

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Size (mm)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S1	0.557	1500	Type B	41.907	39.570	1.737	386792.024	156089.761
S2	1.452	1500	Type B	41.686	39.081	1.855	386781.142	156156.798
S3	0.214	1800	Type B	41.248	38.797	1.702	386775.646	156213.373
S4	0.307	1800	Type B	41.105	38.729	1.626	386777.392	156226.810
S5	0.039	1800	Type B	40.981	38.670	1.561	386782.608	156237.394
S6	0.000	1800	Type C	40.856	38.461	1.495	386790.766	156245.917
S7	0.125	1800	Type C	40.732	38.402	1.430	386801.111	156251.591
S8	0.051	1800	Type B	40.776	38.226	1.650	386834.066	156263.574
S9	0.743	1800	Type B	40.930	38.437	1.744	386858.230	156258.479
S10	0.000	1800	Type B	40.787	38.186	1.706	386839.789	156269.183
S11	0.000	1800	Type B	40.686	38.109	1.677	386839.673	156284.706
S12	0.165	1800	Type C	39.750	37.658	1.192	386924.197	156315.951
S13	0.074	1800	Type C	39.500	37.484	1.116	386957.328	156328.198
S14	0.442	1800	Type C	39.366	37.261	1.205	386950.831	156373.163
S15	0.195	1800	Type C	39.107	37.005	1.202	386945.836	156424.751
S16	0.073	1800	Type C	38.730	36.632	1.197	386901.482	156486.087
S17	0.959	1800	Type C	38.464	36.371	1.194	386887.849	156537.443
HW1	0.000	---	Unknown	37.600	36.325	0.375	386885.462	156546.436
S18	3.272	1500	Type B	43.478	41.115	1.688	386337.001	156193.664
HW2	0.000	---	Unknown	42.295	41.025	0.595	386333.290	156211.333
HW3	0.000	---	Unknown	42.295	40.800	1.270	386363.747	156247.984
S19	0.000	2700	Type B	43.267	40.724	2.318	386376.315	156248.953
S20	2.172	1575	Type A	43.629	39.882	3.073	386429.922	156253.085
HW4	0.000	---	Unknown	40.707	39.375	0.657	386517.829	156303.573
S22	1.909	1500	Type C	41.356	39.442	1.239	386553.410	156246.529
HW5	0.000	---	Unknown	40.707	39.375	0.657	386555.105	156259.859
HW6	0.000	---	Unknown	40.707	39.150	1.257	386552.683	156334.825
S23	0.000	2700	Type B	40.950	39.122	1.528	386555.002	156339.747
S24	0.146	1350	Type C	40.411	38.982	1.129	386565.734	156362.527
S25	0.000	1350	Type C	40.411	38.771	1.190	386558.687	156373.328
S26	1.908	1800	Type C	39.848	37.808	1.290	386597.756	156425.289
S27	0.189	1800	Type C	39.330	37.216	1.214	386648.009	156498.015
S28	0.142	1800	Type C	39.239	36.848	1.491	386686.860	156560.458
S29	0.408	1500	Type C	40.462	38.555	1.462	386827.753	156318.929
S30	0.520	1500	Type C	40.143	38.202	1.341	386803.180	156385.207
S31	0.377	1800	Type B	40.091	37.739	1.601	386777.606	156442.241
S32	0.787	1800	Type C	39.536	37.267	1.369	386749.489	156500.270
S33	0.047	1800	Type B	39.657	37.078	1.679	386733.036	156534.224
S34	0.067	1800	Type B	39.476	36.988	1.589	386723.308	156549.527
S35	0.000	1800	Type C	39.167	36.774	1.492	386697.991	156570.196
S36	0.000	1800	Type B	39.212	36.662	1.650	386712.183	156587.580
S37	0.265	1800	Type C	38.511	36.410	1.201	386746.950	156624.045
HW7	0.000	---	Unknown	37.600	36.325	0.375	386766.907	156628.024
S38	0.543	1350	Type C	38.143	36.358	1.336	386816.370	156604.119
HW8	0.000	---	Type C	37.600	36.325	0.825	386819.312	156609.991
HW9	0.000	---	Unknown	37.600	36.100	1.125	386809.119	156659.748
S39	0.000	3000	Type C	37.900	36.070	1.455	386811.986	156665.074
HW10	0.000	---	Unknown	39.000	36.047	2.428	386814.139	156669.075

