

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.356	Preferred Cover Depth (m)	1.200
CV	0.750	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)	Easting (m)	Northing (m)	Depth (m)
SW MH02			71.267	1500	385116.717	402275.705	1.994
SW MH03			71.595	1500	385127.483	402301.107	2.506
SW MH05	0.200	5.00	73.562	1500	385100.488	402359.538	4.000
SW MH06	0.160	5.00	72.057	1500	385135.165	402368.801	3.421
SW MH07	0.100	5.00	71.652	1500	385137.553	402397.024	3.206
DUMMY D	0.750	5.00	72.000	1500	385114.476	402411.127	3.358
MSCP DUMMY			72.000	1500	385129.388	402414.167	3.618
SW MH08	0.300	5.00	70.297	1500	385138.759	402444.242	2.313
SW MH09	0.180	5.00	70.407	1500	385131.782	402474.147	2.628
SW MH11	0.100	5.00	70.400	1500	385114.894	402506.694	2.867
SW MH12	0.180	5.00	71.026	1500	385085.103	402530.485	7.124
SW MH13			69.889	1500	385038.512	402553.954	6.196
SW MH14	0.400	5.00	71.064	1500	385016.319	402570.614	7.483
SW MH15	0.210	5.00	68.285	2100	385022.383	402584.943	4.766
15_OUT			72.000		385016.233	402593.048	8.520
DUMMY F	1.240	5.00	68.336	1500	384995.239	402557.804	0.964
DUMMY F2			68.336	1500	385007.194	402566.106	1.191
DUMMY G	0.500	5.00	71.000	1200	385068.741	402509.216	1.500
DUMMY G2			71.934	1200	385078.091	402520.210	2.678
DUMMY E	0.290	5.00	70.281	1200	385110.275	402456.653	1.879
DUMMY E2			70.281	1200	385121.586	402464.613	2.130
DUMMY C	0.230	5.00	71.759	1200	385092.140	402308.798	2.176
DUMMY C2			71.759	1200	385111.111	402304.366	2.493
DUMMY B	0.280	5.00	71.231	1200	385079.453	402283.917	1.499
DUMMY B2			71.231		385099.409	402277.724	1.718
1	0.210	5.00	71.240	1500	385088.399	402211.355	1.500
DUMMY A	0.400	5.00	71.240	1500	385060.840	402219.096	1.101
DUMMY A2	0.000		71.240		385074.000	402214.296	1.296

