

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	50	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
SW1	0.060	5.00	108.000	600	1.075
SW2			107.100	600	0.895
SW3			107.100	600	0.975
SW4	0.025	5.00	107.000	600	1.415
SW5	0.025	5.00	106.750	600	1.533
SW6	0.022	5.00	106.000	1500	1.286
SW7	0.095	5.00	106.000	1500	1.633
SW8	0.141	5.00	106.000	1500	1.744
SW9			106.000	1500	1.881
SW10	0.067	5.00	106.000	1500	2.041
SW11			106.000	1500	2.145
SW12	0.219	5.00	106.000	1500	2.271
SW13	0.126	5.00	106.000	1500	2.422
SW14	0.045	5.00	106.000	1500	2.558
SW15	0.085	5.00	106.000	1800	2.729
SW17	0.110	5.00	106.000	600	1.075
SW18	0.070	5.00	106.000	600	1.600
SW19	0.030	5.00	105.000	475	1.000
SW20			105.000	1800	1.803
SW21	0.090	5.00	104.000	600	1.000
SW22	0.160	5.00	104.000	1200	1.322
SW23	0.090	5.00	104.000	1200	1.570
SW24			104.000	1800	2.003
SW25			103.808	1800	1.975
SW26			103.808	1800	2.808
SW27			102.200	1800	2.000
SW28			102.200	1800	2.011
SW29			102.200	1500	2.811
SW30			99.740	1200	1.590
SW8A	0.115	5.00	106.750	600	1.325
SW8B	0.026	5.00	106.750	600	1.598
SW31	0.336	5.00	104.500	1200	2.000
SW32			104.500	1200	2.413

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.0	SW1	SW2	72.000	0.600	106.925	106.205	0.720	100.0	225	5.92	50.0
1.1	SW2	SW3	8.000	0.600	106.205	106.125	0.080	100.0	225	6.02	50.0
1.2	SW3	SW4	54.000	0.600	106.125	105.585	0.540	100.0	225	6.71	50.0
1.3	SW4	SW5	44.000	0.600	105.585	105.292	0.293	150.0	225	7.40	50.0
1.4	SW5	SW6	53.000	0.600	105.217	104.864	0.353	150.0	300	8.09	50.0
1.5	SW6	SW7	52.000	0.600	104.714	104.367	0.347	149.9	450	8.61	50.0
1.6	SW7	SW8	25.000	0.600	104.367	104.256	0.111	225.0	450	8.92	50.0
1.7	SW8	SW9	41.000	0.600	104.256	104.119	0.137	300.0	450	9.50	50.0
1.8	SW9	SW10	48.000	0.600	104.119	103.959	0.160	300.0	450	10.19	50.0
1.9	SW10	SW11	39.000	0.600	103.959	103.855	0.104	375.0	450	10.81	50.0
1.10	SW11	SW12	19.000	0.600	103.855	103.804	0.051	375.0	450	11.11	50.0
1.11	SW12	SW13	34.000	0.600	103.729	103.653	0.076	450.0	525	11.65	50.0
1.12	SW13	SW14	61.000	0.600	103.578	103.442	0.136	450.0	600	12.54	50.0
1.13	SW14	SW15	43.000	0.600	103.442	103.346	0.096	450.0	600	13.17	50.0
1.14	SW15	SW20	37.000	0.600	103.271	103.197	0.074	500.0	675	13.70	50.0
1.15	SW20	SW24	45.000	0.600	103.197	102.072	1.125	40.0	675	13.88	50.0
1.16	SW24	SW25	82.000	0.600	101.997	101.833	0.164	500.0	750	14.98	50.0
1.17	SW25	SW26	88.000	0.600	101.833	101.000	0.833	105.6	750	15.52	50.0
1.18	SW26	SW27	50.000	0.600	101.000	100.200	0.800	62.5	750	15.75	50.0
1.19	SW27	SW28	5.500	0.600	100.200	100.189	0.011	500.0	750	15.83	50.0
1.20	SW28	SW29	8.000	0.600	100.189	99.389	0.800	10.0	750	15.84	50.0
1.21	SW29	SW30	15.000	0.600	99.389	98.150	1.239	12.1	225	15.91	0.0
2.0	SW8A	SW8B	41.000	0.600	105.425	105.152	0.273	150.0	300	5.53	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.0	1.307	52.0	16.3	0.850	0.670	0.060	0.0	87	1.161
1.1	1.307	52.0	16.3	0.670	0.750	0.060	0.0	87	1.161
1.2	1.307	52.0	16.3	0.750	1.190	0.060	0.0	87	1.161
1.3	1.065	42.3	23.0	1.190	1.233	0.085	0.0	118	1.086
1.4	1.281	90.6	29.8	1.233	0.836	0.110	0.0	118	1.151
