022	35.51	9.86	95.330	3.690	0.0	0.0	0.0	6.07	1715.3	356.4
1.023	35.26	9.99	93.560	3.690	0.0	0.0	0.0	1.92	543.7	356.4
16.000	47.81	5.33	96.868	0.092	0.0	0.0	0.0	1.01	17.9	11.9
16.001	46.80	5.60	96.662	0.135	0.0	0.0	0.0	1.60	28.2	17.0
16.002	45.96	5.84	96.021	0.157	0.0	0.0	0.0	2.18	38.5	19.5
16.003	45.05	6.10	94.511	0.224	0.0	0.0	0.0	1.03	40.9	27.3
16.004	44.21	6.36	92.535	0.224	0.0	0.0	0.0	1.83	25299.9	27.3
17.000	48.71	5.11	96.329	0.096	0.0	0.0	0.0	2.32	40.9	12.7
17.001	48.45	5.17	95.557	0.096	0.0	0.0	0.0	2.40	42.4	12.7
17.002	48.32	5.20	95.035	0.096	0.0	0.0	0.0	3.10	54.7	12.7
16.005	40.80	7.52	92.501	0.320	0.0	0.0	0.0	1.10	15219.7	35.3
18.000	48.72	5.10	96.470	0.000	0.0	0.0	0.0	4.16	165.5	0.0
18.001	47.21	5.49	92.047	0.000	0.0	0.0	0.0	1.73	17977.8	0.0
19.000	48.53	5.15	96.310	0.000	0.0	0.0	0.0	2.66	47.0	0.0

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Network Design Table for SURFACE WATER.SWS

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
19.001	6.920#	0.692	10.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
18.002	51.975#	0.036	1443.8	0.000	0.00	0.0	0.600	ooo	-2	Pipe/Conduit	
1.024	5.843	0.037	157.9	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)
19.001	48.38	5.19	94.645	0.000	0.0	0.0	0.0	3.20	56.6	0.0
18.002	44.98	6.12	92.003	0.000	0.0	0.0	0.0	1.38	14303.3	0.0
1.024	35.08	10.08	91.967	4.010	0.0	0.0	0.0	1.04	41.3«	381.0

Conduit Sections for SURFACE WATER.SWS

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m²)
-1	4o	8400	2100			2.100	13.854
-2	ooo	6300	2100			2.100	10.391

Free Flowing Outfall Details for SURFACE WATER.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.024	91	93.200	91.930	92.000	0	0

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Simulation Criteria for SURFACE WATER.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	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	2
Number of Online Controls	3	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)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.357		

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Online Controls for SURFACE WATER.SWS

Hydro-Brake® Optimum Manhole: 70, DS/PN: 8.010, Volume (m³): 49.8

Unit Reference	MD-SHE-0391-1000-1300-1000
Design Head (m)	1.300
Design Flow (l/s)	100.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	391
Invert Level (m)	96.881
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	100.0
Flush-Flo™	0.588	99.9
Kick-Flo®	1.023	89.0
Mean Flow over Head Range	-	80.1

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	10.9	1.200	96.2	3.000	150.2	7.000	227.4
0.200	38.7	1.400	103.6	3.500	161.9	7.500	235.2
0.300	74.2	1.600	110.6	4.000	172.9	8.000	242.8
0.400	96.9	1.800	117.1	4.500	183.1	8.500	250.1
0.500	99.4	2.000	123.2	5.000	192.8	9.000	257.2
0.600	99.9	2.200	129.1	5.500	202.0	9.500	264.1
0.800	97.6	2.400	134.7	6.000	210.8		
1.000	90.4	2.600	140.1	6.500	219.3		

Hydro-Brake® Optimum Manhole: 74, DS/PN: 1.022, Volume (m³): 17.8

Unit Reference	MD-CHE-0587-3850-1000-3850
Design Head (m)	1.000
Design Flow (l/s)	385.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	587
Invert Level (m)	95.330
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

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Hydro-Brake® Optimum Manhole: 74, DS/PN: 1.022, Volume (m³): 17.8

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	371.3
Flush-Flo™	0.843	375.9
Kick-Flo®	0.933	363.2
Mean Flow over Head Range	-	214.7

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)
0.100	14.1	1.200	405.9	3.000	637.0	7.000	966.7
0.200	52.5	1.400	437.9	3.500	687.3	7.500	1000.1
0.300	108.8	1.600	467.6	4.000	733.9	8.000	1032.4
0.400	174.9	1.800	495.5	4.500	777.7	8.500	1063.7
0.500	240.1	2.000	521.8	5.000	819.1	9.000	1094.1
0.600	292.6	2.200	546.9	5.500	858.5	9.500	1123.6
0.800	370.8	2.400	570.8	6.000	896.1		
1.000	371.3	2.600	593.7	6.500	932.1		

Hydro-Brake® Optimum Manhole: 90, DS/PN: 1.024, Volume (m³): 1556.5

Unit Reference	MD-SHE-0211-2840-2400-2840
Design Head (m)	2.400
Design Flow (l/s)	28.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	211
Invert Level (m)	91.967
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.400	28.4
Flush-Flo™	0.694	28.4
Kick-Flo®	1.467	22.4
Mean Flow over Head Range	-	24.7

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)
0.100	7.2	0.300	25.3	0.500	27.8	0.800	28.3
0.200	20.4	0.400	26.9	0.600	28.3	1.000	27.6