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)
1.000	SW MH02	SW MH03	27.590	0.600	69.273	69.089	0.184	150.0	450	6.30	50.0
1.001	SW MH03	SW MH06	68.129	0.600	69.091	68.636	0.455	149.7	450	6.98	50.0
2.000	SW MH05	SW MH06	35.893	0.600	69.562	68.867	0.695	51.6	450	5.21	50.0
1.002	SW MH06	SW MH07	28.324	0.600	68.636	68.446	0.190	149.1	450	7.26	50.0
1.003	SW MH07	SW MH08	47.233	0.600	68.446	67.984	0.462	102.2	450	7.66	50.0
3.000	DUMMY D	MSCP DUMMY	15.219	0.600	68.642	68.382	0.260	58.5	600	5.08	50.0
3.001	MSCP DUMMY	SW MH08	31.501	0.600	68.382	68.124	0.258	122.1	600	5.32	50.0
1.004	SW MH08	SW MH09	30.708	0.600	67.984	67.779	0.205	149.8	600	7.91	50.0
1.005	SW MH09	SW MH11	36.668	0.600	67.779	67.535	0.244	150.3	600	8.22	50.0
1.006	SW MH11	SW MH12	38.125	0.600	67.533	67.279	0.254	150.1	600	8.54	50.0
1.007	SW MH12	SW MH13	52.168	0.600	63.902	63.693	0.209	250.0	600	9.11	50.0
1.008	SW MH13	SW MH14	27.825	0.600	63.693	63.582	0.111	250.0	600	9.41	50.0
1.009	SW MH14	SW MH15	15.542	0.600	63.581	63.519	0.062	250.0	600	9.58	50.0
1.010	SW MH15	15_OUT	10.022	0.600	63.520	63.480	0.040	250.0	450	9.71	50.0
8.000	DUMMY F	DUMMY F2	14.555	0.600	67.372	67.145	0.227	64.1	600	5.08	50.0
8.001	DUMMY F2	SW MH14	10.178	0.600	67.145	66.884	0.261	39.0	600	5.12	50.0
7.000	DUMMY G	DUMMY G2	14.432	0.600	69.500	69.256	0.244	59.1	225	5.00	50.0
7.001	DUMMY G2	SW MH12	12.440	0.600	69.259	69.017	0.242	51.4	375	5.08	50.0
6.000	DUMMY E	DUMMY E2	13.831	0.600	68.402	68.151	0.251	55.1	225	5.13	50.0
6.001	DUMMY E2	SW MH09	13.959	0.600	68.151	67.924	0.227	61.5	225	5.27	50.0
3.000_1	DUMMY C	DUMMY C2	19.482	0.600	69.583	69.266	0.317	61.5	225	5.19	50.0
3.001_1	DUMMY C2	SW MH03	16.693	0.600	69.266	69.096	0.170	98.2	225	5.41	50.0
2.000_1	DUMMY B	DUMMY B2	20.895	0.600	69.732	69.513	0.219	95.4	225	5.26	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)
1.000	1.657	263.6	168.9	1.544	2.056	0.890	0.0
1.001	1.659	263.8	212.5	2.054	2.971	1.120	0.0
2.000	2.834	450.7	37.9	3.550	2.740	0.200	0.0
1.002	1.663	264.4	280.8	2.971	2.756	1.480	0.0
1.003	2.010	319.7	299.8	2.756	1.863	1.580	0.0
3.000	3.187	901.0	142.3	2.758	3.018	0.750	0.0
3.001	2.202	622.7	142.3	3.018	1.573	0.750	0.0
1.004	1.987	561.8	499.0	1.713	2.028	2.630	0.0
1.005	1.984	560.9	588.2	2.028	2.265	3.100	0.0
1.006	1.985	561.3	607.2	2.267	3.147	3.200	0.0
1.007	1.535	434.1	736.2	6.524	5.596	3.880	0.0
1.008	1.535	434.1	736.2	5.596	6.882	3.880	0.0
1.009	1.535	434.1	1047.3	6.883	4.166	5.520	0.0
1.010	1.281	203.7	1087.2	4.315	8.070	5.730	0.0
8.000	3.044	860.7	235.3	0.364	0.591	1.240	0.0
8.001	3.907	1104.7	235.3	0.591	3.580	1.240	0.0
7.000	1.703	67.7	94.9	1.275	2.453	0.500	0.0
7.001	2.532	279.6	94.9	2.300	1.634	0.500	0.0
6.000	1.765	70.2	55.0	1.654	1.905	0.290	0.0
6.001	1.670	66.4	55.0	1.905	2.258	0.290	0.0
3.000_1	1.671	66.4	43.6	1.951	2.268	0.230	0.0
3.001_1	1.319	52.5	43.6	2.268	2.274	0.230	0.0
2.000_1	1.339	53.2	53.1	1.274	1.493	0.280	0.0

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)
2.001	DUMMY B2	SW MH02	17.425	0.600	69.513	69.273	0.240	72.6	225	5.45	50.0
1.002_1	1	SW MH02	70.305	0.600	69.740	69.273	0.467	150.5	450	6.02	50.0
1.000_1	DUMMY A	DUMMY A2	14.008	0.600	70.139	69.944	0.195	71.8	225	5.15	50.0
1.001_1	DUMMY A2	1	14.696	0.600	69.944	69.740	0.204	72.0	225	5.31	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)
2.001	1.536	61.1	53.1	1.493	1.769	0.280	0.0
1.002_1	1.654	263.1	115.7	1.050	1.544	0.610	0.0
1.000_1	1.545	61.4	75.9	0.876	1.071	0.400	0.0
1.001_1	1.542	61.3	75.9	1.071	1.275	0.400	0.0

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)
1.000	27.590	150.0	450	1 STANDARD	71.267	69.273	1.544	71.595	69.089	2.056
1.001	68.129	149.7	450	1 STANDARD	71.595	69.091	2.054	72.057	68.636	2.971
2.000	35.893	51.6	450	1 STANDARD	73.562	69.562	3.550	72.057	68.867	2.740
1.002	28.324	149.1	450	1 STANDARD	72.057	68.636	2.971	71.652	68.446	2.756
1.003	47.233	102.2	450	1 STANDARD	71.652	68.446	2.756	70.297	67.984	1.863
3.000	15.219	58.5	600	1 STANDARD	72.000	68.642	2.758	72.000	68.382	3.018
3.001	31.501	122.1	600	1 STANDARD	72.000	68.382	3.018	70.297	68.124	1.573
1.004	30.708	149.8	600	1 STANDARD	70.297	67.984	1.713	70.407	67.779	2.028
1.005	36.668	150.3	600	1 STANDARD	70.407	67.779	2.028	70.400	67.535	2.265
1.006	38.125	150.1	600	1 STANDARD	70.400	67.533	2.267	71.026	67.279	3.147
1.007	52.168	250.0	600	1 STANDARD	71.026	63.902	6.524	69.889	63.693	5.596
1.008	27.825	250.0	600	1 STANDARD	69.889	63.693	5.596	71.064	63.582	6.882
1.009	15.542	250.0	600	1 STANDARD	71.064	63.581	6.883	68.285	63.519	4.166
1.010	10.022	250.0	450	1 STANDARD	68.285	63.520	4.315	72.000	63.480	8.070
8.000	14.555	64.1	600	1 STANDARD	68.336	67.372	0.364	68.336	67.145	0.591

