

Robert E Fry & Associates		Page 1
45 Bridgeman Terrace Wigan WN1 1TT	GRESFORD ROAD LLAY SW SIMULATIONS	
Date 29/01/2018 File SW1.MDX	Designed by GWH Checked by	
XP Solutions	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW1.SWS

Pipe Sizes SFA 7 Manhole Sizes United Utilities

FSR Rainfall Model - England and Wales			
Return Period (years)	8	PIMP (%)	100
M5-60 (mm)	17.000	Add Flow / Climate Change (%)	0
Ratio R	0.300	Minimum Backdrop Height (m)	0.600
Maximum Rainfall (mm/hr)	200	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.550
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)	250

Designed with Level Soffits

Time Area Diagram for SW1.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.513	8-12	4.340	12-16	1.525	16-20	0.011

Total Area Contributing (ha) = 6.390

Total Pipe Volume (m³) = 1602.756

Network Design Table for SW1.SWS

« - 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	21.371	0.825	25.9	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	22.324	0.134	166.6	0.060	0.00	5.0	0.600	o	300	Pipe/Conduit	
1.002	20.230	0.121	167.2	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	28.617	0.171	167.4	0.146	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.004	31.231	0.410	76.2	0.058	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)
1.000	71.96	5.14	84.100	0.060	0.0	0.0	0.0	2.58	102.6	11.7
1.001	70.39	5.44	83.200	0.120	5.0	0.0	0.0	1.22	85.9	27.9
1.002	69.04	5.72	83.066	0.178	5.0	0.0	0.0	1.21	85.8	38.3
1.003	67.46	6.06	82.870	0.324	5.0	0.0	0.0	1.40	154.4	64.2
1.004	66.35	6.31	82.699	0.382	5.0	0.0	0.0	2.08	229.5	73.6

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Network Design Table for SW1.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
1.005	37.514	0.223	168.2	0.060	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.000	12.486	0.100	124.9	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	58.797	0.582	101.0	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.002	39.033	0.389	100.3	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.003	25.768	0.380	67.8	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.004	18.145	0.076	238.8	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.005	23.900	0.091	262.6	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.006	14.621	0.059	247.8	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.007	14.256	0.057	250.1	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	22.562	0.056	402.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.007	19.135	0.048	398.6	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.008	16.170	0.036	449.2	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
3.000	32.869	0.361	91.0	0.146	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	16.087	0.041	392.4	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.010	15.149	0.038	398.7	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.011	29.775	0.074	402.4	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.012	27.981	0.070	399.7	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.013	19.833	0.050	396.7	0.058	0.00	0.0	0.600	o	1200	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)
1.005	64.68	6.71	82.214	0.442	5.0	0.0	0.0	1.56	248.8	82.4
2.000	71.75	5.18	84.450	0.060	0.0	0.0	0.0	1.17	46.5	11.7
2.001	68.65	5.80	84.275	0.120	0.0	0.0	0.0	1.56	110.6	22.3
2.002	66.77	6.22	83.693	0.178	0.0	0.0	0.0	1.57	110.9	32.2
2.003	65.92	6.41	83.229	0.236	0.0	0.0	0.0	2.20	243.3	42.1
2.004	64.96	6.64	82.774	0.294	0.0	0.0	0.0	1.31	208.6	51.7
2.005	63.69	6.96	82.698	0.352	0.0	0.0	0.0	1.25	198.8	60.7
2.006	62.96	7.15	82.607	0.410	0.0	0.0	0.0	1.29	204.7	69.9
2.007	62.27	7.34	82.548	0.468	0.0	0.0	0.0	1.28	203.7	78.9
1.006	61.54	7.54	79.147	0.968	5.0	0.0	0.0	1.86	2101.0	166.3
1.007	60.93	7.71	79.091	1.026	5.0	0.0	0.0	1.87	2112.2	174.3
1.008	60.41	7.86	79.043	1.084	5.0	0.0	0.0	1.76	1989.0	182.3
3.000	70.96	5.33	82.000	0.146	0.0	0.0	0.0	1.65	116.5	28.1
1.009	59.92	8.01	79.007	1.288	5.0	0.0	0.0	1.88	2129.1	214.0
1.010	59.48	8.14	78.966	1.346	5.0	0.0	0.0	1.87	2112.2	221.8
1.011	58.62	8.41	78.928	1.404	5.0	0.0	0.0	1.86	2102.3	227.9
1.012	57.84	8.66	78.854	1.462	5.0	0.0	0.0	1.87	2109.3	234.0
1.013	57.30	8.84	78.784	1.520	5.0	0.0	0.0	1.87	2117.5	240.9

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Network Design Table for SW1.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
4.000	33.533	0.375	89.4	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	40.950	0.898	45.6	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	57.350	0.506	113.3	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.002	36.561	0.623	58.7	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.003	15.681	0.197	79.6	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.014	8.372	0.021	398.7	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.015	33.173	0.083	399.7	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.016	18.649	0.047	396.8	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
6.000	33.176	0.332	99.9	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
7.000	15.770	0.164	96.2	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
7.001	20.860	0.217	96.1	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
7.002	16.493	0.222	74.3	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.000	33.371	0.218	153.1	0.060	5.00	0.0	0.600	o	300	Pipe/Conduit	
7.003	23.103	0.141	163.9	0.058	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)
4.000	70.59	5.40	83.200	0.060	0.0	0.0	0.0	1.38	55.0	11.5
4.001	69.16	5.70	82.750	0.120	0.0	0.0	0.0	2.33	165.0	22.5
5.000	68.77	5.78	82.433	0.060	0.0	0.0	0.0	1.23	48.8	11.2
4.002	67.40	6.08	81.852	0.238	0.0	0.0	0.0	2.06	145.4	43.4
4.003	66.83	6.20	81.154	0.296	0.0	0.0	0.0	2.03	224.5	53.6
1.014	57.08	8.91	78.734	1.874	5.0	0.0	0.0	1.87	2112.1	294.7
1.015	56.22	9.21	78.713	1.932	5.0	0.0	0.0	1.87	2109.5	299.2
1.016	55.75	9.37	78.630	1.990	5.0	0.0	0.0	1.87	2117.2	305.5
6.000	70.50	5.42	80.800	0.060	0.0	0.0	0.0	1.31	52.0	11.5
7.000	71.65	5.20	81.280	0.060	0.0	0.0	0.0	1.33	53.0	11.6
7.001	70.54	5.41	81.041	0.120	0.0	0.0	0.0	1.60	113.4	22.9
7.002	69.80	5.56	80.824	0.178	0.0	0.0	0.0	1.83	129.1	33.6
8.000	70.42	5.44	80.820	0.060	0.0	0.0	0.0	1.27	89.7	11.4
7.003	68.30	5.88	80.602	0.296	0.0	0.0	0.0	1.23	86.6	54.8

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7.004	22.369	0.133	168.2	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
7.005	32.307	0.317	101.9	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
9.000	30.178	0.320	94.3	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
9.001	29.192	0.320	91.2	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.002	25.305	0.151	167.6	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.003	11.170	0.067	166.7	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.004	15.404	0.093	165.6	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
9.005	26.488	0.301	88.0	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
7.006	13.971	0.036	388.1	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.007	18.903	0.047	402.2	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
10.000	31.701	0.391	81.1	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
10.001	19.674	0.428	46.0	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
7.008	22.403	0.061	367.3	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.009	21.481	0.053	405.3	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.010	18.283	0.047	389.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.000	21.189	0.212	99.9	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
11.001	16.518	0.165	100.1	0.060	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)
7.004	66.91	6.19	80.461	0.354	0.0	0.0	0.0	1.21	85.5	64.1
7.005	65.62	6.49	80.253	0.412	0.0	0.0	0.0	1.79	198.2	73.2
9.000	70.75	5.37	82.324	0.060	0.0	0.0	0.0	1.35	53.5	11.5
9.001	69.29	5.67	81.929	0.120	0.0	0.0	0.0	1.65	116.4	22.5
9.002	67.67	6.02	81.609	0.180	0.0	0.0	0.0	1.21	85.6	33.0
9.003	66.98	6.17	81.458	0.238	0.0	0.0	0.0	1.21	85.9	43.2
9.004	66.18	6.35	81.316	0.296	0.0	0.0	0.0	1.41	155.2	53.1
9.005	65.22	6.58	81.223	0.354	0.0	0.0	0.0	1.93	213.4	62.5
7.006	64.72	6.70	79.111	0.824	0.0	0.0	0.0	1.89	2140.9	144.4
7.007	64.04	6.87	79.075	0.882	0.0	0.0	0.0	1.86	2102.8	153.0
10.000	70.80	5.36	80.822	0.060	0.0	0.0	0.0	1.45	57.8	11.5
10.001	70.09	5.50	80.356	0.120	0.0	0.0	0.0	2.33	164.3	22.8
7.008	63.29	7.07	79.028	1.060	0.0	0.0	0.0	1.95	2201.2	181.7
7.009	62.56	7.26	78.967	1.118	0.0	0.0	0.0	1.85	2094.7	189.4
7.010	61.97	7.42	78.914	1.176	0.0	0.0	0.0	1.89	2138.4	197.4
11.000	71.28	5.27	80.662	0.060	0.0	0.0	0.0	1.31	52.0	11.6
11.001	70.21	5.48	80.450	0.120	0.0	0.0	0.0	1.31	52.0	22.8

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Network Design Table for SW1.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
11.002	14.727	0.037	398.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.003	12.283	0.030	409.4	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.004	10.718	0.027	397.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.005	19.803	0.050	396.1	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.006	12.525	0.031	404.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.007	10.008	0.026	384.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.008	38.975	0.097	401.8	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.009	40.078	0.100	400.8	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
11.010	18.163	0.045	403.6	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.011	8.297	0.022	377.1	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.012	22.013	0.061	360.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
7.013	51.971	0.201	258.6	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.017	17.456	0.087	200.6	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.018	43.505	0.113	385.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.019	45.507	0.144	316.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
12.000	26.357	0.066	399.3	0.060	5.00	0.0	0.600	o	1200	Pipe/Conduit	
13.000	41.771	0.105	397.8	0.060	5.00	0.0	0.600	o	1200	Pipe/Conduit	
13.001	28.483	0.071	401.2	0.060	0.00	0.0	0.600	o	1200	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)
11.002	69.56	5.61	79.310	0.178	0.0	0.0	0.0	1.87	2113.8	33.5
11.003	69.03	5.72	79.273	0.236	0.0	0.0	0.0	1.84	2084.0	44.1
11.004	68.58	5.82	79.243	0.294	0.0	0.0	0.0	1.87	2116.7	54.6
11.005	67.77	5.99	79.216	0.352	0.0	0.0	0.0	1.87	2119.1	64.6
11.006	67.26	6.11	79.166	0.410	0.0	0.0	0.0	1.86	2098.0	74.7
11.007	66.87	6.20	79.135	0.468	0.0	0.0	0.0	1.90	2149.8	84.8
11.008	65.38	6.54	79.109	0.526	0.0	0.0	0.0	1.86	2103.8	93.1
11.009	63.93	6.90	79.012	0.584	0.0	0.0	0.0	1.86	2106.5	101.1
11.010	63.29	7.07	78.912	0.642	0.0	0.0	0.0	1.86	2099.0	110.0
7.011	61.71	7.49	78.867	1.876	0.0	0.0	0.0	1.92	2172.0	313.5
7.012	61.05	7.68	78.845	1.934	0.0	0.0	0.0	1.96	2220.7	319.7
7.013	59.77	8.05	78.784	1.992	0.0	0.0	0.0	2.32	2626.1	322.5
1.017	55.19	9.58	78.583	4.100	5.0	0.0	0.0	1.43	227.7<	617.8
1.018	54.18	9.96	77.750	4.158	5.0	0.0	0.0	1.90	2149.5	617.8
1.019	53.26	10.32	77.637	4.216	5.0	0.0	0.0	2.10	2374.1	617.8
12.000	71.45	5.24	77.873	0.060	0.0	0.0	0.0	1.87	2110.3	11.6
13.000	70.75	5.37	78.032	0.060	0.0	0.0	0.0	1.87	2114.4	11.5
13.001	69.49	5.63	77.927	0.120	0.0	0.0	0.0	1.86	2105.5	22.6