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Hydro-Brake® Optimum Manhole: 90, DS/PN: 1.024, Volume (m³): 1556.5

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	26.4	2.400	28.4	5.000	40.4	8.000	50.7
1.400	23.8	2.600	29.5	5.500	42.3	8.500	52.2
1.600	23.4	3.000	31.6	6.000	44.1	9.000	53.7
1.800	24.7	3.500	34.0	6.500	45.9	9.500	55.1
2.000	26.0	4.000	36.3	7.000	47.5		
2.200	27.2	4.500	38.4	7.500	49.2		

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Storage Structures for SURFACE WATER.SWS

Tank or Pond Manhole: 69, DS/PN: 14.000

Invert Level (m) 96.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	327.6	1.000	686.5

Tank or Pond Manhole: 73, DS/PN: 15.000

Invert Level (m) 95.350

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	87.6	1.000	292.8

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

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	2
Number of Online Controls	3	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 0.361
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	1	+0%	100/15 Summer			
1.001	2	15 Winter	1	+0%	100/15 Summer			
1.002	3	15 Winter	1	+0%	100/15 Summer			
1.003	4	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
2.000	5	15 Winter	1	+0%	100/15 Summer			
1.004	6	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
3.000	7	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
3.001	8	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.005	9	15 Winter	1	+0%	30/15 Summer			
1.006	10	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
4.000	11	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.007	12	15 Winter	1	+0%	30/15 Summer	100/15 Winter		
1.008	13	15 Winter	1	+0%	30/15 Summer			
1.009	14	15 Winter	1	+0%	30/15 Summer			
1.010	15	15 Winter	1	+0%	30/15 Summer			
5.000	16	15 Winter	1	+0%	100/15 Summer			
5.001	17	15 Winter	1	+0%	100/15 Summer			
5.002	18	15 Winter	1	+0%	100/15 Summer			
6.000	19	15 Winter	1	+0%				
5.003	20	15 Winter	1	+0%	100/15 Summer			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	111.653	-0.097	0.000	0.26		4.2	OK	
1.001	2	111.547	-0.094	0.000	0.29		6.3	OK	
1.002	3	111.261	-0.105	0.000	0.20		8.5	OK	
1.003	4	109.775	-0.080	0.000	0.44		18.6	OK	4
2.000	5	109.198	-0.117	0.000	0.11		4.8	OK	
1.004	6	108.073	-0.074	0.000	0.51		24.9	OK	2
3.000	7	107.361	-0.089	0.000	0.34		5.3	OK	4
3.001	8	107.312	-0.047	0.000	0.79		15.4	OK	1
1.005	9	106.874	-0.128	0.000	0.38		49.2	OK	
1.006	10	105.069	-0.108	0.000	0.53		51.0	OK	4
4.000	11	105.088	-0.052	0.000	0.74		13.7	OK	4
1.007	12	104.103	-0.136	0.000	0.58		72.5	OK	1
1.008	13	103.794	-0.115	0.000	0.70		72.1	OK	
1.009	14	103.549	-0.168	0.000	0.39		73.7	OK	
1.010	15	102.760	-0.167	0.000	0.40		85.1	OK	
5.000	16	105.692	-0.167	0.000	0.15		5.6	OK	
5.001	17	105.642	-0.145	0.000	0.27		13.2	OK	
5.002	18	105.342	-0.135	0.000	0.34		14.8	OK	
6.000	19	106.879	-0.107	0.000	0.18		8.6	OK	
5.003	20	105.224	-0.147	0.000	0.26		27.7	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
5.004	21	15 Winter	1	+0%	100/15 Summer			
1.011	22	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.012	23	15 Winter	1	+0%	30/15 Summer			
7.000	24	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
7.001	25	15 Winter	1	+0%	30/15 Summer			
1.013	26	30 Winter	1	+0%	30/15 Summer			
1.014	27	15 Winter	1	+0%				
1.015	28	15 Winter	1	+0%	100/15 Winter			
1.016	29	15 Winter	1	+0%	30/15 Summer			
1.017	30	15 Winter	1	+0%	30/15 Summer			
1.018	31	15 Winter	1	+0%	100/15 Winter			
1.019	32	15 Winter	1	+0%				
8.000	33	15 Winter	1	+0%	100/15 Summer			
8.001	34	15 Winter	1	+0%	100/15 Summer			
8.002	35	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
8.003	36	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
8.004	37	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
8.005	38	15 Winter	1	+0%	100/15 Winter			
9.000	39	15 Winter	1	+0%	100/15 Summer			
9.001	40	15 Winter	1	+0%	100/15 Summer			
9.002	41	15 Winter	1	+0%	100/15 Summer			
10.000	42	15 Winter	1	+0%	100/15 Summer			
9.003	43	15 Winter	1	+0%	100/15 Summer			
9.004	44	15 Winter	1	+0%	100/15 Summer			
8.006	45	15 Winter	1	+0%	100/15 Winter			
8.007	46	15 Winter	1	+0%	100/15 Summer			
11.000	47	15 Winter	1	+0%	100/15 Summer			
11.001	48	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
11.002	49	15 Winter	1	+0%	100/15 Summer			
11.003	50	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
11.004	51	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
11.005	52	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
12.000	53	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
12.001	54	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
12.002	55	15 Winter	1	+0%	30/15 Summer			
11.006	56	15 Winter	1	+0%	30/15 Summer			
11.007	57	15 Winter	1	+0%	30/15 Winter			
13.000	58	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
13.001	59	15 Winter	1	+0%	30/15 Summer			
11.008	60	15 Winter	1	+0%	30/15 Summer			
11.009	61	15 Winter	1	+0%	30/15 Summer			
11.010	62	15 Winter	1	+0%	30/15 Summer			
11.011	63	15 Winter	1	+0%	30/15 Summer			
11.012	64	15 Winter	1	+0%	30/15 Summer			
11.013	65	15 Winter	1	+0%	1/15 Winter			
11.014	66	15 Winter	1	+0%	1/15 Winter			
8.008	67	15 Winter	1	+0%	1/15 Winter			
8.009	68	15 Winter	1	+0%				