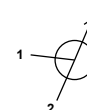
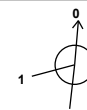
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW MH02	1500	Manhole	1 STANDARD	SW MH03	1500	Manhole	1 STANDARD
1.001	SW MH03	1500	Manhole	1 STANDARD	SW MH06	1500	Manhole	1 STANDARD
2.000	SW MH05	1500	Manhole	1 STANDARD	SW MH06	1500	Manhole	1 STANDARD
1.002	SW MH06	1500	Manhole	1 STANDARD	SW MH07	1500	Manhole	1 STANDARD
1.003	SW MH07	1500	Manhole	1 STANDARD	SW MH08	1500	Manhole	1 STANDARD
3.000	DUMMY D	1500	Manhole	1 STANDARD	MSCP DUMMY	1500	Manhole	1 STANDARD
3.001	MSCP DUMMY	1500	Manhole	1 STANDARD	SW MH08	1500	Manhole	1 STANDARD
1.004	SW MH08	1500	Manhole	1 STANDARD	SW MH09	1500	Manhole	1 STANDARD
1.005	SW MH09	1500	Manhole	1 STANDARD	SW MH11	1500	Junction	
1.006	SW MH11	1500	Junction		SW MH12	1500	Manhole	1 STANDARD
1.007	SW MH12	1500	Manhole	1 STANDARD	SW MH13	1500	Manhole	1 STANDARD
1.008	SW MH13	1500	Manhole	1 STANDARD	SW MH14	1500	Manhole	1 STANDARD
1.009	SW MH14	1500	Manhole	1 STANDARD	SW MH15	2100	Junction	
1.010	SW MH15	2100	Junction		15_OUT		Manhole	1 STANDARD
8.000	DUMMY F	1500	Manhole	1 STANDARD	DUMMY F2	1500	Junction	

Pipeline Schedule

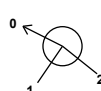
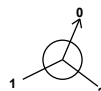
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.001	10.178	39.0	600	1 STANDARD	68.336	67.145	0.591	71.064	66.884	3.580
7.000	14.432	59.1	225	1 STANDARD	71.000	69.500	1.275	71.934	69.256	2.453
7.001	12.440	51.4	375	1 STANDARD	71.934	69.259	2.300	71.026	69.017	1.634
6.000	13.831	55.1	225	1 STANDARD	70.281	68.402	1.654	70.281	68.151	1.905
6.001	13.959	61.5	225	1 STANDARD	70.281	68.151	1.905	70.407	67.924	2.258
3.000_1	19.482	61.5	225	1 STANDARD	71.759	69.583	1.951	71.759	69.266	2.268
3.001_1	16.693	98.2	225	1 STANDARD	71.759	69.266	2.268	71.595	69.096	2.274
2.000_1	20.895	95.4	225	1 STANDARD	71.231	69.732	1.274	71.231	69.513	1.493
2.001	17.425	72.6	225	1 STANDARD	71.231	69.513	1.493	71.267	69.273	1.769
1.002_1	70.305	150.5	450	1 STANDARD	71.240	69.740	1.050	71.267	69.273	1.544
1.000_1	14.008	71.8	225	1 STANDARD	71.240	70.139	0.876	71.240	69.944	1.071
1.001_1	14.696	72.0	225	1 STANDARD	71.240	69.944	1.071	71.240	69.740	1.275

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.001	DUMMY F2	1500	Junction		SW MH14	1500	Manhole	1 STANDARD
7.000	DUMMY G	1200	Manhole	1 STANDARD	DUMMY G2	1200	Junction	
7.001	DUMMY G2	1200	Junction		SW MH12	1500	Manhole	1 STANDARD
6.000	DUMMY E	1200	Manhole	1 STANDARD	DUMMY E2	1200	Junction	
6.001	DUMMY E2	1200	Junction		SW MH09	1500	Manhole	1 STANDARD
3.000_1	DUMMY C	1200	Manhole	1 STANDARD	DUMMY C2	1200	Junction	
3.001_1	DUMMY C2	1200	Junction		SW MH03	1500	Manhole	1 STANDARD
2.000_1	DUMMY B	1200	Manhole	1 STANDARD	DUMMY B2		Junction	
2.001	DUMMY B2		Junction		SW MH02	1500	Manhole	1 STANDARD
1.002_1	1	1500	Manhole	1 STANDARD	SW MH02	1500	Manhole	1 STANDARD
1.000_1	DUMMY A	1500	Manhole	1 STANDARD	DUMMY A2		Junction	
1.001_1	DUMMY A2		Junction		1	1500	Manhole	1 STANDARD