1.5	1.658	263.7	35.8	0.836	1.183	0.132	0.0	111	1.173
1.6	1.351	214.9	61.5	1.183	1.294	0.227	0.0	164	1.171
1.7	1.168	185.8	138.0	1.294	1.431	0.509	0.0	290	1.274
1.8	1.168	185.8	138.0	1.431	1.591	0.509	0.0	290	1.274
1.9	1.044	166.0	156.1	1.591	1.695	0.576	0.0	349	1.179
1.10	1.044	166.0	156.1	1.695	1.746	0.576	0.0	349	1.179
1.11	1.049	227.1	215.5	1.746	1.822	0.795	0.0	411	1.186
1.12	1.141	322.7	249.6	1.822	1.958	0.921	0.0	398	1.254
1.13	1.141	322.7	261.8	1.958	2.054	0.966	0.0	412	1.264
1.14	1.165	416.9	333.7	2.054	1.128	1.231	0.0	459	1.287
1.15	4.151	1485.5	341.8	1.128	1.253	1.261	0.0	219	3.403
1.16	1.244	549.7	434.0	1.253	1.225	1.601	0.0	505	1.372
1.17	2.722	1202.6	434.0	1.225	2.058	1.601	0.0	310	2.511
1.18	3.543	1565.2	525.0	2.058	1.250	1.937	0.0	298	3.207
1.19	1.244	549.7	525.0	1.250	1.261	1.937	0.0	591	1.405
1.20	8.877	3921.8	525.0	1.261	2.061	1.937	0.0	183	6.290
1.21	3.781	150.3	0.0	2.586	1.365	1.937	0.0	0	0.000
2.0	1.281	90.6	31.2	1.025	1.298	0.115	0.0	121	1.165

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.1	SW8B	SW8	50.000	0.600	105.152	104.406	0.746	67.0	300	5.97	50.0
3.0	SW17	SW18	83.000	0.600	104.925	104.400	0.525	158.1	300	6.11	50.0
3.1	SW18	SW15	38.000	0.600	104.400	103.646	0.754	50.4	300	6.39	50.0
4.0	SW19	SW20	27.000	0.600	104.000	103.722	0.278	97.1	150	5.44	50.0
5.0	SW21	SW22	37.000	0.600	103.000	102.753	0.247	150.0	225	5.58	50.0
5.1	SW22	SW23	39.000	0.600	102.678	102.505	0.173	225.0	300	6.20	50.0
5.2	SW23	SW24	13.000	0.600	102.430	102.372	0.058	225.0	375	6.38	50.0
6.0	SW31	SW32	93.000	0.600	102.500	102.087	0.413	225.0	375	6.29	50.0
6.1	SW32	SW26	57.000	0.600	102.087	101.450	0.637	89.5	375	6.78	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.1	1.923	135.9	38.2	1.298	1.294	0.141	0.0	109	1.661
3.0	1.248	88.2	29.8	0.775	1.300	0.110	0.0	120	1.129
3.1	2.220	156.9	48.8	1.300	2.054	0.180	0.0	115	1.967
4.0	1.020	18.0	8.1	0.850	1.128	0.030	0.0	71	0.994
5.0	1.065	42.3	24.4	0.775	1.022	0.090	0.0	123	1.102
5.1	1.044	73.8	67.8	1.022	1.195	0.250	0.0	228	1.179
5.2	1.204	132.9	92.2	1.195	1.253	0.340	0.0	230	1.296
6.0	1.204	132.9	91.1	1.625	2.038	0.336	0.0	228	1.292
6.1	1.916	211.6	91.1	2.038	1.983	0.336	0.0	172	1.847

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.0	72.000	100.0	225	Circular	108.000	106.925	0.850	107.100	106.205	0.670
1.1	8.000	100.0	225	Circular	107.100	106.205	0.670	107.100	106.125	0.750
1.2	54.000	100.0	225	Circular	107.100	106.125	0.750	107.000	105.585	1.190
1.3	44.000	150.0	225	Circular	107.000	105.585	1.190	106.750	105.292	1.233
1.4	53.000	150.0	300	Circular	106.750	105.217	1.233	106.000	104.864	0.836
1.5	52.000	149.9	450	Circular	106.000	104.714	0.836	106.000	104.367	1.183
1.6	25.000	225.0	450	Circular	106.000	104.367	1.183	106.000	104.256	1.294
1.7	41.000	300.0	450	Circular	106.000	104.256	1.294	106.000	104.119	1.431
1.8	48.000	300.0	450	Circular	106.000	104.119	1.431	106.000	103.959	1.591
1.9	39.000	375.0	450	Circular	106.000	103.959	1.591	106.000	103.855	1.695
1.10	19.000	375.0	450	Circular	106.000	103.855	1.695	106.000	103.804	1.746