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XP Solutions	Network 2017.1.2	

Network Design Table for SW1.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
13.002	19.499	0.049	397.9	0.060	0.00	0.0	0.600	o	1200	Pipe/Conduit	
12.001	23.171	0.058	399.5	0.060	0.00	0.0	0.600	o	1200	Pipe/Conduit	
12.002	20.117	0.050	402.3	0.060	0.00	0.0	0.600	o	1200	Pipe/Conduit	
12.003	16.786	0.042	399.7	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
14.000	34.067	0.341	99.9	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
12.004	20.142	0.050	402.8	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
12.005	45.707	0.114	400.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.020	21.418	0.054	396.6	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
15.000	33.182	0.702	47.3	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
15.001	12.417	0.398	31.2	0.060	0.00	0.0	0.600	o	225	Pipe/Conduit	
15.002	14.898	0.688	21.7	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
15.003	25.110	0.512	49.0	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
15.004	17.472	0.382	45.7	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
15.005	15.846	0.494	32.1	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
15.006	44.392	0.338	131.3	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
16.000	27.202	0.592	45.9	0.060	5.00	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)
13.002	68.66	5.80	77.856	0.180	0.0	0.0	0.0	1.87	2114.1	33.5
12.001	67.70	6.01	77.807	0.300	0.0	0.0	0.0	1.87	2109.9	55.0
12.002	66.90	6.19	77.749	0.360	0.0	0.0	0.0	1.86	2102.4	65.2
12.003	66.25	6.34	77.699	0.418	0.0	0.0	0.0	1.87	2109.5	75.0
14.000	70.44	5.43	78.973	0.060	0.0	0.0	0.0	1.31	52.0	11.4
12.004	65.48	6.52	77.657	0.536	0.0	0.0	0.0	1.86	2101.1	95.1
12.005	63.83	6.93	77.607	0.594	0.0	0.0	0.0	1.86	2106.1	102.7
1.020	52.79	10.51	77.493	4.868	5.0	0.0	0.0	1.87	2117.6	700.9
15.000	71.17	5.29	82.051	0.060	0.0	0.0	0.0	1.91	75.8	11.6
15.001	70.72	5.38	81.349	0.120	0.0	0.0	0.0	2.35	93.5	23.0
15.002	70.36	5.45	80.876	0.178	0.0	0.0	0.0	3.39	239.9	33.9
15.003	69.44	5.64	80.188	0.236	0.0	0.0	0.0	2.25	159.1	44.4
15.004	68.92	5.75	79.601	0.294	0.0	0.0	0.0	2.69	296.6	54.9
15.005	68.54	5.83	79.219	0.352	0.0	0.0	0.0	3.21	354.4	65.3
15.006	66.43	6.30	78.725	0.410	0.0	0.0	0.0	1.58	174.4	73.8
16.000	71.46	5.23	81.950	0.060	0.0	0.0	0.0	1.93	76.9	11.6

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Network Design Table for SW1.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
16.001	20.292	0.650	31.2	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
16.002	12.524	0.259	48.4	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
16.003	26.138	0.711	36.8	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit	
16.004	12.703	0.423	30.0	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
16.005	32.246	0.597	54.0	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
16.006	19.831	0.181	109.6	0.058	0.00	0.0	0.600	o	375	Pipe/Conduit	
15.007	13.225	0.036	367.4	0.060	0.00	0.0	0.600	o	1200	Pipe/Conduit	
15.008	22.509	0.057	394.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
15.009	11.471	0.030	382.4	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.021	32.442	0.078	415.9	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.022	18.775	0.042	447.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
17.000	34.907	0.349	100.0	0.060	5.00	0.0	0.600	o	225	Pipe/Conduit	
17.001	19.076	0.095	200.8	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
17.002	16.157	0.041	394.1	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
17.003	42.008	0.108	389.0	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
17.004	24.219	0.062	390.6	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
17.005	22.667	0.060	377.8	0.058	0.00	0.0	0.600	o	1200	Pipe/Conduit	
17.006	18.566	0.120	154.7	0.058	0.00	0.0	0.600	o	1200	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)
16.001	70.85	5.35	81.283	0.120	0.0	0.0	0.0	2.82	199.6	23.0
16.002	70.38	5.45	80.633	0.178	0.0	0.0	0.0	2.27	160.2	33.9
16.003	69.56	5.61	80.374	0.236	0.0	0.0	0.0	2.60	183.9	44.5
16.004	69.25	5.68	79.588	0.294	0.0	0.0	0.0	3.32	366.4	55.1
16.005	68.22	5.90	79.165	0.352	0.0	0.0	0.0	2.47	272.8	65.0
16.006	67.35	6.09	78.568	0.410	0.0	0.0	0.0	1.73	191.1	74.8
15.007	65.94	6.41	77.562	0.880	0.0	0.0	0.0	1.95	2200.9	157.2
15.008	65.11	6.61	77.526	0.938	0.0	0.0	0.0	1.88	2122.3	165.4
15.009	64.70	6.71	77.469	0.996	0.0	0.0	0.0	1.91	2157.0	174.5
1.021	52.08	10.81	77.439	5.922	5.0	0.0	0.0	1.83	2067.6	840.2
1.022	51.66	10.98	77.361	5.980	5.0	0.0	0.0	1.76	1993.8	841.7
17.000	70.39	5.45	79.129	0.060	0.0	0.0	0.0	1.31	52.0	11.4
17.001	68.99	5.73	78.705	0.120	0.0	0.0	0.0	1.11	78.2	22.4
17.002	68.31	5.88	77.710	0.178	0.0	0.0	0.0	1.88	2124.5	32.9
17.003	66.65	6.25	77.669	0.236	0.0	0.0	0.0	1.89	2138.5	42.6
17.004	65.73	6.46	77.561	0.294	0.0	0.0	0.0	1.89	2133.9	52.3
17.005	64.91	6.66	77.499	0.352	0.0	0.0	0.0	1.92	2170.1	61.9
17.006	64.50	6.76	77.439	0.410	0.0	0.0	0.0	3.01	3399.2	71.6

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Network Design Table for SW1.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
1.023	24.289	0.065	373.7	0.000	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.024	39.200	0.098	400.0	0.000	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.025	33.081	0.083	398.6	0.000	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.026	10.015	0.040	250.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.027	78.969	0.316	249.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.028	89.167	1.328	67.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.029	97.122	0.647	150.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.030	79.496	0.530	150.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.031	99.821	6.212	16.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.032	27.276	3.165	8.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.033	40.863	4.285	9.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.034	25.596	2.864	8.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.035	49.555	5.851	8.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.036	73.792	6.335	11.6	0.000	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)
1.023	51.19	11.19	77.319	6.390	5.0	0.0	0.0	1.93	2182.1	890.8
1.024	50.41	11.54	77.254	6.390	5.0	0.0	0.0	1.86	2108.6	890.8
1.025	49.78	11.84	77.156	6.390	5.0	0.0	0.0	1.87	2112.4	890.8
1.026	49.47	11.98	77.073	6.390	5.0	0.0	0.0	1.14	126.0«	890.8
1.027	47.22	13.14	77.033	6.390	5.0	0.0	0.0	1.14	126.1«	890.8
1.028	46.02	13.81	76.717	6.390	5.0	0.0	0.0	2.21	244.5«	890.8
1.029	44.22	14.91	75.389	6.390	5.0	0.0	0.0	1.48	163.1«	890.8
1.030	42.87	15.80	74.742	6.390	5.0	0.0	0.0	1.48	163.1«	890.8
1.031	42.34	16.17	74.212	6.390	5.0	0.0	0.0	4.54	501.4«	890.8
1.032	42.24	16.24	68.000	6.390	5.0	0.0	0.0	6.20	685.1«	890.8
1.033	42.08	16.36	64.835	6.390	5.0	0.0	0.0	5.90	651.2«	890.8
1.034	41.98	16.43	60.550	6.390	5.0	0.0	0.0	6.09	672.8«	890.8
1.035	41.80	16.56	57.686	6.390	5.0	0.0	0.0	6.26	691.1«	890.8
1.036	41.49	16.79	51.835	6.390	5.0	0.0	0.0	5.33	589.1«	890.8

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Manhole Schedules for SW1.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	86.039	1.939	Open Manhole	1200	1.000	84.100			
2	86.075	2.875	Open Manhole	1350	1.001	83.200	1.000	83.275	225
3	86.084	3.018	Open Manhole	1350	1.002	83.066	1.001	83.066	300
4	85.922	3.052	Open Manhole	1350	1.003	82.870	1.002	82.945	300
5	85.599	2.900	Open Manhole	1350	1.004	82.699	1.003	82.699	375
6	85.008	2.794	Open Manhole	1500	1.005	82.214	1.004	82.289	375
7	86.308	1.858	Open Manhole	1200	2.000	84.450			
8	86.269	1.994	Open Manhole	1350	2.001	84.275	2.000	84.350	225
9	85.738	2.045	Open Manhole	1350	2.002	83.693	2.001	83.693	300
10	84.942	1.713	Open Manhole	1350	2.003	83.229	2.002	83.304	300
11	84.457	1.683	Open Manhole	1500	2.004	82.774	2.003	82.849	375
12	84.348	1.650	Open Manhole	1500	2.005	82.698	2.004	82.698	450
13	84.596	1.989	Open Manhole	1500	2.006	82.607	2.005	82.607	450
14	84.684	2.136	Open Manhole	1500	2.007	82.548	2.006	82.548	450
15	84.661	5.514	Open Manhole	2400	1.006	79.147	1.005	81.991	450
							2.007	82.491	450
16	84.705	5.614	Open Manhole	2400	1.007	79.091	1.006	79.091	1200
17	84.742	5.699	Open Manhole	2400	1.008	79.043	1.007	79.043	1200
18	85.216	3.216	Open Manhole	1350	3.000	82.000			
19	84.696	5.689	Open Manhole	2400	1.009	79.007	1.008	79.007	1200
							3.000	81.639	300
20	84.650	5.684	Open Manhole	2400	1.010	78.966	1.009	78.966	1200
21	84.395	5.467	Open Manhole	2400	1.011	78.928	1.010	78.928	1200
22	84.095	5.241	Open Manhole	2400	1.012	78.854	1.011	78.854	1200
23	83.382	4.598	Open Manhole	2400	1.013	78.784	1.012	78.784	1200
24	84.932	1.732	Open Manhole	1200	4.000	83.200			
25	84.419	1.669	Open Manhole	1350	4.001	82.750	4.000	82.825	225
26	84.750	2.317	Open Manhole	1200	5.000	82.433			
27	83.915	2.063	Open Manhole	1350	4.002	81.852	4.001	81.852	300
							5.000	81.927	225
28	83.079	1.925	Open Manhole	1350	4.003	81.154	4.002	81.229	300
29	82.881	4.147	Open Manhole	2400	1.014	78.734	1.013	78.734	1200
							4.003	80.957	375
30	82.782	4.069	Open Manhole	2400	1.015	78.713	1.014	78.713	1200
31	82.567	3.937	Open Manhole	2400	1.016	78.630	1.015	78.630	1200
32	82.500	1.700	Open Manhole	1200	6.000	80.800			
33	83.026	1.746	Open Manhole	1200	7.000	81.280			
34	83.103	2.062	Open Manhole	1350	7.001	81.041	7.000	81.116	225