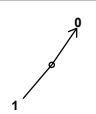
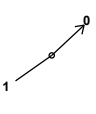
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SW MH02	385116.717	402275.705	71.267	1.994	1500		1	2.001	69.273	225
							2	1.002_1	69.273	450
							0	1.000	69.273	450
SW MH03	385127.483	402301.107	71.595	2.506	1500		1	3.001_1	69.096	225
							2	1.000	69.089	450
							0	1.001	69.091	450
SW MH05	385100.488	402359.538	73.562	4.000	1500		0	2.000	69.562	450
SW MH06	385135.165	402368.801	72.057	3.421	1500		1	2.000	68.867	450
							2	1.001	68.636	450
							0	1.002	68.636	450
SW MH07	385137.553	402397.024	71.652	3.206	1500		1	1.002	68.446	450
							0	1.003	68.446	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
DUMMY D	385114.476	402411.127	72.000	3.358	1500		0	3.000	68.642	600
MSCP DUMMY	385129.388	402414.167	72.000	3.618	1500		1	3.000	68.382	600
							0	3.001	68.382	600
SW MH08	385138.759	402444.242	70.297	2.313	1500		1	3.001	68.124	600
							2	1.003	67.984	450
							0	1.004	67.984	600
SW MH09	385131.782	402474.147	70.407	2.628	1500		1	6.001	67.924	225
							2	1.004	67.779	600
							0	1.005	67.779	600
SW MH11	385114.894	402506.694	70.400	2.867	1500		1	1.005	67.535	600
							0	1.006	67.533	600
SW MH12	385085.103	402530.485	71.026	7.124	1500		1	7.001	69.017	375
							2	1.006	67.279	600
							0	1.007	63.902	600
SW MH13	385038.512	402553.954	69.889	6.196	1500		1	1.007	63.693	600
							0	1.008	63.693	600
SW MH14	385016.319	402570.614	71.064	7.483	1500		1	8.001	66.884	600
							2	1.008	63.582	600
							0	1.009	63.581	600
SW MH15	385022.383	402584.943	68.285	4.766	2100		1	1.009	63.519	600
							0	1.010	63.520	450
15_OUT	385016.233	402593.048	72.000	8.520			1	1.010	63.480	450
DUMMY F	384995.239	402557.804	68.336	0.964	1500		0	8.000	67.372	600
DUMMY F2	385007.194	402566.106	68.336	1.191	1500		1	8.000	67.145	600
							0	8.001	67.145	600
DUMMY G	385068.741	402509.216	71.000	1.500	1200		0	7.000	69.500	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DUMMY G2	385078.091	402520.210	71.934	2.678	1200		1 7.000	69.256	225
							0 7.001	69.259	375
DUMMY E	385110.275	402456.653	70.281	1.879	1200		0 6.000	68.402	225
DUMMY E2	385121.586	402464.613	70.281	2.130	1200		1 6.000	68.151	225
							0 6.001	68.151	225
DUMMY C	385092.140	402308.798	71.759	2.176	1200		0 3.000_1	69.583	225
DUMMY C2	385111.111	402304.366	71.759	2.493	1200		1 3.000_1	69.266	225
							0 3.001_1	69.266	225
DUMMY B	385079.453	402283.917	71.231	1.499	1200		0 2.000_1	69.732	225
DUMMY B2	385099.409	402277.724	71.231	1.718			1 2.000_1	69.513	225
							0 2.001	69.513	225
1	385088.399	402211.355	71.240	1.500	1500		1 1.001_1	69.740	225
							0 1.002_1	69.740	450
DUMMY A	385060.840	402219.096	71.240	1.101	1500		0 1.000_1	70.139	225
DUMMY A2	385074.000	402214.296	71.240	1.296			1 1.000_1	69.944	225
							0 1.001_1	69.944	225

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	Drain Down Time (mins)	240
Ratio-R	0.356	Additional Storage (m³/ha)	20.0
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	0	0	0
100	40	0	0

Node MSCP DUMMY Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	68.382	Product Number	CTL-SHE-0098-5000-1500-5000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node SW MH11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	67.535	Product Number	CTL-SHE-0127-1050-2500-1050
Design Depth (m)	2.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.5	Min Node Diameter (mm)	1500

Node DUMMY F2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	8.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0139-9200-1100-9200
Invert Level (m)	67.145	Min Outlet Diameter (m)	0.225
Design Depth (m)	1.100	Min Node Diameter (mm)	1200
Design Flow (l/s)	9.2		

Node DUMMY G2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	7.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0117-7100-1500-7100
Invert Level (m)	69.259	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
Design Flow (l/s)	7.1		