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.0	SW1	600	Manhole	Adoptable	SW2	600	Manhole	Adoptable
1.1	SW2	600	Manhole	Adoptable	SW3	600	Manhole	Adoptable
1.2	SW3	600	Manhole	Adoptable	SW4	600	Manhole	Adoptable
1.3	SW4	600	Manhole	Adoptable	SW5	600	Manhole	Adoptable
1.4	SW5	600	Manhole	Adoptable	SW6	1500	Manhole	Adoptable
1.5	SW6	1500	Manhole	Adoptable	SW7	1500	Manhole	Adoptable
1.6	SW7	1500	Manhole	Adoptable	SW8	1500	Manhole	Adoptable
1.7	SW8	1500	Manhole	Adoptable	SW9	1500	Manhole	Adoptable
1.8	SW9	1500	Manhole	Adoptable	SW10	1500	Manhole	Adoptable
1.9	SW10	1500	Manhole	Adoptable	SW11	1500	Manhole	Adoptable
1.10	SW11	1500	Manhole	Adoptable	SW12	1500	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.11	34.000	450.0	525	Circular	106.000	103.729	1.746	106.000	103.653	1.822
1.12	61.000	450.0	600	Circular	106.000	103.578	1.822	106.000	103.442	1.958
1.13	43.000	450.0	600	Circular	106.000	103.442	1.958	106.000	103.346	2.054
1.14	37.000	500.0	675	Circular	106.000	103.271	2.054	105.000	103.197	1.128
1.15	45.000	40.0	675	Circular	105.000	103.197	1.128	104.000	102.072	1.253
1.16	82.000	500.0	750	Circular	104.000	101.997	1.253	103.808	101.833	1.225
1.17	88.000	105.6	750	Circular	103.808	101.833	1.225	103.808	101.000	2.058
1.18	50.000	62.5	750	Circular	103.808	101.000	2.058	102.200	100.200	1.250
1.19	5.500	500.0	750	Circular	102.200	100.200	1.250	102.200	100.189	1.261
1.20	8.000	10.0	750	Circular	102.200	100.189	1.261	102.200	99.389	2.061
1.21	15.000	12.1	225	Circular	102.200	99.389	2.586	99.740	98.150	1.365
2.0	41.000	150.0	300	Circular	106.750	105.425	1.025	106.750	105.152	1.298
2.1	50.000	67.0	300	Circular	106.750	105.152	1.298	106.000	104.406	1.294
3.0	83.000	158.1	300	Circular	106.000	104.925	0.775	106.000	104.400	1.300
3.1	38.000	50.4	300	Circular	106.000	104.400	1.300	106.000	103.646	2.054
4.0	27.000	97.1	150	Circular	105.000	104.000	0.850	105.000	103.722	1.128
5.0	37.000	150.0	225	Circular	104.000	103.000	0.775	104.000	102.753	1.022
5.1	39.000	225.0	300	Circular	104.000	102.678	1.022	104.000	102.505	1.195
5.2	13.000	225.0	375	Circular	104.000	102.430	1.195	104.000	102.372	1.253
6.0	93.000	225.0	375	Circular	104.500	102.500	1.625	104.500	102.087	2.038
6.1	57.000	89.5	375	Circular	104.500	102.087	2.038	103.808	101.450	1.983

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.11	SW12	1500	Manhole	Adoptable	SW13	1500	Manhole	Adoptable
1.12	SW13	1500	Manhole	Adoptable	SW14	1500	Manhole	Adoptable
1.13	SW14	1500	Manhole	Adoptable	SW15	1800	Manhole	Adoptable
1.14	SW15	1800	Manhole	Adoptable	SW20	1800	Manhole	Adoptable
1.15	SW20	1800	Manhole	Adoptable	SW24	1800	Manhole	Adoptable
1.16	SW24	1800	Manhole	Adoptable	SW25	1800	Manhole	Adoptable
1.17	SW25	1800	Manhole	Adoptable	SW26	1800	Manhole	Adoptable
1.18	SW26	1800	Manhole	Adoptable	SW27	1800	Manhole	Adoptable
1.19	SW27	1800	Manhole	Adoptable	SW28	1800	Manhole	Adoptable
1.20	SW28	1800	Manhole	Adoptable	SW29	1500	Manhole	Adoptable
1.21	SW29	1500	Manhole	Adoptable	SW30	1200	Manhole	Adoptable
2.0	SW8A	600	Manhole	Adoptable	SW8B	600	Manhole	Adoptable
2.1	SW8B	600	Manhole	Adoptable	SW8	1500	Manhole	Adoptable