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
5.004	21	104.368	-0.144	0.000	0.28		33.8	OK	
1.011	22	101.965	-0.134	0.000	0.58		122.5	OK	4
1.012	23	101.235	-0.130	0.000	0.60		127.9	OK	
7.000	24	100.511	-0.039	0.000	0.86		14.9	OK	5
7.001	25	100.067	-0.017	0.000	0.92		14.6	OK	
1.013	26	99.968	0.000	0.000	1.30		120.1	OK	
1.014	27	99.666	-0.282	0.000	0.30		156.5	OK	
1.015	28	98.582	-0.295	0.000	0.26		158.5	OK	
1.016	29	97.367	-0.240	0.000	0.45		163.5	OK	
1.017	30	97.018	-0.166	0.000	0.72		172.6	OK	
1.018	31	96.596	-0.405	0.000	0.40		174.4	OK	
1.019	32	96.505	-0.430	0.000	0.38		173.8	OK	
8.000	33	108.681	-0.111	0.000	0.15		5.1	OK	
8.001	34	108.129	-0.099	0.000	0.24		9.4	OK	
8.002	35	107.125	-0.086	0.000	0.37		9.4	OK	2
8.003	36	106.761	-0.077	0.000	0.47		12.6	OK	4
8.004	37	106.197	-0.079	0.000	0.45		22.3	OK	4
8.005	38	101.162	-0.138	0.000	0.32		30.7	OK	
9.000	39	106.000	-0.099	0.000	0.25		9.5	OK	
9.001	40	104.756	-0.102	0.000	0.22		9.4	OK	
9.002	41	103.675	-0.088	0.000	0.35		15.8	OK	
10.000	42	100.910	-0.230	0.000	0.11		8.2	OK	
9.003	43	100.885	-0.169	0.000	0.39		24.1	OK	
9.004	44	100.823	-0.180	0.000	0.33		26.2	OK	
8.006	45	100.605	-0.194	0.000	0.27		56.5	OK	
8.007	46	99.063	-0.186	0.000	0.31		65.4	OK	
11.000	47	105.430	-0.109	0.000	0.17		5.1	OK	
11.001	48	104.831	-0.082	0.000	0.41		16.0	OK	2
11.002	49	103.022	-0.154	0.000	0.22		23.6	OK	
11.003	50	101.590	-0.141	0.000	0.30		28.3	OK	2
11.004	51	101.119	-0.115	0.000	0.48		34.6	OK	5
11.005	52	100.846	-0.080	0.000	0.74		38.2	OK	3
12.000	53	100.085	-0.083	0.000	0.40		6.3	OK	5
12.001	54	99.965	-0.107	0.000	0.53		19.6	OK	4
12.002	55	99.840	-0.077	0.000	0.75		27.8	OK	
11.006	56	99.640	-0.121	0.000	0.78		78.2	OK	
11.007	57	99.371	-0.268	0.000	0.18		81.7	OK	
13.000	58	98.401	-0.124	0.000	0.41		15.0	OK	5
13.001	59	98.299	-0.110	0.000	0.48		17.8	OK	
11.008	60	98.276	-0.017	0.000	0.77		104.0	OK	
11.009	61	98.228	0.000	0.000	1.03		98.3	OK	
11.010	62	98.193	-0.011	0.000	0.77		102.6	OK	
11.011	63	98.143	0.000	0.000	1.05		104.0	OK	
11.012	64	98.104	-0.001	0.000	0.81		107.1	OK	
11.013	65	98.052	0.006	0.000	1.11		107.6	SURCHARGED	
11.014	66	98.025	0.003	0.000	1.07		109.4	SURCHARGED	
8.008	67	97.989	0.000	0.000	1.13		149.7	SURCHARGED	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
8.009	68	97.301	-0.665	0.000	0.24		149.1	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
14.000	69	120 Winter	1	+0%				
8.010	70	15 Winter	1	+0%	30/15 Summer			
1.020	71	15 Winter	1	+0%				
1.021	72	15 Winter	1	+0%				
15.000	73	30 Winter	1	+0%	100/15 Summer			
1.022	74	15 Winter	1	+0%	30/15 Summer			
1.023	75	15 Winter	1	+0%	100/15 Summer			
16.000	76	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
16.001	77	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
16.002	78	15 Winter	1	+0%	30/15 Summer			
16.003	79	15 Winter	1	+0%	30/15 Summer			
16.004	80	180 Winter	1	+0%				
17.000	81	15 Winter	1	+0%	100/15 Summer			
17.001	82	15 Winter	1	+0%	100/15 Summer			
17.002	83	15 Winter	1	+0%				
16.005	84	180 Winter	1	+0%				
18.000	85	120 Winter	1	+0%				
18.001	86	180 Winter	1	+0%	100/240 Winter			
19.000	87	120 Winter	1	+0%				
19.001	88	120 Winter	1	+0%				
18.002	89	180 Winter	1	+0%	100/240 Winter			
1.024	90	180 Winter	1	+0%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
14.000	69	97.066	-0.884	0.000	0.02		8.9	OK	
8.010	70	97.215	-0.116	0.000	0.23		85.2	OK	
1.020	71	96.477	-0.418	0.000	0.41		256.0	OK	
1.021	72	96.210	-0.522	0.000	0.20		256.5	OK	
15.000	73	95.698	-0.402	0.000	0.17		28.8	OK	
1.022	74	95.730	-0.200	0.000	0.13		174.7	OK	
1.023	75	93.861	-0.299	0.000	0.50		174.5	OK	
16.000	76	96.961	-0.057	0.000	0.69		11.5	OK	4
16.001	77	96.747	-0.065	0.000	0.60		16.2	OK	2
16.002	78	96.097	-0.074	0.000	0.50		18.6	OK	
16.003	79	94.651	-0.085	0.000	0.71		25.7	OK	
16.004	80	92.807	-1.828	0.000	0.00		7.6	OK	
17.000	81	96.388	-0.091	0.000	0.32		12.2	OK	
17.001	82	95.616	-0.091	0.000	0.32		12.1	OK	
17.002	83	95.088	-0.097	0.000	0.27		12.2	OK	
16.005	84	92.807	-1.794	0.000	0.00		10.7	OK	
18.000	85	96.470	-0.225	0.000	0.00		0.0	OK	
18.001	86	92.807	-1.340	0.000	0.00		0.7	OK	
19.000	87	96.310	-0.150	0.000	0.00		0.0	OK	
19.001	88	94.645	-0.150	0.000	0.00		0.0	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
18.002	89	92.807	-1.296	0.000	0.00		11.8	OK	
1.024	90	92.807	0.615	0.000	0.95		28.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