Node DUMMY E2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	6.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0098-5000-1500-5000
Invert Level (m)	68.151	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.0		

Node DUMMY C2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	3.001_1	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0098-5000-1500-5000
Invert Level (m)	69.266	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.0		

Node DUMMY B2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	2.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0098-5000-1500-5000
Invert Level (m)	69.513	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.0		

Node DUMMY A2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.001_1	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0098-5000-1500-5000
Invert Level (m)	69.944	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.0		

Node SW MH15 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.010	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0235-3630-2500-3630
Invert Level (m)	63.520	Min Outlet Diameter (m)	0.300
Design Depth (m)	2.500	Min Node Diameter (mm)	2100
Design Flow (l/s)	36.3		

Node MSCP DUMMY Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	68.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	3000.0	0.0	1.000	3000.0	0.0	1.010	0.0	0.0

Node SW MH11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	67.533
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	350.0	0.0	1.500	350.0	0.0	1.501	0.0	0.0

Node DUMMY F2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	67.145
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6000.0	0.0	1.000	6000.0	0.0	1.001	0.0	0.0

Node DUMMY G2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.256
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	3000.0	0.0	2.000	3000.0	0.0	2.001	0.0	0.0

Node DUMMY E2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	68.151
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	3000.0	0.0	2.000	3000.0	0.0	2.001	0.0	0.0

Node DUMMY C2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.266
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	3000.0	0.0	1.000	3000.0	0.0	1.001	0.0	0.0

Node DUMMY B2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.513
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	3000.0	0.0	1.000	3000.0	0.0	1.010	0.0	0.0

Node DUMMY A2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.944
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	3000.0	0.0	1.000	3000.0	0.0	1.001	0.0	0.0

Node SW MH15 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	63.519
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	154

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	70.0	0.0	2.500	70.0	0.0	2.501	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW MH02	11	69.369	0.096	24.9	0.1695	0.0000	OK
15 minute winter	SW MH03	12	69.182	0.093	24.9	0.1643	0.0000	OK
15 minute winter	SW MH05	10	69.633	0.071	24.3	0.1972	0.0000	OK
15 minute winter	SW MH06	11	68.795	0.159	65.0	0.4291	0.0000	OK
15 minute winter	SW MH07	11	68.595	0.149	75.5	0.3556	0.0000	OK
15 minute winter	DUMMY D	10	68.791	0.149	91.2	0.9284	0.0000	OK
720 minute winter	MSCP DUMMY	555	68.482	0.100	9.3	96.5131	0.0000	OK
15 minute winter	SW MH08	11	68.174	0.190	110.1	0.8275	0.0000	OK
15 minute winter	SW MH09	12	67.976	0.197	128.6	0.6169	0.0000	OK
480 minute winter	SW MH11	360	67.935	0.402	22.7	141.1436	0.0000	OK
15 minute winter	SW MH12	10	63.994	0.092	22.2	0.2090	0.0000	OK
30 minute winter	SW MH13	23	63.871	0.178	19.5	0.3143	0.0000	OK
30 minute winter	SW MH14	25	63.868	0.287	54.4	0.8138	0.0000	OK
30 minute winter	SW MH15	24	63.869	0.350	68.4	24.7938	0.0000	OK
15 minute summer	15_OUT	1	63.480	0.000	31.5	0.0000	0.0000	OK
15 minute winter	DUMMY F	10	67.559	0.187	150.8	5.1528	0.0000	OK
1440 minute winter	DUMMY F2	1380	67.191	0.046	9.5	276.9625	0.0000	OK
15 minute winter	DUMMY G	10	69.688	0.188	60.8	1.4641	0.0000	OK
1440 minute winter	DUMMY G2	1350	69.292	0.036	3.8	108.5250	0.0000	OK
15 minute winter	DUMMY E	10	68.534	0.132	35.3	0.5560	0.0000	OK
1440 minute winter	DUMMY E2	1380	68.173	0.022	2.2	66.2823	0.0000	OK
15 minute winter	DUMMY C	10	69.704	0.121	28.0	0.3936	0.0000	OK
1440 minute winter	DUMMY C2	1410	69.284	0.018	1.8	53.8419	0.0000	OK
15 minute winter	DUMMY B	10	69.880	0.148	34.1	0.7184	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	SW MH02	1.000	SW MH03	24.9	1.045	0.094	0.6565	
15 minute winter	SW MH03	1.001	SW MH06	24.4	0.701	0.092	2.4577	
15 minute winter	SW MH05	2.000	SW MH06	23.8	1.510	0.053	0.5653	
15 minute winter	SW MH06	1.002	SW MH07	64.1	1.348	0.243	1.3538	
15 minute winter	SW MH07	1.003	SW MH08	74.5	1.388	0.233	2.5776	
15 minute winter	DUMMY D	3.000	MSCP DUMMY	90.4	2.514	0.100	0.5648	
720 minute winter	MSCP DUMMY	3.001	SW MH08	2.2	0.532	0.004	0.1307	
15 minute winter	SW MH08	1.004	SW MH09	108.0	1.390	0.192	2.4034	
15 minute winter	SW MH09	1.005	SW MH11	128.1	1.631	0.228	2.8802	
480 minute winter	SW MH11	1.006	SW MH12	8.8	0.753	0.016	0.4475	
15 minute winter	SW MH12	1.007	SW MH13	21.9	0.834	0.050	1.9822	
30 minute winter	SW MH13	1.008	SW MH14	18.1	0.593	0.042	2.7914	
30 minute winter	SW MH14	1.009	SW MH15	48.5	1.004	0.112	2.3566	
30 minute winter	SW MH15	Hydro-Brake®	15_OUT	33.1				137.8
15 minute winter	DUMMY F	8.000	DUMMY F2	148.1	5.097	0.172	0.5491	
1440 minute winter	DUMMY F2	Hydro-Brake®	SW MH14	1.3				
15 minute winter	DUMMY G	7.000	DUMMY G2	59.4	3.691	0.878	0.2566	
1440 minute winter	DUMMY G2	Hydro-Brake®	SW MH12	0.6				
15 minute winter	DUMMY E	6.000	DUMMY E2	34.9	3.517	0.497	0.1676	
1440 minute winter	DUMMY E2	Hydro-Brake®	SW MH09	0.3				
15 minute winter	DUMMY C	3.000_1	DUMMY C2	27.7	3.142	0.416	0.2130	
1440 minute winter	DUMMY C2	Hydro-Brake®	SW MH03	0.2				
15 minute winter	DUMMY B	2.000_1	DUMMY B2	33.5	2.901	0.630	0.2891	