3.0	SW17	600	Manhole	Adoptable	SW18	600	Manhole	Adoptable
3.1	SW18	600	Manhole	Adoptable	SW15	1800	Manhole	Adoptable
4.0	SW19	475	Manhole	Adoptable	SW20	1800	Manhole	Adoptable
5.0	SW21	600	Manhole	Adoptable	SW22	1200	Manhole	Adoptable
5.1	SW22	1200	Manhole	Adoptable	SW23	1200	Manhole	Adoptable
5.2	SW23	1200	Manhole	Adoptable	SW24	1800	Manhole	Adoptable
6.0	SW31	1200	Manhole	Adoptable	SW32	1200	Manhole	Adoptable
6.1	SW32	1200	Manhole	Adoptable	SW26	1800	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SW1	108.000	1.075	600					
				0	1.0	106.925	225	
SW2	107.100	0.895	600		1	1.0	106.205	225
				0	1.1	106.205	225	
SW3	107.100	0.975	600		1	1.1	106.125	225
				0	1.2	106.125	225	
SW4	107.000	1.415	600		1	1.2	105.585	225
				0	1.3	105.585	225	
SW5	106.750	1.533	600		1	1.3	105.292	225
				0	1.4	105.217	300	
SW6	106.000	1.286	1500		1	1.4	104.864	300
				0	1.5	104.714	450	
SW7	106.000	1.633	1500		1	1.5	104.367	450
				0	1.6	104.367	450	
SW8	106.000	1.744	1500		1	2.1	104.406	300
				2	1.6	104.256	450	
				0	1.7	104.256	450	
SW9	106.000	1.881	1500		1	1.7	104.119	450
				0	1.8	104.119	450	
SW10	106.000	2.041	1500		1	1.8	103.959	450
				0	1.9	103.959	450	
SW11	106.000	2.145	1500		1	1.9	103.855	450
				0	1.10	103.855	450	
SW12	106.000	2.271	1500		1	1.10	103.804	450
				0	1.11	103.729	525	
SW13	106.000	2.422	1500		1	1.11	103.653	525
				0	1.12	103.578	600	

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW14	106.000	2.558	1500	1	1.12	103.442	600
				0	1.13	103.442	600
SW15	106.000	2.729	1800	1	3.1	103.646	300
				2	1.13	103.346	600
				0	1.14	103.271	675
SW17	106.000	1.075	600	0	3.0	104.925	300
SW18	106.000	1.600	600	1	3.0	104.400	300
				0	3.1	104.400	300
SW19	105.000	1.000	475	0	4.0	104.000	150
SW20	105.000	1.803	1800	1	4.0	103.722	150
				2	1.14	103.197	675
				0	1.15	103.197	675
SW21	104.000	1.000	600	0	5.0	103.000	225
SW22	104.000	1.322	1200	1	5.0	102.753	225
				0	5.1	102.678	300
SW23	104.000	1.570	1200	1	5.1	102.505	300
				0	5.2	102.430	375
SW24	104.000	2.003	1800	1	5.2	102.372	375
				2	1.15	102.072	675
				0	1.16	101.997	750
SW25	103.808	1.975	1800	1	1.16	101.833	750
				0	1.17	101.833	750
SW26	103.808	2.808	1800	1	6.1	101.450	375
				2	1.17	101.000	750
				0	1.18	101.000	750
SW27	102.200	2.000	1800	1	1.18	100.200	750
				0	1.19	100.200	750

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW28	102.200	2.011	1800	1	1.19	100.189	750
				0	1.20	100.189	750
SW29	102.200	2.811	1500	1	1.20	99.389	750
				0	1.21	99.389	225
SW30	99.740	1.590	1200	1	1.21	98.150	225
				0	1.21	98.150	225
SW8A	106.750	1.325	600	0	2.0	105.425	300
SW8B	106.750	1.598	600	1	2.0	105.152	300
				0	2.1	105.152	300
SW31	104.500	2.000	1200	0	6.0	102.500	375
SW32	104.500	2.413	1200	1	6.0	102.087	375
				0	6.1	102.087	375

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	40	0	0
100	50	0	0

Node SW29 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	99.389	Product Number	CTL-SHE-0160-1500-2000-1500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	15.0	Min Node Diameter (mm)	1500