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Manhole Schedules for SW1.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
35	82.995	2.171	Open Manhole	1350	7.002	80.824	300	7.001	80.824	300	
36	82.670	1.850	Open Manhole	1350	8.000	80.820	300				
37	82.839	2.237	Open Manhole	1350	7.003	80.602	300	7.002	80.602	300	
								8.000	80.602	300	
38	82.974	2.513	Open Manhole	1350	7.004	80.461	300	7.003	80.461	300	
39	82.886	2.633	Open Manhole	1350	7.005	80.253	375	7.004	80.328	300	
40	84.099	1.775	Open Manhole	1200	9.000	82.324	225				
41	83.760	1.831	Open Manhole	1350	9.001	81.929	300	9.000	82.004	225	
42	83.797	2.188	Open Manhole	1350	9.002	81.609	300	9.001	81.609	300	
43	83.668	2.210	Open Manhole	1350	9.003	81.458	300	9.002	81.458	300	
44	83.599	2.283	Open Manhole	1350	9.004	81.316	375	9.003	81.391	300	
45	83.302	2.079	Open Manhole	1350	9.005	81.223	375	9.004	81.223	375	
46	82.856	3.745	Open Manhole	2400	7.006	79.111	1200	7.005	79.936	375	
								9.005	80.922	375	986
47	82.749	3.674	Open Manhole	2400	7.007	79.075	1200	7.006	79.075	1200	
48	82.551	1.729	Open Manhole	1200	10.000	80.822	225				
49	82.576	2.220	Open Manhole	1350	10.001	80.356	300	10.000	80.431	225	
50	82.653	3.625	Open Manhole	2400	7.008	79.028	1200	7.007	79.028	1200	
								10.001	79.928	300	
51	82.544	3.577	Open Manhole	2400	7.009	78.967	1200	7.008	78.967	1200	
52	82.536	3.622	Open Manhole	2400	7.010	78.914	1200	7.009	78.914	1200	
53	82.445	1.783	Open Manhole	1200	11.000	80.662	225				
54	82.645	2.195	Open Manhole	1200	11.001	80.450	225	11.000	80.450	225	
55	82.693	3.383	Open Manhole	2400	11.002	79.310	1200	11.001	80.285	225	
56	82.588	3.315	Open Manhole	2400	11.003	79.273	1200	11.002	79.273	1200	
57	82.803	3.560	Open Manhole	2400	11.004	79.243	1200	11.003	79.243	1200	
58	82.932	3.716	Open Manhole	2400	11.005	79.216	1200	11.004	79.216	1200	
59	83.166	4.000	Open Manhole	2400	11.006	79.166	1200	11.005	79.166	1200	
60	83.320	4.185	Open Manhole	2400	11.007	79.135	1200	11.006	79.135	1200	
61	83.410	4.301	Open Manhole	2400	11.008	79.109	1200	11.007	79.109	1200	
62	83.267	4.255	Open Manhole	2400	11.009	79.012	1200	11.008	79.012	1200	
63	82.613	3.701	Open Manhole	2400	11.010	78.912	1200	11.009	78.912	1200	
64	82.592	3.725	Open Manhole	2400	7.011	78.867	1200	7.010	78.867	1200	
								11.010	78.867	1200	
65	82.648	3.803	Open Manhole	2400	7.012	78.845	1200	7.011	78.845	1200	
66	82.728	3.944	Open Manhole	2400	7.013	78.784	1200	7.012	78.784	1200	
67	82.400	3.817	Open Manhole	2400	1.017	78.583	450	1.016	78.583	1200	
								6.000	80.468	225	1660

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Manhole Schedules for SW1.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
68	82.101	4.351	Open Manhole	2400	1.018	77.750	1200	7.013	78.583	1200	
69	81.462	3.825	Open Manhole	2400	1.019	77.637	1200	1.017	78.496	450	
70	82.468	4.595	Open Manhole	2400	12.000	77.873	1200	1.018	77.637	1200	
71	81.706	3.674	Open Manhole	2400	13.000	78.032	1200				
72	81.400	3.473	Open Manhole	2400	13.001	77.927	1200	13.000	77.927	1200	
73	81.300	3.444	Open Manhole	2400	13.002	77.856	1200	13.001	77.856	1200	
74	81.700	3.893	Open Manhole	2400	12.001	77.807	1200	12.000	77.807	1200	
								13.002	77.807	1200	
75	80.800	3.051	Open Manhole	2400	12.002	77.749	1200	12.001	77.749	1200	
76	80.350	2.651	Open Manhole	2400	12.003	77.699	1200	12.002	77.699	1200	
77	80.750	1.777	Open Manhole	1200	14.000	78.973	225				
78	80.400	2.743	Open Manhole	2400	12.004	77.657	1200	12.003	77.657	1200	
								14.000	78.632	225	
79	80.250	2.643	Open Manhole	2400	12.005	77.607	1200	12.004	77.607	1200	
80	80.250	2.757	Open Manhole	2400	1.020	77.493	1200	1.019	77.493	1200	
								12.005	77.493	1200	
81	83.826	1.775	Open Manhole	1200	15.000	82.051	225				
82	83.123	1.774	Open Manhole	1200	15.001	81.349	225	15.000	81.349	225	
83	82.726	1.850	Open Manhole	1350	15.002	80.876	300	15.001	80.951	225	
84	82.037	1.849	Open Manhole	1350	15.003	80.188	300	15.002	80.188	300	
85	81.525	1.924	Open Manhole	1350	15.004	79.601	375	15.003	79.676	300	
86	81.143	1.924	Open Manhole	1350	15.005	79.219	375	15.004	79.219	375	
87	80.649	1.924	Open Manhole	1350	15.006	78.725	375	15.005	78.725	375	
88	83.791	1.841	Open Manhole	1200	16.000	81.950	225				
89	83.209	1.926	Open Manhole	1350	16.001	81.283	300	16.000	81.358	225	
90	82.570	1.937	Open Manhole	1350	16.002	80.633	300	16.001	80.633	300	
91	82.244	1.870	Open Manhole	1350	16.003	80.374	300	16.002	80.374	300	
92	81.200	1.612	Open Manhole	1350	16.004	79.588	375	16.003	79.663	300	
93	80.900	1.735	Open Manhole	1350	16.005	79.165	375	16.004	79.165	375	
94	80.600	2.032	Open Manhole	1350	16.006	78.568	375	16.005	78.568	375	
95	80.400	2.838	Open Manhole	2400	15.007	77.562	1200	15.006	78.387	375	
								16.006	78.387	375	
96	80.300	2.774	Open Manhole	2400	15.008	77.526	1200	15.007	77.526	1200	
97	80.400	2.931	Open Manhole	2400	15.009	77.469	1200	15.008	77.469	1200	
98	80.300	2.861	Open Manhole	2400	1.021	77.439	1200	1.020	77.439	1200	
								15.009	77.439	1200	
99	80.200	2.839	Open Manhole	2400	1.022	77.361	1200	1.021	77.361	1200	

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Manhole Schedules for SW1.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
100	80.750	1.621	Open Manhole	1200	17.000	79.129			
101	80.500	1.795	Open Manhole	1350	17.001	78.705	17.000	78.780	225
102	80.250	2.540	Open Manhole	2400	17.002	77.710	17.001	78.610	300
103	80.000	2.331	Open Manhole	2400	17.003	77.669	17.002	77.669	1200
104	80.250	2.689	Open Manhole	2400	17.004	77.561	17.003	77.561	1200
105	80.000	2.501	Open Manhole	2400	17.005	77.499	17.004	77.499	1200
106	80.000	2.561	Open Manhole	2400	17.006	77.439	17.005	77.439	1200
107	80.100	2.781	Open Manhole	2400	1.023	77.319	1.022	77.319	1200
							17.006	77.319	1200
108	80.440	3.186	Open Manhole	2400	1.024	77.254	1.023	77.254	1200
109	80.500	3.344	Open Manhole	2400	1.025	77.156	1.024	77.156	1200
110	81.352	4.279	Open Manhole	2400	1.026	77.073	1.025	77.073	1200
111	81.712	4.679	Open Manhole	1350	1.027	77.033	1.026	77.033	375
112	79.409	2.692	Open Manhole	1350	1.028	76.717	1.027	76.717	375
113	77.675	2.286	Open Manhole	1350	1.029	75.389	1.028	75.389	375
114	77.118	2.376	Open Manhole	1350	1.030	74.742	1.029	74.742	375
115	76.561	2.349	Open Manhole	1350	1.031	74.212	1.030	74.212	375
116	70.515	2.515	Open Manhole	1350	1.032	68.000	1.031	68.000	375
117	67.350	2.515	Open Manhole	1350	1.033	64.835	1.032	64.835	375
118	63.019	2.469	Open Manhole	1350	1.034	60.550	1.033	60.550	375
119	60.155	2.469	Open Manhole	1350	1.035	57.686	1.034	57.686	375
120	54.831	2.996	Open Manhole	1350	1.036	51.835	1.035	51.835	375
121	47.430	1.930	Open Manhole	0		OUTFALL	1.036	45.500	375

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PIPELINE SCHEDULES for SW1.SWS

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)
1.000	o	225	1	86.039	84.100	1.714	Open Manhole	1200
1.001	o	300	2	86.075	83.200	2.575	Open Manhole	1350
1.002	o	300	3	86.084	83.066	2.718	Open Manhole	1350
1.003	o	375	4	85.922	82.870	2.677	Open Manhole	1350
1.004	o	375	5	85.599	82.699	2.525	Open Manhole	1350
1.005	o	450	6	85.008	82.214	2.344	Open Manhole	1500
2.000	o	225	7	86.308	84.450	1.633	Open Manhole	1200
2.001	o	300	8	86.269	84.275	1.694	Open Manhole	1350
2.002	o	300	9	85.738	83.693	1.745	Open Manhole	1350
2.003	o	375	10	84.942	83.229	1.338	Open Manhole	1350
2.004	o	450	11	84.457	82.774	1.233	Open Manhole	1500
2.005	o	450	12	84.348	82.698	1.200	Open Manhole	1500
2.006	o	450	13	84.596	82.607	1.539	Open Manhole	1500
2.007	o	450	14	84.684	82.548	1.686	Open Manhole	1500
1.006	o	1200	15	84.661	79.147	4.314	Open Manhole	2400
1.007	o	1200	16	84.705	79.091	4.414	Open Manhole	2400
1.008	o	1200	17	84.742	79.043	4.499	Open Manhole	2400
3.000	o	300	18	85.216	82.000	2.916	Open Manhole	1350