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	DUMMY B2	1410	69.534	0.021	2.1	64.0328	0.0000	OK
15 minute winter	1	10	69.834	0.094	25.5	0.4285	0.0000	OK
15 minute winter	DUMMY A	10	70.305	0.166	48.6	1.4995	0.0000	OK
1440 minute winter	DUMMY A2	1380	69.973	0.029	3.1	87.8142	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)
1440 minute winter	DUMMY B2	Hydro-Brake®	SW MH02	0.3				
15 minute winter	1	1.002_1	SW MH02	24.9	1.045	0.095	1.6923	
15 minute winter	DUMMY A	1.000_1	DUMMY A2	47.5	3.484	0.773	0.2207	
1440 minute winter	DUMMY A2	Hydro-Brake®	1	0.5				

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SW MH02	11	69.428	0.155	61.3	0.2738	0.0000	OK
15 minute winter	SW MH03	11	69.235	0.146	61.6	0.2575	0.0000	OK
15 minute winter	SW MH05	10	69.675	0.113	59.5	0.3125	0.0000	OK
15 minute winter	SW MH06	11	68.915	0.279	162.0	0.7541	0.0000	OK
15 minute winter	SW MH07	11	68.712	0.266	189.9	0.6364	0.0000	OK
15 minute winter	DUMMY D	10	68.901	0.259	223.0	1.6158	0.0000	OK
600 minute winter	MSCP DUMMY	585	68.536	0.154	22.9	260.7713	0.0000	OK
480 minute winter	SW MH08	376	68.481	0.497	38.5	2.1677	0.0000	OK
480 minute winter	SW MH09	376	68.481	0.702	44.8	2.2021	0.0000	SURCHARGED
480 minute winter	SW MH11	376	68.481	0.948	47.0	332.4428	0.0000	SURCHARGED
60 minute winter	SW MH12	53	64.664	0.762	37.2	1.7314	0.0000	SURCHARGED
60 minute winter	SW MH13	52	64.665	0.972	34.0	1.7178	0.0000	SURCHARGED
60 minute winter	SW MH14	52	64.666	1.085	80.1	3.0773	0.0000	SURCHARGED
60 minute winter	SW MH15	52	64.666	1.147	107.2	81.3286	0.0000	SURCHARGED
15 minute summer	15_OUT	1	63.480	0.000	36.2	0.0000	0.0000	OK
15 minute winter	DUMMY F	10	67.662	0.290	368.7	7.9705	0.0000	OK
1440 minute winter	DUMMY F2	1140	67.232	0.087	19.6	522.4061	0.0000	OK
15 minute winter	DUMMY G	12	70.769	1.269	148.6	9.8969	0.0000	FLOOD RISK
1440 minute winter	DUMMY G2	1080	69.323	0.067	7.9	200.2511	0.0000	OK
15 minute winter	DUMMY E	11	68.819	0.417	86.2	1.7578	0.0000	SURCHARGED
1440 minute winter	DUMMY E2	1530	68.248	0.097	7.4	290.0700	0.0000	OK
15 minute winter	DUMMY C	11	69.860	0.277	68.4	0.8988	0.0000	SURCHARGED
1440 minute winter	DUMMY C2	1350	69.300	0.034	3.6	101.2402	0.0000	OK
15 minute winter	DUMMY B	11	70.331	0.599	83.2	2.9173	0.0000	SURCHARGED