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	2
Number of Online Controls	3	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	0.361
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	30	+0%	100/15 Summer			
1.001	2	15 Winter	30	+0%	100/15 Summer			
1.002	3	15 Winter	30	+0%	100/15 Summer			
1.003	4	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
2.000	5	15 Winter	30	+0%	100/15 Summer			
1.004	6	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
3.000	7	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
3.001	8	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
1.005	9	15 Winter	30	+0%	30/15 Summer			
1.006	10	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
4.000	11	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
1.007	12	15 Winter	30	+0%	30/15 Summer	100/15 Winter		
1.008	13	15 Winter	30	+0%	30/15 Summer			
1.009	14	15 Winter	30	+0%	30/15 Summer			
1.010	15	15 Winter	30	+0%	30/15 Summer			
5.000	16	15 Winter	30	+0%	100/15 Summer			
5.001	17	15 Winter	30	+0%	100/15 Summer			
5.002	18	15 Winter	30	+0%	100/15 Summer			
6.000	19	15 Winter	30	+0%				
5.003	20	15 Winter	30	+0%	100/15 Summer			

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	111.689	-0.061	0.000	0.65		10.3	OK	
1.001	2	111.592	-0.049	0.000	0.77		16.8	OK	
1.002	3	111.295	-0.071	0.000	0.54		23.4	OK	
1.003	4	110.502	0.647	0.000	1.03		44.1	SURCHARGED	4
2.000	5	109.217	-0.097	0.000	0.27		11.7	OK	
1.004	6	108.658	0.512	0.000	1.15		56.7	SURCHARGED	2
3.000	7	108.166	0.716	0.000	0.76		11.8	SURCHARGED	4
3.001	8	108.132	0.773	0.000	1.66		32.2	SURCHARGED	1
1.005	9	107.146	0.144	0.000	0.84		108.1	SURCHARGED	
1.006	10	105.935	0.758	0.000	1.12		108.4	SURCHARGED	4
4.000	11	105.679	0.539	0.000	1.51		27.9	SURCHARGED	4
1.007	12	104.785	0.546	0.000	1.20		150.3	SURCHARGED	1
1.008	13	104.329	0.420	0.000	1.47		151.4	SURCHARGED	
1.009	14	103.946	0.228	0.000	0.87		163.2	SURCHARGED	
1.010	15	103.437	0.510	0.000	0.87		186.1	SURCHARGED	
5.000	16	105.732	-0.127	0.000	0.36		13.7	OK	
5.001	17	105.712	-0.075	0.000	0.76		36.7	OK	
5.002	18	105.427	-0.050	0.000	0.94		40.9	OK	
6.000	19	106.906	-0.079	0.000	0.45		21.1	OK	
5.003	20	105.288	-0.083	0.000	0.70		74.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
5.004	21	15 Winter	30	+0%	100/15 Summer			
1.011	22	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
1.012	23	15 Winter	30	+0%	30/15 Summer			
7.000	24	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
7.001	25	15 Winter	30	+0%	30/15 Summer			
1.013	26	15 Winter	30	+0%	30/15 Summer			
1.014	27	15 Winter	30	+0%				
1.015	28	15 Winter	30	+0%	100/15 Winter			
1.016	29	15 Winter	30	+0%	30/15 Summer			
1.017	30	15 Winter	30	+0%	30/15 Summer			
1.018	31	15 Winter	30	+0%	100/15 Winter			
1.019	32	15 Winter	30	+0%				
8.000	33	15 Winter	30	+0%	100/15 Summer			
8.001	34	15 Winter	30	+0%	100/15 Summer			
8.002	35	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
8.003	36	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
8.004	37	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
8.005	38	15 Winter	30	+0%	100/15 Winter			
9.000	39	15 Winter	30	+0%	100/15 Summer			
9.001	40	15 Winter	30	+0%	100/15 Summer			
9.002	41	15 Winter	30	+0%	100/15 Summer			
10.000	42	15 Winter	30	+0%	100/15 Summer			
9.003	43	15 Winter	30	+0%	100/15 Summer			
9.004	44	15 Winter	30	+0%	100/15 Summer			
8.006	45	15 Winter	30	+0%	100/15 Winter			
8.007	46	15 Winter	30	+0%	100/15 Summer			
11.000	47	15 Winter	30	+0%	100/15 Summer			
11.001	48	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
11.002	49	15 Winter	30	+0%	100/15 Summer			
11.003	50	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
11.004	51	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
11.005	52	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
12.000	53	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
12.001	54	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
12.002	55	15 Winter	30	+0%	30/15 Summer			
11.006	56	15 Winter	30	+0%	30/15 Summer			
11.007	57	15 Winter	30	+0%	30/15 Winter			
13.000	58	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
13.001	59	15 Winter	30	+0%	30/15 Summer			
11.008	60	15 Winter	30	+0%	30/15 Summer			
11.009	61	15 Winter	30	+0%	30/15 Summer			
11.010	62	15 Winter	30	+0%	30/15 Summer			
11.011	63	15 Winter	30	+0%	30/15 Summer			
11.012	64	15 Winter	30	+0%	30/15 Summer			
11.013	65	15 Winter	30	+0%	1/15 Winter			
11.014	66	15 Winter	30	+0%	1/15 Winter			
8.008	67	15 Winter	30	+0%	1/15 Winter			
8.009	68	15 Winter	30	+0%				