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (mm)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	S1	39.570	S2	39.231	Circ	600	67.915	200	0.600	1.737	1.855
1.001	S2	39.081	S3	38.797	Circ	750	56.842	200	0.600	1.855	1.702
1.002	S3	38.797	S4	38.729	Circ	750	13.550	200	0.600	1.702	1.626
1.003	S4	38.729	S5	38.670	Circ	750	11.799	200	0.600	1.626	1.561
1.004	S5	38.670	S6	38.611	Circ	750	11.799	200	0.600	1.561	1.495
1.005	S6	38.461	S7	38.402	Circ	900	11.799	200	0.600	1.495	1.430
1.006	S7	38.402	S8	38.226	Circ	900	35.066	200	0.600	1.430	1.650
1.007	S8	38.226	S10	38.186	Circ	900	8.013	200	0.600	1.650	1.700
2.000	S9	38.437	S10	38.330	Circ	750	21.323	200	0.600	1.744	1.706

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (mm)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.008	S10	38.186	S11	38.109	Circ	900	15.524	200	0.600	1.700	1.677
1.009	S11	38.109	S12	37.658	Circ	900	90.114	200	0.600	1.677	1.192
1.010	S12	37.658	S13	37.484	Circ	900	35.322	203	0.600	1.192	1.116
1.011	S13	37.484	S14	37.261	Circ	900	45.432	203	0.600	1.116	1.205
1.012	S14	37.261	S15	37.005	Circ	900	51.829	203	0.600	1.205	1.202
1.013	S15	37.005	S16	36.632	Circ	900	75.692	203	0.600	1.202	1.197
1.014	S16	36.632	S17	36.371	Circ	900	53.135	203	0.600	1.197	1.194
1.015	S17	36.371	HW1	36.325	Circ	900	9.304	203	0.600	1.194	0.375
1.016	HW1	36.325	HW9	36.100	Rect	1800x1200	136.631	607	0.600	0.075	0.300
3.000	S18	41.115	HW2	41.025	Circ	675	18.055	200	0.600	1.688	0.595
3.001	HW2	41.025	HW3	40.800	Rect	2000x1200	47.655	212	0.600	0.070	0.295
3.002	HW3	40.800	S19	40.724	Circ	225	12.605	166	0.600	1.270	2.318
3.003	S19	40.724	S20	40.332	Circ	225	53.766	137	0.600	2.318	3.073
3.004	S20	39.882	HW4	39.375	Circ	675	101.374	200	0.600	3.073	0.657
3.005	HW4	39.375	HW6	39.150	Rect	1200x900	46.814	208	0.600	0.432	0.657
4.000	S22	39.442	HW5	39.375	Circ	675	13.437	201	0.600	1.239	0.657
4.001	HW5	39.375	HW6	39.150	Rect	1200x900	75.006	333	0.600	0.432	0.657
3.006	HW6	39.150	S23	39.122	Circ	300	5.440	195	0.600	1.257	1.528
3.007	S23	39.122	S24	38.982	Circ	300	25.182	180	0.600	1.528	1.129
3.008	S24	38.982	S25	38.921	Circ	300	12.897	210	0.600	1.129	1.190
3.009	S25	38.771	S26	38.108	Circ	450	65.010	98	0.600	1.190	1.290
3.010	S26	37.808	S27	37.366	Circ	750	88.399	200	0.600	1.290	1.214
3.011	S27	37.216	S28	36.848	Circ	900	73.543	200	0.600	1.214	1.491
3.012	S28	36.848	S35	36.774	Circ	900	14.789	200	0.600	1.491	1.492
5.000	S29	38.555	S30	38.202	Circ	600	70.686	200	0.600	1.306	1.341
5.001	S30	38.202	S31	37.889	Circ	600	62.505	200	0.600	1.341	1.601
5.002	S31	37.739	S32	37.417	Circ	750	64.482	200	0.600	1.601	1.369
5.003	S32	37.267	S33	37.078	Circ	900	37.730	200	0.600	1.369	1.679
5.004	S33	37.078	S34	36.988	Circ	900	18.134	200	0.600	1.679	1.589
5.005	S34	36.988	S35	36.774	Circ	900	32.683	153	0.600	1.589	1.492
3.013	S35	36.774	S36	36.662	Circ	900	22.441	200	0.600	1.492	1.650
3.014	S36	36.662	S37	36.410	Circ	900	50.383	200	0.600	1.650	1.201
3.015	S37	36.410	HW7	36.325	Circ	900	20.350	239	0.600	1.201	0.375
3.016	HW7	36.325	HW9	36.100	Rect	1200x900	52.804	235	0.600	0.375	0.600
6.000	S38	36.358	HW8	36.325	Circ	450	6.568	200	0.600	1.336	0.825
6.001	HW8	36.325	HW9	36.100	Rect	1200x900	50.791	226	0.600	0.375	0.600
1.017	HW9	36.100	S39	36.070	Circ	375	6.048	200	0.600	1.125	1.455
1.018	S39	36.070	HW10	36.047	Circ	525	4.544	200	0.600	1.305	2.428