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	SW MH02	1.000	SW MH03	61.6	1.329	0.234	1.2793	
15 minute winter	SW MH03	1.001	SW MH06	60.2	0.854	0.228	5.0003	
15 minute winter	SW MH05	2.000	SW MH06	58.5	1.943	0.130	1.0817	
15 minute winter	SW MH06	1.002	SW MH07	162.0	1.619	0.612	2.8442	
15 minute winter	SW MH07	1.003	SW MH08	189.3	1.709	0.592	5.2671	
15 minute winter	DUMMY D	3.000	MSCP DUMMY	221.8	3.308	0.246	1.0760	
600 minute winter	MSCP DUMMY	3.001	SW MH08	3.9	0.565	0.006	3.2066	
480 minute winter	SW MH08	1.004	SW MH09	38.1	0.994	0.068	8.1574	
480 minute winter	SW MH09	1.005	SW MH11	43.4	0.742	0.077	10.3285	
480 minute winter	SW MH11	1.006	SW MH12	9.2	0.762	0.016	0.4587	
60 minute winter	SW MH12	1.007	SW MH13	34.0	0.775	0.078	14.6945	
60 minute winter	SW MH13	1.008	SW MH14	27.8	0.622	0.064	7.8377	
60 minute winter	SW MH14	1.009	SW MH15	77.4	1.067	0.178	4.3778	
60 minute winter	SW MH15	Hydro-Brake®	15_OUT	36.2				355.0
15 minute winter	DUMMY F	8.000	DUMMY F2	364.6	6.551	0.424	0.9908	
1440 minute winter	DUMMY F2	Hydro-Brake®	SW MH14	4.0				
15 minute winter	DUMMY G	7.000	DUMMY G2	121.7	5.097	1.797	0.2991	
1440 minute winter	DUMMY G2	Hydro-Brake®	SW MH12	2.1				
15 minute winter	DUMMY E	6.000	DUMMY E2	81.3	3.879	1.159	0.2787	
1440 minute winter	DUMMY E2	Hydro-Brake®	SW MH09	1.9				
15 minute winter	DUMMY C	3.000_1	DUMMY C2	65.3	3.454	0.982	0.3902	
1440 minute winter	DUMMY C2	Hydro-Brake®	SW MH03	0.6				
15 minute winter	DUMMY B	2.000_1	DUMMY B2	74.2	3.201	1.393	0.4214	

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	DUMMY B2	1170	69.553	0.040	4.4	120.6854	0.0000	OK
15 minute winter	1	10	69.890	0.150	62.5	0.6843	0.0000	OK
15 minute winter	DUMMY A	12	70.939	0.800	118.9	7.2226	0.0000	SURCHARGED
1440 minute winter	DUMMY A2	1140	69.999	0.055	6.3	165.3340	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)
1440 minute winter	DUMMY B2	Hydro-Brake®	SW MH02	0.8				
15 minute winter	1	1.002_1	SW MH02	61.3	1.316	0.233	3.2748	
15 minute winter	DUMMY A	1.000_1	DUMMY A2	99.5	4.211	1.620	0.2873	
1440 minute winter	DUMMY A2	Hydro-Brake®	1	1.4				