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)
1.000	21.371	25.9	2	86.075	83.275	2.575	Open Manhole	1350
1.001	22.324	166.6	3	86.084	83.066	2.718	Open Manhole	1350
1.002	20.230	167.2	4	85.922	82.945	2.677	Open Manhole	1350
1.003	28.617	167.4	5	85.599	82.699	2.525	Open Manhole	1350
1.004	31.231	76.2	6	85.008	82.289	2.344	Open Manhole	1500
1.005	37.514	168.2	15	84.661	81.991	2.220	Open Manhole	2400
2.000	12.486	124.9	8	86.269	84.350	1.694	Open Manhole	1350
2.001	58.797	101.0	9	85.738	83.693	1.745	Open Manhole	1350
2.002	39.033	100.3	10	84.942	83.304	1.338	Open Manhole	1350
2.003	25.768	67.8	11	84.457	82.849	1.233	Open Manhole	1500
2.004	18.145	238.8	12	84.348	82.698	1.200	Open Manhole	1500
2.005	23.900	262.6	13	84.596	82.607	1.539	Open Manhole	1500
2.006	14.621	247.8	14	84.684	82.548	1.686	Open Manhole	1500
2.007	14.256	250.1	15	84.661	82.491	1.720	Open Manhole	2400
1.006	22.562	402.9	16	84.705	79.091	4.414	Open Manhole	2400
1.007	19.135	398.6	17	84.742	79.043	4.499	Open Manhole	2400
1.008	16.170	449.2	19	84.696	79.007	4.489	Open Manhole	2400
3.000	32.869	91.0	19	84.696	81.639	2.757	Open Manhole	2400

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PIPELINE SCHEDULES for SW1.SWS

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)
1.009	o	1200	19	84.696	79.007	4.489	Open Manhole	2400
1.010	o	1200	20	84.650	78.966	4.484	Open Manhole	2400
1.011	o	1200	21	84.395	78.928	4.267	Open Manhole	2400
1.012	o	1200	22	84.095	78.854	4.041	Open Manhole	2400
1.013	o	1200	23	83.382	78.784	3.398	Open Manhole	2400
4.000	o	225	24	84.932	83.200	1.507	Open Manhole	1200
4.001	o	300	25	84.419	82.750	1.369	Open Manhole	1350
5.000	o	225	26	84.750	82.433	2.092	Open Manhole	1200
4.002	o	300	27	83.915	81.852	1.763	Open Manhole	1350
4.003	o	375	28	83.079	81.154	1.550	Open Manhole	1350
1.014	o	1200	29	82.881	78.734	2.947	Open Manhole	2400
1.015	o	1200	30	82.782	78.713	2.869	Open Manhole	2400
1.016	o	1200	31	82.567	78.630	2.737	Open Manhole	2400
6.000	o	225	32	82.500	80.800	1.475	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)
1.009	16.087	392.4	20	84.650	78.966	4.484	Open Manhole	2400
1.010	15.149	398.7	21	84.395	78.928	4.267	Open Manhole	2400
1.011	29.775	402.4	22	84.095	78.854	4.041	Open Manhole	2400
1.012	27.981	399.7	23	83.382	78.784	3.398	Open Manhole	2400
1.013	19.833	396.7	29	82.881	78.734	2.947	Open Manhole	2400
4.000	33.533	89.4	25	84.419	82.825	1.369	Open Manhole	1350
4.001	40.950	45.6	27	83.915	81.852	1.763	Open Manhole	1350
5.000	57.350	113.3	27	83.915	81.927	1.763	Open Manhole	1350
4.002	36.561	58.7	28	83.079	81.229	1.550	Open Manhole	1350
4.003	15.681	79.6	29	82.881	80.957	1.549	Open Manhole	2400
1.014	8.372	398.7	30	82.782	78.713	2.869	Open Manhole	2400
1.015	33.173	399.7	31	82.567	78.630	2.737	Open Manhole	2400
1.016	18.649	396.8	67	82.400	78.583	2.617	Open Manhole	2400
6.000	33.176	99.9	67	82.400	80.468	1.707	Open Manhole	2400

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PIPELINE SCHEDULES for SW1.SWS

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)
7.000	o	225	33	83.026	81.280	1.521	Open Manhole	1200
7.001	o	300	34	83.103	81.041	1.762	Open Manhole	1350
7.002	o	300	35	82.995	80.824	1.871	Open Manhole	1350
8.000	o	300	36	82.670	80.820	1.550	Open Manhole	1350
7.003	o	300	37	82.839	80.602	1.937	Open Manhole	1350
7.004	o	300	38	82.974	80.461	2.213	Open Manhole	1350
7.005	o	375	39	82.886	80.253	2.258	Open Manhole	1350
9.000	o	225	40	84.099	82.324	1.550	Open Manhole	1200
9.001	o	300	41	83.760	81.929	1.531	Open Manhole	1350
9.002	o	300	42	83.797	81.609	1.888	Open Manhole	1350
9.003	o	300	43	83.668	81.458	1.910	Open Manhole	1350
9.004	o	375	44	83.599	81.316	1.908	Open Manhole	1350
9.005	o	375	45	83.302	81.223	1.704	Open Manhole	1350
7.006	o	1200	46	82.856	79.111	2.545	Open Manhole	2400
7.007	o	1200	47	82.749	79.075	2.474	Open Manhole	2400
10.000	o	225	48	82.551	80.822	1.504	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)
7.000	15.770	96.2	34	83.103	81.116	1.762	Open Manhole	1350
7.001	20.860	96.1	35	82.995	80.824	1.871	Open Manhole	1350
7.002	16.493	74.3	37	82.839	80.602	1.937	Open Manhole	1350
8.000	33.371	153.1	37	82.839	80.602	1.937	Open Manhole	1350
7.003	23.103	163.9	38	82.974	80.461	2.213	Open Manhole	1350
7.004	22.369	168.2	39	82.886	80.328	2.258	Open Manhole	1350
7.005	32.307	101.9	46	82.856	79.936	2.545	Open Manhole	2400
9.000	30.178	94.3	41	83.760	82.004	1.531	Open Manhole	1350
9.001	29.192	91.2	42	83.797	81.609	1.888	Open Manhole	1350
9.002	25.305	167.6	43	83.668	81.458	1.910	Open Manhole	1350
9.003	11.170	166.7	44	83.599	81.391	1.908	Open Manhole	1350
9.004	15.404	165.6	45	83.302	81.223	1.704	Open Manhole	1350
9.005	26.488	88.0	46	82.856	80.922	1.559	Open Manhole	2400
7.006	13.971	388.1	47	82.749	79.075	2.474	Open Manhole	2400
7.007	18.903	402.2	50	82.653	79.028	2.425	Open Manhole	2400
10.000	31.701	81.1	49	82.576	80.431	1.920	Open Manhole	1350

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PIPELINE SCHEDULES for SW1.SWS

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)
10.001	o	300	49	82.576	80.356	1.920	Open Manhole	1350
7.008	o	1200	50	82.653	79.028	2.425	Open Manhole	2400
7.009	o	1200	51	82.544	78.967	2.377	Open Manhole	2400
7.010	o	1200	52	82.536	78.914	2.422	Open Manhole	2400
11.000	o	225	53	82.445	80.662	1.558	Open Manhole	1200
11.001	o	225	54	82.645	80.450	1.970	Open Manhole	1200
11.002	o	1200	55	82.693	79.310	2.183	Open Manhole	2400
11.003	o	1200	56	82.588	79.273	2.115	Open Manhole	2400
11.004	o	1200	57	82.803	79.243	2.360	Open Manhole	2400
11.005	o	1200	58	82.932	79.216	2.516	Open Manhole	2400
11.006	o	1200	59	83.166	79.166	2.800	Open Manhole	2400
11.007	o	1200	60	83.320	79.135	2.985	Open Manhole	2400
11.008	o	1200	61	83.410	79.109	3.101	Open Manhole	2400
11.009	o	1200	62	83.267	79.012	3.055	Open Manhole	2400
11.010	o	1200	63	82.613	78.912	2.501	Open Manhole	2400
7.011	o	1200	64	82.592	78.867	2.525	Open Manhole	2400
7.012	o	1200	65	82.648	78.845	2.603	Open Manhole	2400
7.013	o	1200	66	82.728	78.784	2.744	Open Manhole	2400

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)
10.001	19.674	46.0	50	82.653	79.928	2.425	Open Manhole	2400
7.008	22.403	367.3	51	82.544	78.967	2.377	Open Manhole	2400
7.009	21.481	405.3	52	82.536	78.914	2.422	Open Manhole	2400
7.010	18.283	389.0	64	82.592	78.867	2.525	Open Manhole	2400
11.000	21.189	99.9	54	82.645	80.450	1.970	Open Manhole	1200
11.001	16.518	100.1	55	82.693	80.285	2.183	Open Manhole	2400
11.002	14.727	398.0	56	82.588	79.273	2.115	Open Manhole	2400
11.003	12.283	409.4	57	82.803	79.243	2.360	Open Manhole	2400
11.004	10.718	397.0	58	82.932	79.216	2.516	Open Manhole	2400
11.005	19.803	396.1	59	83.166	79.166	2.800	Open Manhole	2400
11.006	12.525	404.0	60	83.320	79.135	2.985	Open Manhole	2400
11.007	10.008	384.9	61	83.410	79.109	3.101	Open Manhole	2400
11.008	38.975	401.8	62	83.267	79.012	3.055	Open Manhole	2400
11.009	40.078	400.8	63	82.613	78.912	2.501	Open Manhole	2400
11.010	18.163	403.6	64	82.592	78.867	2.525	Open Manhole	2400
7.011	8.297	377.1	65	82.648	78.845	2.603	Open Manhole	2400
7.012	22.013	360.9	66	82.728	78.784	2.744	Open Manhole	2400
7.013	51.971	258.6	67	82.400	78.583	2.617	Open Manhole	2400

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PIPELINE SCHEDULES for SW1.SWS

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)
1.017	o	450	67	82.400	78.583	3.367	Open Manhole	2400
1.018	o	1200	68	82.101	77.750	3.151	Open Manhole	2400
1.019	o	1200	69	81.462	77.637	2.625	Open Manhole	2400
12.000	o	1200	70	82.468	77.873	3.395	Open Manhole	2400
13.000	o	1200	71	81.706	78.032	2.474	Open Manhole	2400
13.001	o	1200	72	81.400	77.927	2.273	Open Manhole	2400
13.002	o	1200	73	81.300	77.856	2.244	Open Manhole	2400
12.001	o	1200	74	81.700	77.807	2.693	Open Manhole	2400
12.002	o	1200	75	80.800	77.749	1.851	Open Manhole	2400
12.003	o	1200	76	80.350	77.699	1.451	Open Manhole	2400
14.000	o	225	77	80.750	78.973	1.552	Open Manhole	1200
12.004	o	1200	78	80.400	77.657	1.543	Open Manhole	2400
12.005	o	1200	79	80.250	77.607	1.443	Open Manhole	2400
1.020	o	1200	80	80.250	77.493	1.557	Open Manhole	2400