Node SW28 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	100.189
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	540.0	0.0	2.000	1172.0	0.0	2.010	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW1	10	106.986	0.061	8.5	0.0847	0.0000	OK
15 minute winter	SW2	11	106.270	0.065	8.2	0.0183	0.0000	OK
15 minute winter	SW3	12	106.185	0.059	8.2	0.0168	0.0000	OK
15 minute winter	SW4	12	105.664	0.079	11.3	0.0499	0.0000	OK
15 minute winter	SW5	12	105.295	0.078	13.6	0.0476	0.0000	OK
15 minute winter	SW6	13	104.786	0.072	15.6	0.1527	0.0000	OK
15 minute winter	SW7	12	104.471	0.104	26.2	0.3037	0.0000	OK
15 minute winter	SW8	11	104.442	0.186	62.9	0.6279	0.0000	OK
15 minute winter	SW9	12	104.302	0.183	61.8	0.3231	0.0000	OK
15 minute winter	SW10	12	104.169	0.210	69.5	0.5078	0.0000	OK
15 minute winter	SW11	13	104.063	0.208	67.9	0.3672	0.0000	OK
15 minute winter	SW12	13	103.958	0.229	87.4	0.8470	0.0000	OK
15 minute winter	SW13	13	103.812	0.234	98.3	0.6557	0.0000	OK
15 minute winter	SW14	14	103.676	0.234	102.8	0.4949	0.0000	OK
15 minute winter	SW15	13	103.506	0.235	124.9	0.7452	0.0000	OK
15 minute winter	SW17	11	105.009	0.084	15.4	0.1964	0.0000	OK
15 minute winter	SW18	11	104.482	0.081	24.6	0.0944	0.0000	OK
15 minute winter	SW19	10	104.049	0.049	4.2	0.0384	0.0000	OK
15 minute winter	SW20	13	103.327	0.130	127.5	0.3316	0.0000	OK
15 minute winter	SW21	11	103.084	0.084	12.6	0.1754	0.0000	OK
15 minute winter	SW22	11	102.826	0.148	34.5	0.5245	0.0000	OK
15 minute winter	SW23	11	102.594	0.164	46.0	0.3731	0.0000	OK
15 minute winter	SW24	13	102.270	0.273	162.7	0.6945	0.0000	OK
15 minute winter	SW25	14	102.021	0.188	163.2	0.4792	0.0000	OK
15 minute winter	SW26	14	101.175	0.175	198.0	0.4460	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SW1	1.0	SW2	8.2	0.939	0.159	0.6446	
15 minute winter	SW2	1.1	SW3	8.2	0.927	0.158	0.0710	
15 minute winter	SW3	1.2	SW4	8.0	0.801	0.155	0.5585	
15 minute winter	SW4	1.3	SW5	10.8	0.888	0.254	0.5337	
15 minute winter	SW5	1.4	SW6	13.2	0.921	0.145	0.7613	
15 minute winter	SW6	1.5	SW7	15.3	0.717	0.058	1.1424	
15 minute winter	SW7	1.6	SW8	25.8	0.604	0.120	1.1056	
15 minute winter	SW8	1.7	SW9	61.8	1.027	0.332	2.4876	
15 minute winter	SW9	1.8	SW10	62.1	0.936	0.334	3.1850	
15 minute winter	SW10	1.9	SW11	67.9	0.955	0.409	2.7982	
15 minute winter	SW11	1.10	SW12	68.0	1.041	0.410	1.2414	
15 minute winter	SW12	1.11	SW13	87.5	1.069	0.385	2.7835	
15 minute winter	SW13	1.12	SW14	99.2	0.983	0.307	6.1819	
15 minute winter	SW14	1.13	SW15	100.7	1.090	0.312	3.9756	
15 minute winter	SW15	1.14	SW20	124.7	1.601	0.299	2.9359	
15 minute winter	SW17	3.0	SW18	15.1	0.955	0.171	1.3138	
15 minute winter	SW18	3.1	SW15	24.4	1.607	0.155	0.5761	
15 minute winter	SW19	4.0	SW20	4.1	0.821	0.227	0.1345	
15 minute winter	SW20	1.15	SW24	126.6	1.952	0.085	3.0424	
15 minute winter	SW21	5.0	SW22	12.3	0.922	0.290	0.4936	
15 minute winter	SW22	5.1	SW23	34.1	1.016	0.462	1.3096	
15 minute winter	SW23	5.2	SW24	46.2	1.059	0.348	0.5676	
15 minute winter	SW24	1.16	SW25	163.2	1.428	0.297	9.4377	
15 minute winter	SW25	1.17	SW26	162.4	1.976	0.135	7.2372	