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	SW MH02	264	70.047	0.774	18.8	1.3682	0.0000	SURCHARGED
360 minute winter	SW MH03	264	70.048	0.959	19.3	1.6940	0.0000	SURCHARGED
360 minute winter	SW MH05	264	70.047	0.485	16.4	1.3431	0.0000	SURCHARGED
360 minute winter	SW MH06	264	70.047	1.411	48.5	3.8143	0.0000	SURCHARGED
360 minute winter	SW MH07	264	70.047	1.601	56.6	3.8270	0.0000	SURCHARGED
15 minute winter	DUMMY D	10	69.037	0.395	403.0	2.4596	0.0000	OK
1440 minute winter	MSCP DUMMY	1530	68.731	0.349	24.6	844.8828	0.0000	OK
360 minute winter	SW MH08	264	70.046	2.062	81.2	8.9914	0.0000	FLOOD RISK
360 minute winter	SW MH09	264	70.046	2.267	88.9	7.1104	0.0000	SURCHARGED
360 minute winter	SW MH11	264	70.046	2.513	91.5	526.9288	0.0000	SURCHARGED
120 minute winter	SW MH12	88	68.197	4.295	42.9	9.7582	0.0000	SURCHARGED
120 minute winter	SW MH13	90	68.192	4.499	40.6	7.9495	0.0000	SURCHARGED
120 minute winter	SW MH14	90	68.199	4.618	112.5	13.0971	0.0000	SURCHARGED
120 minute winter	SW MH15	90	68.200	4.681	146.3	179.1587	0.0000	FLOOD RISK
15 minute summer	15_OUT	1	63.480	0.000	36.2	0.0000	0.0000	OK
15 minute winter	DUMMY F	10	67.770	0.398	666.2	10.9309	0.0000	OK
1440 minute winter	DUMMY F2	1110	67.293	0.148	34.8	886.7575	0.0000	OK
15 minute winter	DUMMY G	9	71.000	1.500	268.6	11.6970	28.9213	FLOOD
1440 minute winter	DUMMY G2	1050	69.366	0.110	14.0	330.5658	0.0000	OK
15 minute winter	DUMMY E	11	69.999	1.597	155.8	6.7365	0.0000	FLOOD RISK
1440 minute winter	DUMMY E2	1680	68.340	0.189	13.0	566.4132	0.0000	OK
15 minute winter	DUMMY C	11	70.906	1.323	123.5	4.2937	0.0000	SURCHARGED
960 minute winter	DUMMY C2	780	69.339	0.073	10.4	219.5185	0.0000	OK
15 minute winter	DUMMY B	10	71.231	1.499	150.4	7.2956	5.0086	FLOOD

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	SW MH02	1.000	SW MH03	18.7	0.941	0.071	4.3715	
360 minute winter	SW MH03	1.001	SW MH06	19.2	0.692	0.073	10.7946	
360 minute winter	SW MH05	2.000	SW MH06	16.4	1.357	0.036	5.6870	
360 minute winter	SW MH06	1.002	SW MH07	48.4	1.266	0.183	4.4878	
360 minute winter	SW MH07	1.003	SW MH08	56.5	1.207	0.177	7.4838	
15 minute winter	DUMMY D	3.000	MSCP DUMMY	401.8	3.717	0.446	1.7189	
1440 minute winter	MSCP DUMMY	3.001	SW MH08	-5.1	0.569	-0.008	8.8731	
360 minute winter	SW MH08	1.004	SW MH09	74.1	1.056	0.132	8.6497	
360 minute winter	SW MH09	1.005	SW MH11	83.3	0.919	0.149	10.3285	
360 minute winter	SW MH11	1.006	SW MH12	10.4	0.790	0.019	0.5026	
120 minute winter	SW MH12	1.007	SW MH13	40.6	0.727	0.094	14.6945	
120 minute winter	SW MH13	1.008	SW MH14	38.8	0.509	0.089	7.8377	
120 minute winter	SW MH14	1.009	SW MH15	108.1	0.992	0.249	4.3778	
120 minute winter	SW MH15	Hydro-Brake®	15_OUT	49.0				676.6
15 minute winter	DUMMY F	8.000	DUMMY F2	659.8	7.487	0.767	1.4681	
1440 minute winter	DUMMY F2	Hydro-Brake®	SW MH14	8.0				
15 minute winter	DUMMY G	7.000	DUMMY G2	132.4	5.526	1.955	0.3091	
1440 minute winter	DUMMY G2	Hydro-Brake®	SW MH12	4.5				
15 minute winter	DUMMY E	6.000	DUMMY E2	136.9	5.754	1.951	0.2889	
1440 minute winter	DUMMY E2	Hydro-Brake®	SW MH09	0.4				
15 minute winter	DUMMY C	3.000_1	DUMMY C2	109.4	4.653	1.647	0.3995	
960 minute winter	DUMMY C2	Hydro-Brake®	SW MH03	2.2				
15 minute winter	DUMMY B	2.000_1	DUMMY B2	109.1	4.633	2.049	0.4337	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DUMMY B2	660	69.588	0.075	13.4	224.9503	0.0000	OK
480 minute winter	1	336	70.044	0.304	15.0	1.3904	0.0000	OK
15 minute winter	DUMMY A	9	71.240	1.101	214.9	9.9453	20.4107	FLOOD
1440 minute winter	DUMMY A2	1080	70.036	0.092	11.2	277.2683	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)
720 minute winter	DUMMY B2	Hydro-Brake®	SW MH02	2.3				
480 minute winter	1	1.002_1	SW MH02	15.0	0.887	0.057	9.5817	
15 minute winter	DUMMY A	1.000_1	DUMMY A2	114.9	4.849	1.871	0.2954	
1440 minute winter	DUMMY A2	Hydro-Brake®	1	3.0				