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
5.004	21	104.439	-0.073	0.000	0.77		92.6	OK	
1.011	22	102.941	0.842	0.000	1.23		260.3	SURCHARGED	4
1.012	23	101.828	0.462	0.000	1.28		271.5	SURCHARGED	
7.000	24	101.640	1.090	0.000	1.54		26.6	SURCHARGED	5
7.001	25	100.511	0.427	0.000	1.67		26.7	SURCHARGED	
1.013	26	100.201	0.233	0.000	3.18		294.5	SURCHARGED	
1.014	27	99.758	-0.190	0.000	0.62		323.6	OK	
1.015	28	98.665	-0.212	0.000	0.54		328.5	OK	
1.016	29	97.774	0.167	0.000	0.93		341.9	SURCHARGED	
1.017	30	97.405	0.221	0.000	1.51		365.3	SURCHARGED	
1.018	31	96.798	-0.203	0.000	0.84		367.4	OK	
1.019	32	96.697	-0.238	0.000	0.80		371.8	OK	
8.000	33	108.705	-0.086	0.000	0.37		12.5	OK	
8.001	34	108.169	-0.059	0.000	0.67		25.7	OK	
8.002	35	107.462	0.251	0.000	0.89		22.5	SURCHARGED	2
8.003	36	107.183	0.344	0.000	1.08		28.9	SURCHARGED	4
8.004	37	106.563	0.287	0.000	1.03		50.5	SURCHARGED	4
8.005	38	101.227	-0.073	0.000	0.79		76.2	OK	
9.000	39	106.034	-0.064	0.000	0.61		23.4	OK	
9.001	40	104.788	-0.070	0.000	0.54		23.2	OK	
9.002	41	103.730	-0.033	0.000	0.94		42.5	OK	
10.000	42	101.024	-0.116	0.000	0.27		19.8	OK	
9.003	43	101.012	-0.042	0.000	1.00		61.4	OK	
9.004	44	100.921	-0.082	0.000	0.87		67.9	OK	
8.006	45	100.683	-0.116	0.000	0.68		142.2	OK	
8.007	46	99.154	-0.095	0.000	0.79		168.8	OK	
11.000	47	105.456	-0.083	0.000	0.41		12.5	OK	
11.001	48	105.112	0.199	0.000	1.06		41.0	SURCHARGED	2
11.002	49	103.075	-0.101	0.000	0.58		63.4	OK	
11.003	50	102.337	0.606	0.000	0.73		69.0	SURCHARGED	2
11.004	51	102.074	0.840	0.000	1.14		82.4	SURCHARGED	5
11.005	52	101.671	0.744	0.000	1.75		90.1	SURCHARGED	3
12.000	53	100.801	0.633	0.000	0.96		15.1	SURCHARGED	5
12.001	54	100.740	0.667	0.000	1.18		43.6	SURCHARGED	4
12.002	55	100.520	0.603	0.000	1.72		63.8	SURCHARGED	
11.006	56	100.047	0.286	0.000	1.82		183.3	SURCHARGED	
11.007	57	99.643	0.004	0.000	0.39		178.9	SURCHARGED	
13.000	58	99.548	1.023	0.000	0.70		25.7	SURCHARGED	5
13.001	59	99.492	1.083	0.000	0.76		28.0	SURCHARGED	
11.008	60	99.438	1.145	0.000	1.62		217.1	SURCHARGED	
11.009	61	99.266	1.038	0.000	2.29		217.9	SURCHARGED	
11.010	62	99.120	0.916	0.000	1.72		229.9	SURCHARGED	
11.011	63	98.943	0.800	0.000	2.35		232.0	SURCHARGED	
11.012	64	98.778	0.673	0.000	1.82		241.3	SURCHARGED	
11.013	65	98.580	0.534	0.000	2.54		245.2	SURCHARGED	
11.014	66	98.393	0.371	0.000	2.42		248.2	SURCHARGED	
8.008	67	98.205	0.216	0.000	2.96		390.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
8.009	68	97.617	-0.349	0.000	0.63		388.9	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
14.000	69	60 Winter	30	+0%				
8.010	70	15 Winter	30	+0%	30/15 Summer			
1.020	71	15 Winter	30	+0%				
1.021	72	15 Winter	30	+0%				
15.000	73	30 Winter	30	+0%	100/15 Summer			
1.022	74	30 Winter	30	+0%	30/15 Summer			
1.023	75	30 Winter	30	+0%	100/15 Summer			
16.000	76	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
16.001	77	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
16.002	78	15 Winter	30	+0%	30/15 Summer			
16.003	79	15 Winter	30	+0%	30/15 Summer			
16.004	80	360 Winter	30	+0%				
17.000	81	15 Winter	30	+0%	100/15 Summer			
17.001	82	15 Winter	30	+0%	100/15 Summer			
17.002	83	15 Winter	30	+0%				
16.005	84	360 Winter	30	+0%				
18.000	85	120 Winter	30	+0%				
18.001	86	360 Winter	30	+0%	100/240 Winter			
19.000	87	120 Winter	30	+0%				
19.001	88	120 Winter	30	+0%				
18.002	89	360 Winter	30	+0%	100/240 Winter			
1.024	90	360 Winter	30	+0%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
14.000	69	97.402	-0.548	0.000	0.21		80.2	OK	
8.010	70	97.540	0.209	0.000	0.27		99.7	SURCHARGED	
1.020	71	96.644	-0.251	0.000	0.77		487.0	OK	
1.021	72	96.306	-0.426	0.000	0.39		489.3	OK	
15.000	73	96.013	-0.087	0.000	0.50		86.6	OK	
1.022	74	96.028	0.098	0.000	0.25		336.1	SURCHARGED	
1.023	75	94.029	-0.131	0.000	0.97		335.9	OK	
16.000	76	97.512	0.494	0.000	1.34		22.6	SURCHARGED	4
16.001	77	97.141	0.329	0.000	1.18		31.7	SURCHARGED	2
16.002	78	96.245	0.074	0.000	0.99		36.7	SURCHARGED	
16.003	79	94.878	0.142	0.000	1.57		57.0	SURCHARGED	
16.004	80	93.463	-1.172	0.000	0.00		10.4	OK	
17.000	81	96.432	-0.048	0.000	0.79		29.9	OK	
17.001	82	95.660	-0.047	0.000	0.79		29.6	OK	
17.002	83	95.124	-0.060	0.000	0.65		29.8	OK	
16.005	84	93.463	-1.138	0.000	0.00		8.2	OK	
18.000	85	96.470	-0.225	0.000	0.00		0.0	OK	
18.001	86	93.463	-0.684	0.000	0.00		0.2	OK	
19.000	87	96.310	-0.150	0.000	0.00		0.0	OK	
19.001	88	94.645	-0.150	0.000	0.00		0.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
18.002	89	93.463	-0.640	0.000	0.00		6.1	OK	
1.024	90	93.463	1.271	0.000	0.95		28.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