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)
1.017	17.456	200.6	68	82.101	78.496	3.155	Open Manhole	2400
1.018	43.505	385.0	69	81.462	77.637	2.625	Open Manhole	2400
1.019	45.507	316.0	80	80.250	77.493	1.557	Open Manhole	2400
12.000	26.357	399.3	74	81.700	77.807	2.693	Open Manhole	2400
13.000	41.771	397.8	72	81.400	77.927	2.273	Open Manhole	2400
13.001	28.483	401.2	73	81.300	77.856	2.244	Open Manhole	2400
13.002	19.499	397.9	74	81.700	77.807	2.693	Open Manhole	2400
12.001	23.171	399.5	75	80.800	77.749	1.851	Open Manhole	2400
12.002	20.117	402.3	76	80.350	77.699	1.451	Open Manhole	2400
12.003	16.786	399.7	78	80.400	77.657	1.543	Open Manhole	2400
14.000	34.067	99.9	78	80.400	78.632	1.543	Open Manhole	2400
12.004	20.142	402.8	79	80.250	77.607	1.443	Open Manhole	2400
12.005	45.707	400.9	80	80.250	77.493	1.557	Open Manhole	2400
1.020	21.418	396.6	98	80.300	77.439	1.661	Open Manhole	2400

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PIPELINE SCHEDULES for SW1.SWS

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)
15.000	o	225	81	83.826	82.051	1.550	Open Manhole	1200
15.001	o	225	82	83.123	81.349	1.549	Open Manhole	1200
15.002	o	300	83	82.726	80.876	1.550	Open Manhole	1350
15.003	o	300	84	82.037	80.188	1.549	Open Manhole	1350
15.004	o	375	85	81.525	79.601	1.549	Open Manhole	1350
15.005	o	375	86	81.143	79.219	1.549	Open Manhole	1350
15.006	o	375	87	80.649	78.725	1.549	Open Manhole	1350
16.000	o	225	88	83.791	81.950	1.616	Open Manhole	1200
16.001	o	300	89	83.209	81.283	1.626	Open Manhole	1350
16.002	o	300	90	82.570	80.633	1.637	Open Manhole	1350
16.003	o	300	91	82.244	80.374	1.570	Open Manhole	1350
16.004	o	375	92	81.200	79.588	1.237	Open Manhole	1350
16.005	o	375	93	80.900	79.165	1.360	Open Manhole	1350
16.006	o	375	94	80.600	78.568	1.657	Open Manhole	1350
15.007	o	1200	95	80.400	77.562	1.638	Open Manhole	2400
15.008	o	1200	96	80.300	77.526	1.574	Open Manhole	2400
15.009	o	1200	97	80.400	77.469	1.731	Open Manhole	2400

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)
15.000	33.182	47.3	82	83.123	81.349	1.549	Open Manhole	1200
15.001	12.417	31.2	83	82.726	80.951	1.550	Open Manhole	1350
15.002	14.898	21.7	84	82.037	80.188	1.549	Open Manhole	1350
15.003	25.110	49.0	85	81.525	79.676	1.549	Open Manhole	1350
15.004	17.472	45.7	86	81.143	79.219	1.549	Open Manhole	1350
15.005	15.846	32.1	87	80.649	78.725	1.549	Open Manhole	1350
15.006	44.392	131.3	95	80.400	78.387	1.638	Open Manhole	2400
16.000	27.202	45.9	89	83.209	81.358	1.626	Open Manhole	1350
16.001	20.292	31.2	90	82.570	80.633	1.637	Open Manhole	1350
16.002	12.524	48.4	91	82.244	80.374	1.570	Open Manhole	1350
16.003	26.138	36.8	92	81.200	79.663	1.237	Open Manhole	1350
16.004	12.703	30.0	93	80.900	79.165	1.360	Open Manhole	1350
16.005	32.246	54.0	94	80.600	78.568	1.657	Open Manhole	1350
16.006	19.831	109.6	95	80.400	78.387	1.638	Open Manhole	2400
15.007	13.225	367.4	96	80.300	77.526	1.574	Open Manhole	2400
15.008	22.509	394.9	97	80.400	77.469	1.731	Open Manhole	2400
15.009	11.471	382.4	98	80.300	77.439	1.661	Open Manhole	2400

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PIPELINE SCHEDULES for SW1.SWS

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)
1.021	o	1200	98	80.300	77.439	1.661	Open Manhole	2400
1.022	o	1200	99	80.200	77.361	1.639	Open Manhole	2400
17.000	o	225	100	80.750	79.129	1.396	Open Manhole	1200
17.001	o	300	101	80.500	78.705	1.495	Open Manhole	1350
17.002	o	1200	102	80.250	77.710	1.340	Open Manhole	2400
17.003	o	1200	103	80.000	77.669	1.131	Open Manhole	2400
17.004	o	1200	104	80.250	77.561	1.489	Open Manhole	2400
17.005	o	1200	105	80.000	77.499	1.301	Open Manhole	2400
17.006	o	1200	106	80.000	77.439	1.361	Open Manhole	2400
1.023	o	1200	107	80.100	77.319	1.581	Open Manhole	2400
1.024	o	1200	108	80.440	77.254	1.986	Open Manhole	2400
1.025	o	1200	109	80.500	77.156	2.144	Open Manhole	2400
1.026	o	375	110	81.352	77.073	3.904	Open Manhole	2400
1.027	o	375	111	81.712	77.033	4.304	Open Manhole	1350
1.028	o	375	112	79.409	76.717	2.317	Open Manhole	1350
1.029	o	375	113	77.675	75.389	1.911	Open Manhole	1350
1.030	o	375	114	77.118	74.742	2.001	Open Manhole	1350
1.031	o	375	115	76.561	74.212	1.974	Open Manhole	1350
1.032	o	375	116	70.515	68.000	2.140	Open Manhole	1350

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)
1.021	32.442	415.9	99	80.200	77.361	1.639	Open Manhole	2400
1.022	18.775	447.0	107	80.100	77.319	1.581	Open Manhole	2400
17.000	34.907	100.0	101	80.500	78.780	1.495	Open Manhole	1350
17.001	19.076	200.8	102	80.250	78.610	1.340	Open Manhole	2400
17.002	16.157	394.1	103	80.000	77.669	1.131	Open Manhole	2400
17.003	42.008	389.0	104	80.250	77.561	1.489	Open Manhole	2400
17.004	24.219	390.6	105	80.000	77.499	1.301	Open Manhole	2400
17.005	22.667	377.8	106	80.000	77.439	1.361	Open Manhole	2400
17.006	18.566	154.7	107	80.100	77.319	1.581	Open Manhole	2400
1.023	24.289	373.7	108	80.440	77.254	1.986	Open Manhole	2400
1.024	39.200	400.0	109	80.500	77.156	2.144	Open Manhole	2400
1.025	33.081	398.6	110	81.352	77.073	3.079	Open Manhole	2400
1.026	10.015	250.4	111	81.712	77.033	4.304	Open Manhole	1350
1.027	78.969	249.9	112	79.409	76.717	2.317	Open Manhole	1350
1.028	89.167	67.1	113	77.675	75.389	1.911	Open Manhole	1350
1.029	97.122	150.1	114	77.118	74.742	2.001	Open Manhole	1350
1.030	79.496	150.0	115	76.561	74.212	1.974	Open Manhole	1350
1.031	99.821	16.1	116	70.515	68.000	2.140	Open Manhole	1350
1.032	27.276	8.6	117	67.350	64.835	2.140	Open Manhole	1350

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PIPELINE SCHEDULES for SW1.SWS

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)
1.033	o	375	117	67.350	64.835	2.140	Open Manhole	1350
1.034	o	375	118	63.019	60.550	2.094	Open Manhole	1350
1.035	o	375	119	60.155	57.686	2.094	Open Manhole	1350
1.036	o	375	120	54.831	51.835	2.621	Open Manhole	1350

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)
1.033	40.863	9.5	118	63.019	60.550	2.094	Open Manhole	1350
1.034	25.596	8.9	119	60.155	57.686	2.094	Open Manhole	1350
1.035	49.555	8.5	120	54.831	51.835	2.621	Open Manhole	1350
1.036	73.792	11.6	121	47.430	45.500	1.555	Open Manhole	0

Free Flowing Outfall Details for SW1.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.036	121	47.430	45.500	0.000	0	0
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Simulation Criteria for SW1.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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	8	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	17.000	Storm Duration (mins)	30
Ratio R	0.300		

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Online Controls for SW1.SWS

Hydro-Brake® Optimum Manhole: 67, DS/PN: 1.017, Volume (m³): 93.0

Unit Reference	MD-SHE-0301-5500-1500-5500
Design Head (m)	1.500
Design Flow (l/s)	55.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	301
Invert Level (m)	78.583
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	55.0	Kick-Flo®	1.081	47.0
Flush-Flo™	0.518	55.0	Mean Flow over Head Range	-	46.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.2	0.800	53.4	2.000	63.2	4.000	88.4	7.000	116.2
0.200	30.9	1.000	50.0	2.200	66.2	4.500	93.6	7.500	120.1
0.300	52.3	1.200	49.4	2.400	69.0	5.000	98.6	8.000	124.0
0.400	54.4	1.400	53.2	2.600	71.7	5.500	103.3	8.500	127.7
0.500	55.0	1.600	56.7	3.000	76.9	6.000	107.7	9.000	131.3
0.600	54.8	1.800	60.0	3.500	82.9	6.500	112.0	9.500	134.8

Hydro-Brake® Optimum Manhole: 110, DS/PN: 1.026, Volume (m³): 54.1

Unit Reference	MD-SHE-0308-6730-2900-6730
Design Head (m)	2.900
Design Flow (l/s)	67.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	308
Invert Level (m)	77.073
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.900	67.3	Kick-Flo®	1.807	53.6
Flush-Flo™	0.841	67.2	Mean Flow over Head Range	-	58.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake®

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Hydro-Brake® Optimum Manhole: 110, DS/PN: 1.026, Volume (m³): 54.1

Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.3	0.800	67.1	2.000	56.3	4.000	78.7	7.000	103.3
0.200	31.6	1.000	66.8	2.200	58.9	4.500	83.3	7.500	106.8
0.300	54.4	1.200	65.7	2.400	61.4	5.000	87.7	8.000	110.2
0.400	61.3	1.400	63.7	2.600	63.8	5.500	91.8	8.500	113.5
0.500	64.1	1.600	60.3	3.000	68.4	6.000	95.8	9.000	116.7
0.600	65.9	1.800	54.0	3.500	73.7	6.500	99.6	9.500	119.9

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Storage Structures for SW1.SWS

Tank or Pond Manhole: 67, DS/PN: 1.017

Invert Level (m) 80.800

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	896.0	1.600	1683.0

Tank or Pond Manhole: 110, DS/PN: 1.026

Invert Level (m) 78.800

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	768.0	2.550	1430.0

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.300 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 30, 100
 Climate Change (%) 0, 30