15 minute winter	SW26	1.18	SW27	197.2	1.710	0.126	12.7720	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW27	12	100.958	0.758	197.2	1.9302	0.0000	SURCHARGED
120 minute winter	SW28	122	100.474	0.285	90.1	167.6430	0.0000	OK
120 minute winter	SW29	122	100.474	1.085	27.3	1.9178	0.0000	SURCHARGED
15 minute summer	SW30	1	99.150	1.000	15.0	0.0000	0.0000	OK
15 minute winter	SW8A	10	105.513	0.088	16.1	0.1772	0.0000	OK
15 minute winter	SW8B	11	105.229	0.077	19.6	0.0470	0.0000	OK
15 minute winter	SW31	10	102.658	0.158	47.2	0.7086	0.0000	OK
15 minute winter	SW32	11	102.206	0.119	46.5	0.1342	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SW27	1.19	SW28	365.5	2.687	0.665	1.2153	
120 minute winter	SW28	1.20	SW29	27.3	0.396	0.007	2.3750	
120 minute winter	SW29	Hydro-Brake®	SW30	15.0				251.7
15 minute winter	SW8A	2.0	SW8B	15.9	1.026	0.175	0.6375	
15 minute winter	SW8B	2.1	SW8	19.4	1.367	0.142	0.7086	
15 minute winter	SW31	6.0	SW32	46.5	1.275	0.350	3.4246	
15 minute winter	SW32	6.1	SW26	44.8	1.528	0.212	1.6727	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW1	10	107.044	0.119	29.1	0.1669	0.0000	OK
15 minute winter	SW2	11	106.338	0.133	28.5	0.0376	0.0000	OK
15 minute winter	SW3	11	106.242	0.117	28.4	0.0332	0.0000	OK
15 minute winter	SW4	12	105.759	0.174	39.7	0.1104	0.0000	OK
15 minute winter	SW5	12	105.377	0.160	48.6	0.0975	0.0000	OK
15 minute winter	SW6	13	104.968	0.254	56.8	0.5351	0.0000	OK
15 minute winter	SW7	13	104.945	0.578	98.3	1.6953	0.0000	SURCHARGED
15 minute winter	SW8	13	104.915	0.659	209.7	2.2306	0.0000	SURCHARGED
15 minute winter	SW9	12	104.759	0.640	185.4	1.1302	0.0000	SURCHARGED
15 minute winter	SW10	12	104.588	0.629	201.1	1.5236	0.0000	SURCHARGED
15 minute winter	SW11	12	104.392	0.537	203.5	0.9495	0.0000	SURCHARGED
15 minute winter	SW12	12	104.275	0.545	287.2	2.0160	0.0000	SURCHARGED
15 minute winter	SW13	12	104.114	0.536	342.1	1.5041	0.0000	OK
15 minute winter	SW14	12	103.947	0.505	347.4	1.0690	0.0000	OK
15 minute winter	SW15	12	103.741	0.470	462.8	1.4900	0.0000	OK
15 minute winter	SW17	10	105.094	0.169	53.3	0.3939	0.0000	OK
15 minute winter	SW18	11	104.565	0.165	85.6	0.1910	0.0000	OK
15 minute winter	SW19	10	104.105	0.105	14.5	0.0813	0.0000	OK
15 minute winter	SW20	12	103.462	0.265	479.3	0.6732	0.0000	OK
15 minute winter	SW21	11	103.531	0.531	43.6	1.1061	0.0000	SURCHARGED
15 minute winter	SW22	11	103.273	0.595	114.1	2.1140	0.0000	SURCHARGED
15 minute winter	SW23	11	102.808	0.378	153.1	0.8600	0.0000	SURCHARGED
15 minute winter	SW24	12	102.580	0.583	625.8	1.4837	0.0000	OK
15 minute winter	SW25	13	102.231	0.398	617.1	1.0130	0.0000	OK
15 minute winter	SW26	13	101.409	0.409	768.0	1.0406	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SW1	1.0	SW2	28.5	1.267	0.548	1.6268	
15 minute winter	SW2	1.1	SW3	28.4	1.256	0.547	0.1812	
15 minute winter	SW3	1.2	SW4	28.3	1.060	0.545	1.4436	
15 minute winter	SW4	1.3	SW5	38.2	1.196	0.902	1.4046	
15 minute winter	SW5	1.4	SW6	48.4	1.297	0.535	1.9796	
15 minute winter	SW6	1.5	SW7	66.0	0.698	0.250	6.5135	
15 minute winter	SW7	1.6	SW8	100.3	0.715	0.467	3.9611	
15 minute winter	SW8	1.7	SW9	185.4	1.267	0.998	6.4962	