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	2
Number of Online Controls	3	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	0.361
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	100	+30%	100/15 Summer			
1.001	2	15 Winter	100	+30%	100/15 Summer			
1.002	3	15 Winter	100	+30%	100/15 Summer			
1.003	4	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
2.000	5	15 Winter	100	+30%	100/15 Summer			
1.004	6	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
3.000	7	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
3.001	8	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
1.005	9	15 Winter	100	+30%	30/15 Summer			
1.006	10	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
4.000	11	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
1.007	12	15 Winter	100	+30%	30/15 Summer	100/15 Winter		
1.008	13	15 Winter	100	+30%	30/15 Summer			
1.009	14	15 Winter	100	+30%	30/15 Summer			
1.010	15	15 Winter	100	+30%	30/15 Summer			
5.000	16	15 Winter	100	+30%	100/15 Summer			
5.001	17	15 Winter	100	+30%	100/15 Summer			
5.002	18	15 Winter	100	+30%	100/15 Summer			
6.000	19	15 Winter	100	+30%				
5.003	20	15 Winter	100	+30%	100/15 Summer			

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	112.356	0.606	0.000	0.86		13.7	SURCHARGED	
1.001	2	112.285	0.644	0.000	0.97		21.1	SURCHARGED	
1.002	3	112.074	0.708	0.000	0.64		27.8	SURCHARGED	
1.003	4	111.559	1.704	3.627	1.12		47.6	FLOOD	4
2.000	5	109.934	0.620	0.000	0.41		17.8	SURCHARGED	
1.004	6	109.848	1.701	0.674	1.24		60.8	FLOOD	2
3.000	7	109.069	1.619	5.464	1.77		27.7	FLOOD	4
3.001	8	109.190	1.831	0.201	1.76		34.1	FLOOD	1
1.005	9	108.474	1.472	0.000	0.92		117.6	SURCHARGED	
1.006	10	106.882	1.704	3.889	1.33		128.1	FLOOD	4
4.000	11	106.346	1.206	5.721	1.80		33.2	FLOOD	4
1.007	12	105.939	1.701	0.162	1.36		169.6	FLOOD	1
1.008	13	105.502	1.593	0.000	1.69		174.3	FLOOD RISK	
1.009	14	105.122	1.405	0.000	0.99		185.2	FLOOD RISK	
1.010	15	104.573	1.646	0.000	0.95		204.3	FLOOD RISK	
5.000	16	106.487	0.628	0.000	0.52		19.7	SURCHARGED	
5.001	17	106.468	0.681	0.000	1.00		48.4	SURCHARGED	
5.002	18	106.231	0.754	0.000	1.27		55.2	SURCHARGED	
6.000	19	106.934	-0.051	0.000	0.76		35.5	OK	
5.003	20	106.126	0.755	0.000	0.88		94.0	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
5.004	21	15 Winter	100	+30%	100/15 Summer			
1.011	22	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
1.012	23	15 Summer	100	+30%	30/15 Summer			
7.000	24	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
7.001	25	15 Winter	100	+30%	30/15 Summer			
1.013	26	15 Winter	100	+30%	30/15 Summer			
1.014	27	15 Winter	100	+30%				
1.015	28	15 Winter	100	+30%	100/15 Winter			
1.016	29	15 Winter	100	+30%	30/15 Summer			
1.017	30	15 Winter	100	+30%	30/15 Summer			
1.018	31	15 Winter	100	+30%	100/15 Winter			
1.019	32	15 Winter	100	+30%				
8.000	33	15 Winter	100	+30%	100/15 Summer			
8.001	34	15 Winter	100	+30%	100/15 Summer			
8.002	35	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
8.003	36	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
8.004	37	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
8.005	38	15 Winter	100	+30%	100/15 Winter			
9.000	39	15 Winter	100	+30%	100/15 Summer			
9.001	40	15 Winter	100	+30%	100/15 Summer			
9.002	41	15 Winter	100	+30%	100/15 Summer			
10.000	42	15 Winter	100	+30%	100/15 Summer			
9.003	43	15 Winter	100	+30%	100/15 Summer			
9.004	44	15 Winter	100	+30%	100/15 Summer			
8.006	45	15 Winter	100	+30%	100/15 Winter			
8.007	46	15 Winter	100	+30%	100/15 Summer			
11.000	47	15 Winter	100	+30%	100/15 Summer			
11.001	48	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
11.002	49	15 Winter	100	+30%	100/15 Summer			
11.003	50	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
11.004	51	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
11.005	52	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
12.000	53	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
12.001	54	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
12.002	55	15 Winter	100	+30%	30/15 Summer			
11.006	56	15 Winter	100	+30%	30/15 Summer			
11.007	57	15 Winter	100	+30%	30/15 Winter			
13.000	58	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
13.001	59	15 Winter	100	+30%	30/15 Summer			
11.008	60	15 Winter	100	+30%	30/15 Summer			
11.009	61	15 Winter	100	+30%	30/15 Summer			
11.010	62	15 Winter	100	+30%	30/15 Summer			
11.011	63	15 Winter	100	+30%	30/15 Summer			
11.012	64	15 Winter	100	+30%	30/15 Summer			
11.013	65	15 Winter	100	+30%	1/15 Winter			
11.014	66	15 Winter	100	+30%	1/15 Winter			
8.008	67	15 Winter	100	+30%	1/15 Winter			
8.009	68	60 Winter	100	+30%				