Outfall Details

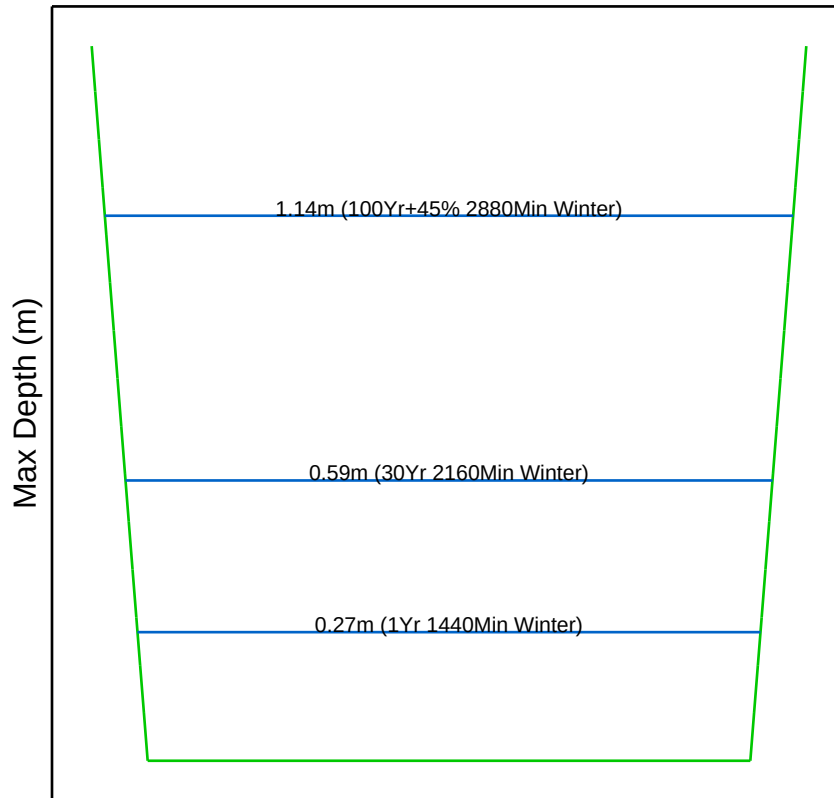
Outfall Manhole HW10 : Free Discharge

Flow Control Details

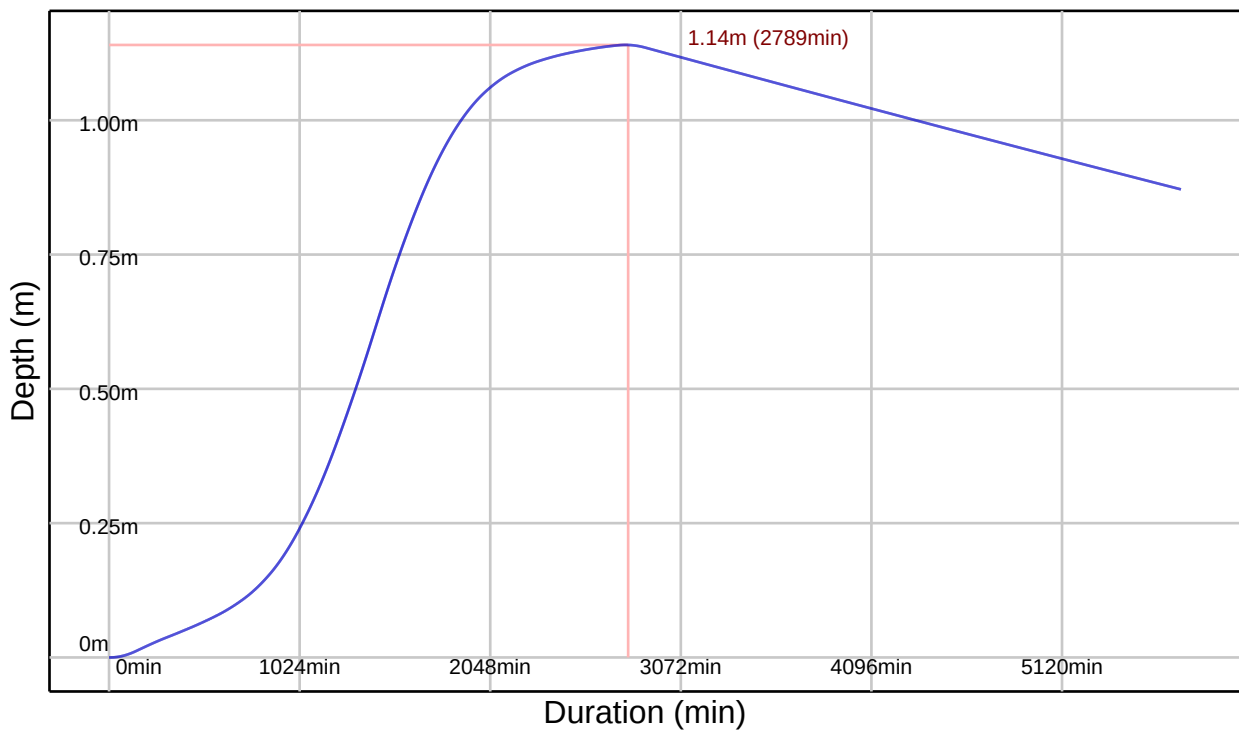
Pond Structure at Manhole HW3

Pond Invert (m)	Max Depth (m)	Volume To Water Level (m3)	Water Level (m)	Freeboard (m)	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
40.800	1.495	3204.763	41.995	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at HW3



Basin J at HW3 (100Yr+45% 2880Min Winter)