15 minute winter	SW9	1.8	SW10	182.4	1.151	0.982	7.6053	
15 minute winter	SW10	1.9	SW11	203.5	1.285	1.226	6.1793	
15 minute winter	SW11	1.10	SW12	204.1	1.372	1.230	3.0104	
15 minute winter	SW12	1.11	SW13	286.6	1.351	1.262	7.0868	
15 minute winter	SW13	1.12	SW14	330.3	1.285	1.024	15.8130	
15 minute winter	SW14	1.13	SW15	351.9	1.570	1.091	9.6716	
15 minute winter	SW15	1.14	SW20	467.0	2.353	1.120	7.3089	
15 minute winter	SW17	3.0	SW18	51.8	1.299	0.588	3.3131	
15 minute winter	SW18	3.1	SW15	84.9	2.218	0.541	1.4547	
15 minute winter	SW19	4.0	SW20	14.1	1.110	0.784	0.3448	
15 minute winter	SW20	1.15	SW24	479.7	2.297	0.323	9.3991	
15 minute winter	SW21	5.0	SW22	40.0	1.006	0.945	1.4715	
15 minute winter	SW22	5.1	SW23	112.0	1.591	1.518	2.7461	
15 minute winter	SW23	5.2	SW24	152.9	1.478	1.150	1.3075	
15 minute winter	SW24	1.16	SW25	617.1	2.053	1.122	24.6683	
15 minute winter	SW25	1.17	SW26	625.8	2.597	0.520	21.2390	
15 minute winter	SW26	1.18	SW27	768.5	2.475	0.491	16.9241	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW27	9	101.350	1.150	768.5	2.9272	0.0000	SURCHARGED
360 minute winter	SW28	360	101.281	1.092	123.7	780.5543	0.0000	SURCHARGED
360 minute winter	SW29	344	101.289	1.900	19.6	3.3564	0.0000	SURCHARGED
15 minute summer	SW30	1	99.150	1.000	15.0	0.0000	0.0000	OK
15 minute winter	SW8A	10	105.602	0.177	55.7	0.3564	0.0000	OK
15 minute winter	SW8B	11	105.298	0.146	67.4	0.0889	0.0000	OK
15 minute winter	SW31	11	102.948	0.448	162.6	2.0110	0.0000	SURCHARGED
15 minute winter	SW32	12	102.331	0.244	152.0	0.2756	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SW27	1.19	SW28	780.3	3.553	1.419	2.0776	
360 minute winter	SW28	1.20	SW29	19.6	0.377	0.005	3.5210	
360 minute winter	SW29	Hydro-Brake®	SW30	15.0				473.8
15 minute winter	SW8A	2.0	SW8B	54.8	1.421	0.605	1.5811	
15 minute winter	SW8B	2.1	SW8	66.3	1.620	0.488	2.6130	
15 minute winter	SW31	6.0	SW32	152.0	1.602	1.144	8.6525	
15 minute winter	SW32	6.1	SW26	150.6	2.057	0.712	4.1727	

Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW1	10	107.073	0.148	40.4	0.2073	0.0000	OK
15 minute winter	SW2	13	106.376	0.171	39.5	0.0485	0.0000	OK
15 minute winter	SW3	13	106.368	0.242	39.5	0.0686	0.0000	SURCHARGED
15 minute winter	SW4	13	106.197	0.612	55.2	0.3893	0.0000	SURCHARGED
15 minute winter	SW5	13	105.945	0.728	60.8	0.4435	0.0000	SURCHARGED
15 minute winter	SW6	13	105.825	1.110	110.3	2.3420	0.0000	FLOOD RISK
15 minute winter	SW7	13	105.797	1.430	112.5	4.1904	0.0000	FLOOD RISK
15 minute winter	SW8	13	105.755	1.499	242.0	5.0736	0.0000	FLOOD RISK
15 minute winter	SW9	12	105.492	1.373	233.3	2.4256	0.0000	SURCHARGED
15 minute winter	SW10	12	105.204	1.245	263.6	3.0167	0.0000	SURCHARGED
15 minute winter	SW11	12	104.879	1.024	269.1	1.8098	0.0000	SURCHARGED
15 minute winter	SW12	12	104.686	0.957	370.2	3.5377	0.0000	SURCHARGED
15 minute winter	SW13	12	104.407	0.829	437.0	2.3283	0.0000	SURCHARGED
15 minute winter	SW14	12	104.100	0.658	461.8	1.3952	0.0000	SURCHARGED
15 minute winter	SW15	11	103.843	0.572	622.8	1.8122	0.0000	OK
15 minute winter	SW17	10	105.137	0.212	74.1	0.4944	0.0000	OK