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SURFACE WATER.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
5.004	21	105.503	0.991	0.000	0.94		113.0	FLOOD RISK	
1.011	22	103.803	1.704	3.310	1.46		309.0	FLOOD	4
1.012	23	102.322	0.957	0.000	1.51		319.8	SURCHARGED	
7.000	24	102.106	1.556	5.533	1.77		30.4	FLOOD	5
7.001	25	100.723	0.639	0.000	1.96		31.2	SURCHARGED	
1.013	26	100.319	0.351	0.000	3.80		351.7	SURCHARGED	
1.014	27	99.804	-0.144	0.000	0.79		413.9	OK	
1.015	28	98.934	0.057	0.000	0.68		416.8	SURCHARGED	
1.016	29	98.338	0.731	0.000	1.20		439.0	SURCHARGED	
1.017	30	97.737	0.553	0.000	1.98		477.6	SURCHARGED	
1.018	31	97.012	0.011	0.000	1.12		487.7	SURCHARGED	
1.019	32	96.935	0.000	0.000	1.04		480.9	OK	
8.000	33	109.148	0.356	0.000	0.58		19.3	SURCHARGED	
8.001	34	109.016	0.788	0.000	0.82		31.4	SURCHARGED	
8.002	35	108.412	1.201	0.610	1.00		25.1	FLOOD	2
8.003	36	108.040	1.202	1.848	1.45		38.7	FLOOD	4
8.004	37	107.478	1.202	1.675	1.11		54.8	FLOOD	4
8.005	38	101.304	0.004	0.000	1.00		96.5	SURCHARGED	
9.000	39	106.272	0.173	0.000	0.94		35.8	SURCHARGED	
9.001	40	105.375	0.517	0.000	0.78		33.3	SURCHARGED	
9.002	41	104.777	1.014	0.000	1.19		53.7	FLOOD RISK	
10.000	42	101.250	0.110	0.000	0.43		31.9	SURCHARGED	
9.003	43	101.232	0.178	0.000	1.38		84.7	SURCHARGED	
9.004	44	101.122	0.119	0.000	1.20		94.2	SURCHARGED	
8.006	45	100.834	0.035	0.000	0.86		180.1	SURCHARGED	
8.007	46	99.704	0.455	0.000	1.01		216.2	SURCHARGED	
11.000	47	106.358	0.819	0.000	0.60		18.2	SURCHARGED	
11.001	48	106.115	1.202	1.890	1.26		49.0	FLOOD	2
11.002	49	103.698	0.522	0.000	0.72		78.6	SURCHARGED	
11.003	50	102.931	1.200	0.351	0.99		94.7	FLOOD	2
11.004	51	102.444	1.210	10.329	1.35		97.6	FLOOD	5
11.005	52	102.127	1.200	0.390	1.97		101.5	FLOOD	3
12.000	53	101.378	1.210	10.176	2.88		45.1	FLOOD	5
12.001	54	101.465	1.393	4.632	1.36		50.3	FLOOD	4
12.002	55	101.477	1.560	0.000	2.09		77.4	FLOOD RISK	
11.006	56	101.231	1.470	0.000	2.06		207.6	SURCHARGED	
11.007	57	100.786	1.147	0.000	0.46		210.6	SURCHARGED	
13.000	58	100.359	1.834	11.043	1.58		58.3	FLOOD	5
13.001	59	100.462	2.053	0.000	1.71		62.7	SURCHARGED	
11.008	60	100.490	2.197	0.000	2.04		273.8	SURCHARGED	
11.009	61	100.268	2.040	0.000	2.74		261.0	SURCHARGED	
11.010	62	100.082	1.878	0.000	2.25		300.2	SURCHARGED	
11.011	63	99.798	1.655	0.000	3.06		301.7	SURCHARGED	
11.012	64	99.517	1.412	0.000	2.43		321.5	SURCHARGED	
11.013	65	99.158	1.112	0.000	3.42		330.2	SURCHARGED	
11.014	66	98.808	0.786	0.000	3.27		335.0	SURCHARGED	