									Water	Surcharged	Flooded	
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
1.000	1	15 Winter	30	+0%						84.162	-0.163	0.000
1.001	2	15 Winter	30	+0%						83.349	-0.151	0.000
1.002	3	15 Winter	30	+0%	100/15	Summer				83.254	-0.112	0.000
1.003	4	15 Winter	30	+0%	100/15	Summer				83.099	-0.146	0.000
1.004	5	15 Winter	30	+0%						82.893	-0.181	0.000
1.005	6	15 Winter	30	+0%						82.453	-0.211	0.000
2.000	7	15 Winter	30	+0%						84.548	-0.127	0.000
2.001	8	15 Winter	30	+0%						84.389	-0.186	0.000
2.002	9	15 Winter	30	+0%						83.837	-0.156	0.000
2.003	10	15 Winter	30	+0%						83.369	-0.235	0.000
2.004	11	15 Winter	30	+0%	100/15	Summer				83.000	-0.224	0.000
2.005	12	15 Winter	30	+0%	100/15	Summer				82.948	-0.200	0.000
2.006	13	15 Winter	30	+0%	100/15	Summer				82.884	-0.173	0.000
2.007	14	15 Winter	30	+0%	100/15	Winter				82.841	-0.157	0.000
1.006	15	240 Winter	30	+0%	30/120	Winter				80.639	0.292	0.000
1.007	16	240 Winter	30	+0%	30/120	Winter				80.638	0.347	0.000
1.008	17	240 Winter	30	+0%	30/60	Winter				80.638	0.395	0.000
3.000	18	15 Winter	30	+0%						82.124	-0.176	0.000
1.009	19	240 Winter	30	+0%	30/60	Winter				80.637	0.430	0.000
1.010	20	240 Winter	30	+0%	30/60	Winter				80.637	0.471	0.000
1.011	21	240 Winter	30	+0%	30/60	Winter				80.637	0.509	0.000
1.012	22	240 Winter	30	+0%	30/60	Winter				80.637	0.583	0.000
1.013	23	240 Winter	30	+0%	30/60	Winter				80.638	0.654	0.000

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
				Flow (l/s)		Exceeded
1.000	1	0.17		15.6		OK
1.001	2	0.49		37.0		OK
1.002	3	0.69		51.8		OK
1.003	4	0.66		90.2		OK
1.004	5	0.52		105.6		OK
1.005	6	0.55		120.5		OK
2.000	7	0.39		15.6		OK
2.001	8	0.30		31.1		OK
2.002	9	0.45		46.3		OK
2.003	10	0.29		60.9		OK
2.004	11	0.46		75.5		OK
2.005	12	0.54		89.0		OK
2.006	13	0.65		101.3		OK
2.007	14	0.74		113.6		OK
1.006	15	0.05		62.1	SURCHARGED	
1.007	16	0.05		55.8	SURCHARGED	
1.008	17	0.06		57.8	SURCHARGED	
3.000	18	0.35		37.6		OK
1.009	19	0.06		67.8	SURCHARGED	
1.010	20	0.07		70.8	SURCHARGED	
1.011	21	0.05		73.8	SURCHARGED	
1.012	22	0.05		74.8	SURCHARGED	
1.013	23	0.06		72.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH		Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
	Name	Storm							Level (m)	Depth (m)
4.000	24	15 Winter	30	+0%					83.285	-0.140
4.001	25	15 Winter	30	+0%					82.843	-0.207
5.000	26	15 Winter	30	+0%					82.523	-0.135
4.002	27	15 Winter	30	+0%					81.997	-0.155
4.003	28	15 Winter	30	+0%					81.331	-0.198
1.014	29	240 Winter	30	+0%	30/60 Summer				80.639	0.705
1.015	30	240 Winter	30	+0%	30/60 Summer				80.639	0.726
1.016	31	240 Winter	30	+0%	30/30 Winter				80.639	0.809
6.000	32	15 Winter	30	+0%	100/60 Summer				80.888	-0.137
7.000	33	15 Winter	30	+0%	100/15 Summer				81.370	-0.135
7.001	34	15 Winter	30	+0%	100/15 Summer				81.159	-0.182
7.002	35	15 Winter	30	+0%	100/15 Summer				80.964	-0.160
8.000	36	15 Winter	30	+0%	100/15 Summer				80.928	-0.192
7.003	37	15 Winter	30	+0%	100/15 Summer				80.901	-0.001
7.004	38	15 Winter	30	+0%	30/15 Summer				80.780	0.019
7.005	39	120 Winter	30	+0%	30/120 Winter				80.629	0.001
9.000	40	15 Winter	30	+0%					82.411	-0.138
9.001	41	15 Winter	30	+0%					82.043	-0.186
9.002	42	15 Winter	30	+0%	100/15 Summer				81.783	-0.126
9.003	43	15 Winter	30	+0%	100/15 Summer				81.694	-0.064
9.004	44	15 Winter	30	+0%					81.539	-0.152
9.005	45	15 Winter	30	+0%					81.411	-0.187
7.006	46	240 Winter	30	+0%	30/120 Winter				80.635	0.324
7.007	47	240 Winter	30	+0%	30/120 Winter				80.635	0.360
10.000	48	15 Winter	30	+0%	100/60 Summer				80.905	-0.142
10.001	49	120 Winter	30	+0%	100/30 Summer				80.632	-0.024
7.008	50	240 Winter	30	+0%	30/60 Winter				80.635	0.407
7.009	51	240 Winter	30	+0%	30/60 Winter				80.635	0.468
7.010	52	240 Winter	30	+0%	30/60 Winter				80.636	0.522
11.000	53	15 Winter	30	+0%	100/30 Winter				80.751	-0.136
11.001	54	180 Winter	30	+0%	100/15 Summer				80.613	-0.062
11.002	55	240 Winter	30	+0%	30/120 Winter				80.627	0.117
11.003	56	240 Winter	30	+0%	30/120 Winter				80.627	0.154
11.004	57	240 Winter	30	+0%	30/120 Winter				80.627	0.184
11.005	58	240 Winter	30	+0%	30/120 Winter				80.628	0.212
11.006	59	240 Winter	30	+0%	30/120 Winter				80.629	0.263
11.007	60	240 Winter	30	+0%	30/120 Winter				80.631	0.296
11.008	61	240 Winter	30	+0%	30/120 Winter				80.634	0.325
11.009	62	240 Winter	30	+0%	30/60 Winter				80.636	0.424
11.010	63	240 Winter	30	+0%	30/60 Winter				80.636	0.524
7.011	64	240 Winter	30	+0%	30/60 Winter				80.636	0.569
7.012	65	240 Winter	30	+0%	30/60 Winter				80.636	0.591
7.013	66	240 Winter	30	+0%	30/60 Winter				80.638	0.654
1.017	67	240 Winter	30	+0%	30/15 Summer				80.638	1.605
1.018	68	240 Winter	30	+0%	100/120 Summer				78.946	-0.004
1.019	69	240 Winter	30	+0%	100/60 Winter				78.807	-0.030
12.000	70	240 Winter	30	+0%	100/120 Winter				78.671	-0.402
13.000	71	240 Winter	30	+0%	100/180 Winter				78.671	-0.561
13.001	72	240 Winter	30	+0%	100/180 Winter				78.671	-0.456

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
4.000	24	0.000	0.30		15.4	OK	
4.001	25	0.000	0.21		31.7	OK	
5.000	26	0.000	0.32		15.2	OK	
4.002	27	0.000	0.46		61.4	OK	
4.003	28	0.000	0.44		76.3	OK	
1.014	29	0.000	0.11		84.3	SURCHARGED	
1.015	30	0.000	0.06		84.8	SURCHARGED	
1.016	31	0.000	0.07		85.7	SURCHARGED	
6.000	32	0.000	0.32		15.4	OK	
7.000	33	0.000	0.33		15.6	OK	
7.001	34	0.000	0.32		32.2	OK	
7.002	35	0.000	0.44		48.1	OK	
8.000	36	0.000	0.18		15.0	OK	
7.003	37	0.000	0.92		70.5	OK	
7.004	38	0.000	1.10		83.0	SURCHARGED	
7.005	39	0.000	0.22		39.6	SURCHARGED	
9.000	40	0.000	0.31		15.3	OK	
9.001	41	0.000	0.30		31.6	OK	
9.002	42	0.000	0.61		47.1	OK	
9.003	43	0.000	0.96		62.5	OK	
9.004	44	0.000	0.65		77.1	OK	
9.005	45	0.000	0.49		91.7	OK	
7.006	46	0.000	0.05		48.8	SURCHARGED	
7.007	47	0.000	0.04		47.1	SURCHARGED	
10.000	48	0.000	0.28		15.4	OK	
10.001	49	0.000	0.08		11.6	OK	
7.008	50	0.000	0.04		51.1	SURCHARGED	
7.009	51	0.000	0.04		46.8	SURCHARGED	
7.010	52	0.000	0.04		42.9	SURCHARGED	
11.000	53	0.000	0.33		15.5	OK	
11.001	54	0.000	0.19		8.9	OK	
11.002	55	0.000	0.01		9.6	SURCHARGED	
11.003	56	0.000	0.01		10.3	SURCHARGED	
11.004	57	0.000	0.01		12.0	SURCHARGED	
11.005	58	0.000	0.01		13.8	SURCHARGED	
11.006	59	0.000	0.02		16.4	SURCHARGED	
11.007	60	0.000	0.02		17.9	SURCHARGED	
11.008	61	0.000	0.01		17.4	SURCHARGED	
11.009	62	0.000	0.01		19.2	SURCHARGED	
11.010	63	0.000	0.02		24.7	SURCHARGED	
7.011	64	0.000	0.05		44.5	SURCHARGED	
7.012	65	0.000	0.03		44.4	SURCHARGED	
7.013	66	0.000	0.02		37.8	SURCHARGED	
1.017	67	0.000	0.36		61.2	SURCHARGED	
1.018	68	0.000	0.04		62.8	OK	
1.019	69	0.000	0.04		68.2	OK	
12.000	70	0.000	0.00		2.9	OK	
13.000	71	0.000	0.00		3.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded	Flow / Overflow		Pipe	Status	Level
		Volume (m³)	Cap.	(l/s)	Flow (l/s)		Exceeded
13.001	72	0.000	0.00		5.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
13.002	73	240 Winter	30	+0%	100/120 Winter				78.671	-0.385
12.001	74	240 Winter	30	+0%	100/120 Winter				78.671	-0.336
12.002	75	240 Winter	30	+0%	100/120 Summer				78.671	-0.278
12.003	76	240 Winter	30	+0%	100/120 Summer				78.671	-0.228
14.000	77	15 Winter	30	+0%	100/180 Winter				79.061	-0.137
12.004	78	240 Winter	30	+0%	100/120 Summer				78.672	-0.185
12.005	79	240 Winter	30	+0%	100/60 Winter				78.672	-0.135
1.020	80	240 Winter	30	+0%	100/60 Summer				78.674	-0.019
15.000	81	15 Winter	30	+0%					82.123	-0.153
15.001	82	15 Winter	30	+0%					81.448	-0.126
15.002	83	15 Winter	30	+0%					80.976	-0.200
15.003	84	15 Winter	30	+0%					80.330	-0.158
15.004	85	15 Winter	30	+0%					79.750	-0.226
15.005	86	15 Winter	30	+0%					79.372	-0.222
15.006	87	15 Winter	30	+0%	100/15 Summer				78.958	-0.142
16.000	88	15 Winter	30	+0%					82.021	-0.154
16.001	89	15 Winter	30	+0%					81.370	-0.213
16.002	90	15 Winter	30	+0%					80.762	-0.171
16.003	91	15 Winter	30	+0%					80.504	-0.170
16.004	92	15 Winter	30	+0%					79.733	-0.230
16.005	93	15 Winter	30	+0%					79.329	-0.211
16.006	94	15 Winter	30	+0%	100/15 Summer				78.801	-0.142
15.007	95	240 Winter	30	+0%	100/60 Winter				78.620	-0.142
15.008	96	240 Winter	30	+0%	100/60 Winter				78.617	-0.109
15.009	97	240 Winter	30	+0%	100/60 Summer				78.612	-0.057
1.021	98	240 Winter	30	+0%	100/60 Summer				78.605	-0.034
1.022	99	240 Winter	30	+0%	100/60 Summer				78.514	-0.047
17.000	100	15 Winter	30	+0%	100/360 Winter				79.217	-0.137
17.001	101	15 Winter	30	+0%	100/120 Winter				78.851	-0.154
17.002	102	240 Winter	30	+0%	100/120 Summer				78.470	-0.440
17.003	103	240 Winter	30	+0%	100/120 Summer				78.470	-0.399
17.004	104	240 Winter	30	+0%	100/60 Winter				78.470	-0.291
17.005	105	240 Winter	30	+0%	100/60 Summer				78.470	-0.229
17.006	106	240 Winter	30	+0%	100/60 Summer				78.471	-0.168
1.023	107	240 Winter	30	+0%	100/60 Summer				78.473	-0.046
1.024	108	240 Winter	30	+0%	100/60 Summer				78.415	-0.039
1.025	109	240 Winter	30	+0%	100/60 Summer				78.333	-0.023
1.026	110	180 Winter	30	+0%	30/15 Summer				78.245	0.797
1.027	111	240 Winter	30	+0%					77.234	-0.174
1.028	112	480 Winter	30	+0%					76.853	-0.239
1.029	113	480 Winter	30	+0%					75.560	-0.204
1.030	114	480 Winter	30	+0%					74.914	-0.203
1.031	115	480 Winter	30	+0%					74.305	-0.282
1.032	116	480 Winter	30	+0%					68.083	-0.292
1.033	117	480 Winter	30	+0%					64.919	-0.291
1.034	118	480 Winter	30	+0%					60.634	-0.291
1.035	119	480 Winter	30	+0%					57.767	-0.294
1.036	120	480 Winter	30	+0%					51.921	-0.289