15 minute winter	SW18	11	104.607	0.207	118.9	0.2396	0.0000	OK
15 minute winter	SW19	11	104.179	0.179	20.2	0.1389	0.0000	SURCHARGED
15 minute winter	SW20	11	103.525	0.328	642.0	0.8337	0.0000	OK
15 minute winter	SW21	10	104.000	1.000	60.6	2.0830	2.2802	FLOOD
15 minute winter	SW22	11	103.734	1.056	151.5	3.7493	0.0000	FLOOD RISK
15 minute winter	SW23	12	103.028	0.598	203.1	1.3619	0.0000	SURCHARGED
15 minute winter	SW24	12	102.849	0.852	839.7	2.1683	0.0000	SURCHARGED
15 minute winter	SW25	12	102.323	0.489	837.4	1.2457	0.0000	OK
360 minute winter	SW26	360	101.684	0.684	175.8	1.7415	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SW1	1.0	SW2	39.5	1.355	0.761	2.1071	
15 minute winter	SW2	1.1	SW3	39.5	1.348	0.760	0.2888	
15 minute winter	SW3	1.2	SW4	39.4	1.097	0.758	2.1476	
15 minute winter	SW4	1.3	SW5	49.1	1.239	1.159	1.7499	
15 minute winter	SW5	1.4	SW6	62.4	1.321	0.689	3.7322	
15 minute winter	SW6	1.5	SW7	88.6	0.617	0.336	8.2391	
15 minute winter	SW7	1.6	SW8	130.4	0.823	0.607	3.9611	
15 minute winter	SW8	1.7	SW9	233.3	1.473	1.256	6.4962	
15 minute winter	SW9	1.8	SW10	237.6	1.499	1.279	7.6053	
15 minute winter	SW10	1.9	SW11	269.1	1.699	1.621	6.1793	
15 minute winter	SW11	1.10	SW12	273.2	1.724	1.646	3.0104	
15 minute winter	SW12	1.11	SW13	370.5	1.715	1.632	7.3451	
15 minute winter	SW13	1.12	SW14	438.0	1.555	1.358	17.1823	
15 minute winter	SW14	1.13	SW15	464.9	1.675	1.441	11.4225	
15 minute winter	SW15	1.14	SW20	623.0	2.552	1.494	9.1426	
15 minute winter	SW17	3.0	SW18	72.1	1.384	0.817	4.3228	
15 minute winter	SW18	3.1	SW15	118.3	2.345	0.754	1.9168	
15 minute winter	SW19	4.0	SW20	19.3	1.126	1.070	0.4527	
15 minute winter	SW20	1.15	SW24	648.6	2.345	0.437	11.8948	
15 minute winter	SW21	5.0	SW22	46.3	1.165	1.094	1.4715	
15 minute winter	SW22	5.1	SW23	142.5	2.024	1.931	2.7464	
15 minute winter	SW23	5.2	SW24	200.9	1.829	1.511	1.4339	
15 minute winter	SW24	1.16	SW25	837.4	2.102	1.523	30.5229	
15 minute winter	SW25	1.17	SW26	827.6	2.696	0.688	27.2328	
360 minute winter	SW26	1.18	SW27	175.8	1.073	0.112	21.5382	

Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	SW27	480	101.685	1.485	141.3	3.7804	0.0000	SURCHARGED
360 minute winter	SW28	360	101.684	1.495	173.6	1163.7440	0.0000	SURCHARGED
360 minute winter	SW29	360	101.699	2.310	22.1	4.0818	0.0000	SURCHARGED
15 minute summer	SW30	1	99.150	1.000	14.5	0.0000	0.0000	OK
15 minute winter	SW8A	12	106.106	0.681	77.4	1.3755	0.0000	SURCHARGED
15 minute winter	SW8B	13	105.952	0.800	93.6	0.4864	0.0000	SURCHARGED
15 minute winter	SW31	11	103.455	0.955	226.1	4.2885	0.0000	SURCHARGED
15 minute winter	SW32	12	102.410	0.323	210.8	0.3657	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	SW27	1.19	SW28	139.6	1.337	0.254	2.4207	
360 minute winter	SW28	1.20	SW29	22.1	0.381	0.006	3.5210	
360 minute winter	SW29	Hydro-Brake®	SW30	16.0				511.0
15 minute winter	SW8A	2.0	SW8B	76.1	1.494	0.840	2.8872	
15 minute winter	SW8B	2.1	SW8	81.8	1.621	0.601	3.5210	
15 minute winter	SW31	6.0	SW32	210.8	1.931	1.586	9.8289	
15 minute winter	SW32	6.1	SW26	207.5	2.157	0.981	5.5116	