8.008	67	98.453	0.464	0.000	4.16		548.2	SURCHARGED	

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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
8.009	68	97.862	-0.104	0.000	0.75		459.8	OK	

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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
14.000	69	60 Winter	100	+30%				
8.010	70	60 Winter	100	+30%	30/15 Summer			
1.020	71	15 Winter	100	+30%				
1.021	72	60 Winter	100	+30%				
15.000	73	30 Winter	100	+30%	100/15 Summer			
1.022	74	60 Winter	100	+30%	30/15 Summer			
1.023	75	480 Winter	100	+30%	100/15 Summer			
16.000	76	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
16.001	77	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
16.002	78	15 Winter	100	+30%	30/15 Summer			
16.003	79	15 Winter	100	+30%	30/15 Summer			
16.004	80	480 Winter	100	+30%				
17.000	81	15 Winter	100	+30%	100/15 Summer			
17.001	82	15 Winter	100	+30%	100/15 Summer			
17.002	83	15 Winter	100	+30%				
16.005	84	480 Winter	100	+30%				
18.000	85	120 Winter	100	+30%				
18.001	86	480 Winter	100	+30%	100/240 Winter			
19.000	87	120 Winter	100	+30%				
19.001	88	120 Winter	100	+30%				
18.002	89	480 Winter	100	+30%	100/240 Winter			
1.024	90	480 Winter	100	+30%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
14.000	69	97.855	-0.095	0.000	0.23		89.8	OK	
8.010	70	97.856	0.525	0.000	0.27		99.5	SURCHARGED	
1.020	71	96.730	-0.165	0.000	0.95		599.0	OK	
1.021	72	96.646	-0.086	0.000	0.41		521.5	OK	
15.000	73	96.355	0.255	0.000	1.28		223.0	SURCHARGED	
1.022	74	96.963	1.033	0.000	0.30		396.8	FLOOD RISK	
1.023	75	94.375	0.215	0.000	0.60		207.3	SURCHARGED	
16.000	76	98.223	1.205	4.510	1.86		31.3	FLOOD	4
16.001	77	98.012	1.200	0.140	1.33		35.9	FLOOD	2
16.002	78	96.973	0.802	0.000	1.17		43.2	SURCHARGED	
16.003	79	95.069	0.333	0.000	2.07		74.9	SURCHARGED	
16.004	80	94.370	-0.265	0.000	0.00		14.0	OK	
17.000	81	96.940	0.461	0.000	1.16		43.7	SURCHARGED	
17.001	82	95.881	0.174	0.000	1.16		43.4	SURCHARGED	
17.002	83	95.150	-0.035	0.000	0.94		43.3	OK	
16.005	84	94.370	-0.231	0.000	0.00		5.9	OK	
18.000	85	96.470	-0.225	0.000	0.00		0.0	OK	
18.001	86	94.370	0.223	0.000	0.00		0.2	SURCHARGED	
19.000	87	96.310	-0.150	0.000	0.00		0.0	OK	
19.001	88	94.645	-0.150	0.000	0.00		0.0	OK	

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PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
18.002	89	94.370	0.267	0.000	0.00		4.2	SURCHARGED	
1.024	90	94.370	2.178	0.000	0.95		28.4	SURCHARGED	

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