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap.	(l/s)	Flow (l/s)		
13.002	73	0.000	0.01		6.6	OK	
12.001	74	0.000	0.01		9.5	OK	
12.002	75	0.000	0.01		11.2	OK	
12.003	76	0.000	0.01		12.7	OK	
14.000	77	0.000	0.32		15.4	OK	
12.004	78	0.000	0.01		14.0	OK	
12.005	79	0.000	0.01		15.3	OK	
1.020	80	0.000	0.07		85.8	OK	
15.000	81	0.000	0.22		15.5	OK	
15.001	82	0.000	0.40		32.1	OK	
15.002	83	0.000	0.24		48.1	OK	
15.003	84	0.000	0.45		64.0	OK	
15.004	85	0.000	0.33		79.8	OK	
15.005	86	0.000	0.35		95.4	OK	
15.006	87	0.000	0.69		111.0	OK	
16.000	88	0.000	0.22		15.6	OK	
16.001	89	0.000	0.19		32.2	OK	
16.002	90	0.000	0.38		48.2	OK	
16.003	91	0.000	0.39		64.2	OK	
16.004	92	0.000	0.31		80.1	OK	
16.005	93	0.000	0.39		95.6	OK	
16.006	94	0.000	0.69		110.1	OK	
15.007	95	0.000	0.05		52.8	OK	
15.008	96	0.000	0.04		53.5	OK	
15.009	97	0.000	0.06		52.4	OK	
1.021	98	0.000	0.07		97.0	OK	
1.022	99	0.000	0.09		91.8	OK	
17.000	100	0.000	0.31		15.3	OK	
17.001	101	0.000	0.46		31.4	OK	
17.002	102	0.000	0.01		10.1	OK	
17.003	103	0.000	0.01		10.6	OK	
17.004	104	0.000	0.01		16.3	OK	
17.005	105	0.000	0.02		23.5	OK	
17.006	106	0.000	0.02		30.2	OK	
1.023	107	0.000	0.08		108.5	OK	
1.024	108	0.000	0.07		104.3	OK	
1.025	109	0.000	0.06		88.0	OK	
1.026	110	0.000	0.72		67.1	SURCHARGED	
1.027	111	0.000	0.56		67.1	OK	
1.028	112	0.000	0.29		67.1	OK	
1.029	113	0.000	0.43		67.1	OK	
1.030	114	0.000	0.43		67.1	OK	
1.031	115	0.000	0.14		67.1	OK	
1.032	116	0.000	0.11		67.1	OK	
1.033	117	0.000	0.11		67.1	OK	
1.034	118	0.000	0.12		67.1	OK	
1.035	119	0.000	0.11		67.1	OK	
1.036	120	0.000	0.12		67.1	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.300 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 30, 100
 Climate Change (%) 0, 30

PN	US/MH		Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
	Name	Storm							(m)	(m)	(m³)
1.000	1	15 Winter	100	+30%					84.181	-0.144	0.000
1.001	2	15 Winter	100	+30%					83.472	-0.028	0.000
1.002	3	15 Winter	100	+30%	100/15 Summer				83.394	0.028	0.000
1.003	4	15 Winter	100	+30%	100/15 Summer				83.252	0.007	0.000
1.004	5	15 Winter	100	+30%					82.955	-0.119	0.000
1.005	6	15 Winter	100	+30%					82.536	-0.128	0.000
2.000	7	15 Winter	100	+30%					84.584	-0.091	0.000
2.001	8	15 Winter	100	+30%					84.428	-0.147	0.000
2.002	9	15 Winter	100	+30%					83.893	-0.100	0.000
2.003	10	15 Winter	100	+30%					83.416	-0.188	0.000
2.004	11	15 Winter	100	+30%	100/15 Summer				83.302	0.078	0.000
2.005	12	15 Winter	100	+30%	100/15 Summer				83.202	0.054	0.000
2.006	13	15 Winter	100	+30%	100/15 Summer				83.101	0.044	0.000
2.007	14	15 Winter	100	+30%	100/15 Winter				83.001	0.003	0.000
1.006	15	240 Winter	100	+30%	30/120 Winter				81.499	1.152	0.000
1.007	16	240 Winter	100	+30%	30/120 Winter				81.498	1.207	0.000
1.008	17	240 Winter	100	+30%	30/60 Winter				81.497	1.254	0.000
3.000	18	15 Winter	100	+30%					82.168	-0.132	0.000
1.009	19	240 Winter	100	+30%	30/60 Winter				81.496	1.289	0.000
1.010	20	240 Winter	100	+30%	30/60 Winter				81.495	1.329	0.000
1.011	21	240 Winter	100	+30%	30/60 Winter				81.494	1.366	0.000
1.012	22	240 Winter	100	+30%	30/60 Winter				81.493	1.439	0.000
1.013	23	240 Winter	100	+30%	30/60 Winter				81.492	1.508	0.000

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flow / Overflow		Pipe Flow	Status	Level
		Cap.	(l/s)	(l/s)		Exceeded
1.000	1	0.28		26.1	OK	
1.001	2	0.74		56.1	OK	
1.002	3	1.08		80.7	SURCHARGED	
1.003	4	1.03		140.3	SURCHARGED	
1.004	5	0.80		163.4	OK	
1.005	6	0.85		187.7	OK	
2.000	7	0.65		26.1	OK	
2.001	8	0.49		51.9	OK	
2.002	9	0.75		77.4	OK	
2.003	10	0.48		101.7	OK	
2.004	11	0.68		112.4	SURCHARGED	
2.005	12	0.80		131.6	SURCHARGED	
2.006	13	0.96		150.3	SURCHARGED	
2.007	14	1.09		167.5	SURCHARGED	
1.006	15	0.08		104.2	SURCHARGED	
1.007	16	0.09		108.9	SURCHARGED	
1.008	17	0.12		113.7	SURCHARGED	
3.000	18	0.59		62.8	OK	
1.009	19	0.12		133.6	SURCHARGED	
1.010	20	0.14		138.0	SURCHARGED	
1.011	21	0.10		141.9	SURCHARGED	
1.012	22	0.10		145.3	SURCHARGED	
1.013	23	0.12		149.2	SURCHARGED	

GRESFORD ROAD
LLAY
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

									Water	Surcharged
US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	Depth (m)
4.000	24	15 Winter	100	+30%					83.314	-0.111
4.001	25	15 Winter	100	+30%					82.873	-0.177
5.000	26	15 Winter	100	+30%					82.554	-0.104
4.002	27	15 Winter	100	+30%					82.054	-0.098
4.003	28	240 Winter	100	+30%					81.493	-0.036
1.014	29	240 Winter	100	+30%	30/60 Summer				81.491	1.557
1.015	30	240 Winter	100	+30%	30/60 Summer				81.490	1.577
1.016	31	240 Winter	100	+30%	30/30 Winter				81.488	1.658
6.000	32	240 Winter	100	+30%	100/60 Summer				81.489	0.464
7.000	33	15 Winter	100	+30%	100/15 Summer				81.611	0.106
7.001	34	120 Winter	100	+30%	100/15 Summer				81.553	0.212
7.002	35	120 Winter	100	+30%	100/15 Summer				81.542	0.418
8.000	36	120 Winter	100	+30%	100/15 Summer				81.534	0.414
7.003	37	120 Winter	100	+30%	100/15 Summer				81.527	0.625
7.004	38	240 Winter	100	+30%	30/15 Summer				81.504	0.743
7.005	39	240 Winter	100	+30%	30/120 Winter				81.498	0.870
9.000	40	15 Winter	100	+30%					82.440	-0.109
9.001	41	15 Winter	100	+30%					82.081	-0.148
9.002	42	15 Winter	100	+30%	100/15 Summer				81.987	0.078
9.003	43	15 Winter	100	+30%	100/15 Summer				81.839	0.081
9.004	44	15 Winter	100	+30%					81.682	-0.009
9.005	45	240 Winter	100	+30%					81.497	-0.101
7.006	46	240 Winter	100	+30%	30/120 Winter				81.493	1.182
7.007	47	240 Winter	100	+30%	30/120 Winter				81.493	1.218
10.000	48	240 Winter	100	+30%	100/60 Summer				81.497	0.450
10.001	49	240 Winter	100	+30%	100/30 Summer				81.494	0.838
7.008	50	240 Winter	100	+30%	30/60 Winter				81.492	1.264
7.009	51	240 Winter	100	+30%	30/60 Winter				81.492	1.325
7.010	52	240 Winter	100	+30%	30/60 Winter				81.491	1.377
11.000	53	240 Winter	100	+30%	100/30 Winter				81.496	0.609
11.001	54	240 Winter	100	+30%	100/15 Summer				81.494	0.819
11.002	55	240 Winter	100	+30%	30/120 Winter				81.490	0.980
11.003	56	240 Winter	100	+30%	30/120 Winter				81.490	1.017
11.004	57	240 Winter	100	+30%	30/120 Winter				81.491	1.048
11.005	58	240 Winter	100	+30%	30/120 Winter				81.491	1.075
11.006	59	240 Winter	100	+30%	30/120 Winter				81.491	1.125
11.007	60	240 Winter	100	+30%	30/120 Winter				81.491	1.156
11.008	61	240 Winter	100	+30%	30/120 Winter				81.491	1.182
11.009	62	240 Winter	100	+30%	30/60 Winter				81.491	1.279
11.010	63	240 Winter	100	+30%	30/60 Winter				81.491	1.379
7.011	64	240 Winter	100	+30%	30/60 Winter				81.490	1.423
7.012	65	240 Winter	100	+30%	30/60 Winter				81.490	1.445
7.013	66	240 Winter	100	+30%	30/60 Winter				81.488	1.504
1.017	67	240 Winter	100	+30%	30/15 Summer				81.487	2.454
1.018	68	720 Winter	100	+30%	100/120 Summer				79.545	0.595
1.019	69	720 Winter	100	+30%	100/60 Winter				79.542	0.705
12.000	70	720 Winter	100	+30%	100/120 Winter				79.539	0.466
13.000	71	720 Winter	100	+30%	100/180 Winter				79.539	0.307
13.001	72	720 Winter	100	+30%	100/180 Winter				79.539	0.412

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
4.000	24	0.000	0.50		25.6	OK	
4.001	25	0.000	0.34		52.7	OK	
5.000	26	0.000	0.54		25.4	OK	
4.002	27	0.000	0.76		102.5	OK	
4.003	28	0.000	0.18		30.7	OK	
1.014	29	0.000	0.23		183.6	SURCHARGED	
1.015	30	0.000	0.13		188.6	SURCHARGED	
1.016	31	0.000	0.16		193.2	SURCHARGED	
6.000	32	0.000	0.13		6.2	SURCHARGED	
7.000	33	0.000	0.51		23.9	SURCHARGED	
7.001	34	0.000	0.20		19.7	SURCHARGED	
7.002	35	0.000	0.26		28.8	SURCHARGED	
8.000	36	0.000	0.12		9.6	SURCHARGED	
7.003	37	0.000	0.62		47.3	SURCHARGED	
7.004	38	0.000	0.46		35.1	SURCHARGED	
7.005	39	0.000	0.22		38.8	SURCHARGED	
9.000	40	0.000	0.51		25.6	OK	
9.001	41	0.000	0.50		52.8	OK	
9.002	42	0.000	0.99		75.9	SURCHARGED	
9.003	43	0.000	1.52		98.8	SURCHARGED	
9.004	44	0.000	1.00		119.3	OK	
9.005	45	0.000	0.20		36.7	OK	
7.006	46	0.000	0.07		71.5	SURCHARGED	
7.007	47	0.000	0.06		75.6	SURCHARGED	
10.000	48	0.000	0.11		6.2	SURCHARGED	
10.001	49	0.000	0.08		11.5	SURCHARGED	
7.008	50	0.000	0.07		90.1	SURCHARGED	
7.009	51	0.000	0.07		94.3	SURCHARGED	
7.010	52	0.000	0.08		98.5	SURCHARGED	
11.000	53	0.000	0.13		6.0	SURCHARGED	
11.001	54	0.000	0.26		12.0	SURCHARGED	
11.002	55	0.000	0.02		15.3	SURCHARGED	
11.003	56	0.000	0.02		19.6	SURCHARGED	
11.004	57	0.000	0.03		23.9	SURCHARGED	
11.005	58	0.000	0.02		28.2	SURCHARGED	
11.006	59	0.000	0.04		32.6	SURCHARGED	
11.007	60	0.000	0.04		36.9	SURCHARGED	
11.008	61	0.000	0.03		41.5	SURCHARGED	
11.009	62	0.000	0.03		46.2	SURCHARGED	
11.010	63	0.000	0.04		50.8	SURCHARGED	
7.011	64	0.000	0.18		153.4	SURCHARGED	
7.012	65	0.000	0.12		158.1	SURCHARGED	
7.013	66	0.000	0.08		162.7	SURCHARGED	
1.017	67	0.000	0.40		67.5	SURCHARGED	
1.018	68	0.000	0.04		66.6	SURCHARGED	
1.019	69	0.000	0.04		67.6	SURCHARGED	
12.000	70	0.000	0.00		2.1	SURCHARGED	
13.000	71	0.000	0.00		2.2	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded	Flow / Overflow		Pipe	Status	Level
		Volume (m³)	Cap.	(l/s)	Flow (l/s)		Exceeded
13.001	72	0.000	0.00		6.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
13.002	73	720 Winter	100	+30%	100/120 Winter				79.539	0.483
12.001	74	720 Winter	100	+30%	100/120 Winter				79.539	0.532
12.002	75	720 Winter	100	+30%	100/120 Summer				79.539	0.590
12.003	76	720 Winter	100	+30%	100/120 Summer				79.539	0.640
14.000	77	960 Winter	100	+30%	100/180 Winter				79.539	0.341
12.004	78	720 Winter	100	+30%	100/120 Summer				79.539	0.682
12.005	79	720 Winter	100	+30%	100/60 Winter				79.539	0.732
1.020	80	720 Winter	100	+30%	100/60 Summer				79.539	0.846
15.000	81	15 Winter	100	+30%					82.146	-0.130
15.001	82	15 Winter	100	+30%					81.485	-0.089
15.002	83	15 Winter	100	+30%					81.009	-0.167
15.003	84	15 Winter	100	+30%					80.385	-0.103
15.004	85	15 Winter	100	+30%					79.801	-0.175
15.005	86	960 Winter	100	+30%					79.539	-0.055
15.006	87	720 Winter	100	+30%	100/15 Summer				79.538	0.438
16.000	88	15 Winter	100	+30%					82.045	-0.130
16.001	89	15 Winter	100	+30%					81.398	-0.185
16.002	90	15 Winter	100	+30%					80.808	-0.125
16.003	91	15 Winter	100	+30%					80.552	-0.122
16.004	92	15 Winter	100	+30%					79.782	-0.181
16.005	93	960 Winter	100	+30%					79.540	0.000
16.006	94	720 Winter	100	+30%	100/15 Summer				79.538	0.595
15.007	95	720 Winter	100	+30%	100/60 Winter				79.537	0.775
15.008	96	720 Winter	100	+30%	100/60 Winter				79.537	0.811
15.009	97	720 Winter	100	+30%	100/60 Summer				79.537	0.868
1.021	98	720 Winter	100	+30%	100/60 Summer				79.537	0.898
1.022	99	720 Winter	100	+30%	100/60 Summer				79.534	0.973
17.000	100	960 Winter	100	+30%	100/360 Winter				79.532	0.178
17.001	101	720 Winter	100	+30%	100/120 Winter				79.532	0.527
17.002	102	720 Winter	100	+30%	100/120 Summer				79.531	0.621
17.003	103	720 Winter	100	+30%	100/120 Summer				79.531	0.662
17.004	104	720 Winter	100	+30%	100/60 Winter				79.531	0.770
17.005	105	720 Winter	100	+30%	100/60 Summer				79.531	0.832
17.006	106	720 Winter	100	+30%	100/60 Summer				79.531	0.892
1.023	107	720 Winter	100	+30%	100/60 Summer				79.531	1.012
1.024	108	720 Winter	100	+30%	100/60 Summer				79.529	1.075
1.025	109	720 Winter	100	+30%	100/60 Summer				79.526	1.170
1.026	110	960 Winter	100	+30%	30/15 Summer				79.523	2.075
1.027	111	2880 Summer	100	+30%					77.234	-0.174
1.028	112	480 Summer	100	+30%					76.854	-0.238
1.029	113	480 Winter	100	+30%					75.560	-0.204
1.030	114	2160 Summer	100	+30%					74.914	-0.203
1.031	115	2160 Summer	100	+30%					74.305	-0.282
1.032	116	2160 Summer	100	+30%					68.083	-0.292
1.033	117	2880 Summer	100	+30%					64.919	-0.291
1.034	118	2880 Summer	100	+30%					60.634	-0.291
1.035	119	2880 Summer	100	+30%					57.767	-0.294
1.036	120	4320 Summer	100	+30%					51.921	-0.289

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.SWS

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
13.002	73	0.000	0.01	10.4	SURCHARGED		
12.001	74	0.000	0.01	16.9	SURCHARGED		
12.002	75	0.000	0.02	20.1	SURCHARGED		
12.003	76	0.000	0.02	22.8	SURCHARGED		
14.000	77	0.000	0.05	2.3	SURCHARGED		
12.004	78	0.000	0.02	25.1	SURCHARGED		
12.005	79	0.000	0.02	27.5	SURCHARGED		
1.020	80	0.000	0.06	78.7	SURCHARGED		
15.000	81	0.000	0.36	25.9	OK		
15.001	82	0.000	0.67	53.5	OK		
15.002	83	0.000	0.40	80.3	OK		
15.003	84	0.000	0.75	106.9	OK		
15.004	85	0.000	0.55	133.3	OK		
15.005	86	0.000	0.05	13.3	OK		
15.006	87	0.000	0.12	19.1	SURCHARGED		
16.000	88	0.000	0.37	26.1	OK		
16.001	89	0.000	0.31	53.8	OK		
16.002	90	0.000	0.63	80.6	OK		
16.003	91	0.000	0.65	107.3	OK		
16.004	92	0.000	0.53	133.9	OK		
16.005	93	0.000	0.05	13.3	OK		
16.006	94	0.000	0.12	18.9	SURCHARGED		
15.007	95	0.000	0.04	38.3	SURCHARGED		
15.008	96	0.000	0.03	39.6	SURCHARGED		
15.009	97	0.000	0.04	41.0	SURCHARGED		
1.021	98	0.000	0.08	117.8	SURCHARGED		
1.022	99	0.000	0.11	119.7	SURCHARGED		
17.000	100	0.000	0.05	2.3	SURCHARGED		
17.001	101	0.000	0.08	5.6	SURCHARGED		
17.002	102	0.000	0.01	7.9	SURCHARGED		
17.003	103	0.000	0.01	8.8	SURCHARGED		
17.004	104	0.000	0.01	12.5	SURCHARGED		
17.005	105	0.000	0.01	17.0	SURCHARGED		
17.006	106	0.000	0.01	21.2	SURCHARGED		
1.023	107	0.000	0.10	131.9	SURCHARGED		
1.024	108	0.000	0.09	131.5	SURCHARGED		
1.025	109	0.000	0.09	131.0	SURCHARGED		
1.026	110	0.000	0.72	67.1	SURCHARGED		
1.027	111	0.000	0.56	67.1	OK		
1.028	112	0.000	0.29	67.1	OK		
1.029	113	0.000	0.43	67.1	OK		
1.030	114	0.000	0.43	67.1	OK		
1.031	115	0.000	0.14	67.1	OK		
1.032	116	0.000	0.11	67.1	OK		
1.033	117	0.000	0.11	67.1	OK		
1.034	118	0.000	0.12	67.1	OK		
1.035	119	0.000	0.11	67.1	OK		
1.036	120	0.000	0.12	67.1	OK		