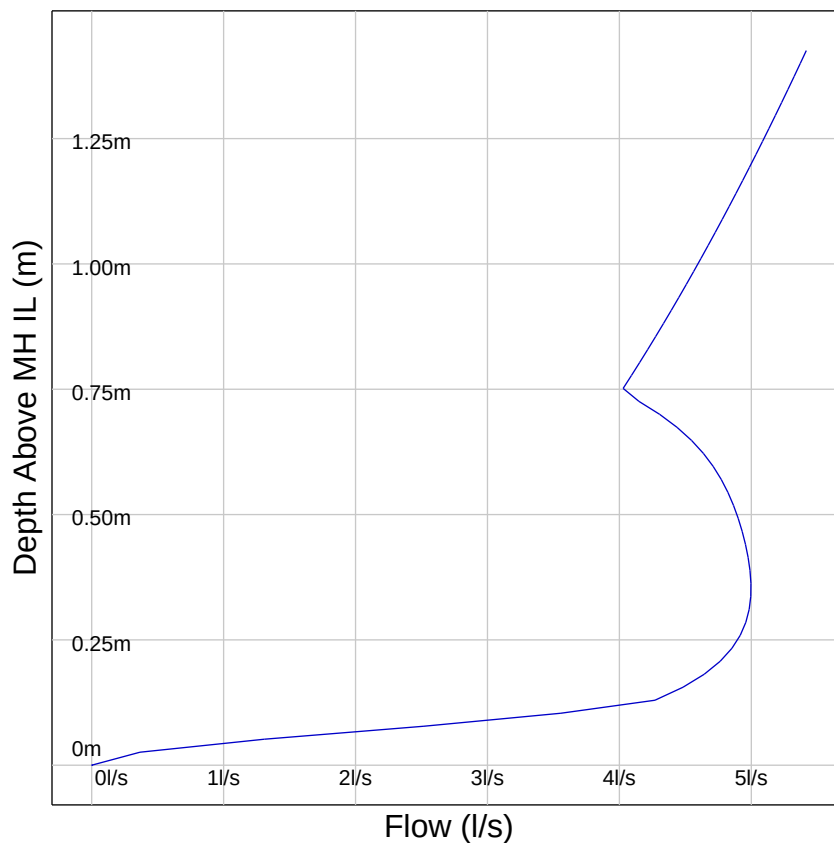


Controls within Manhole S19

Hydro-Brake® Optimum Control

Model Ref	Design Depth (m)	Design Flow (l/s)	Invert Offset (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0103-5000-1200-5000	1.200	5.000	0.000	0.353	4.998	0.744	4.010

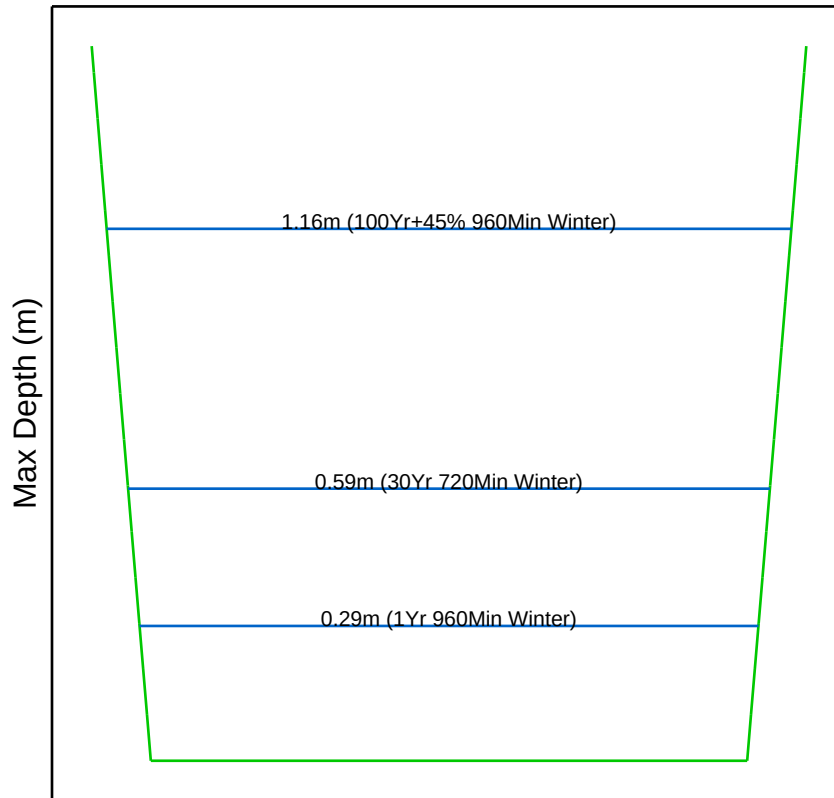
Hydro-Brake® Optimum Control from S19 to S20



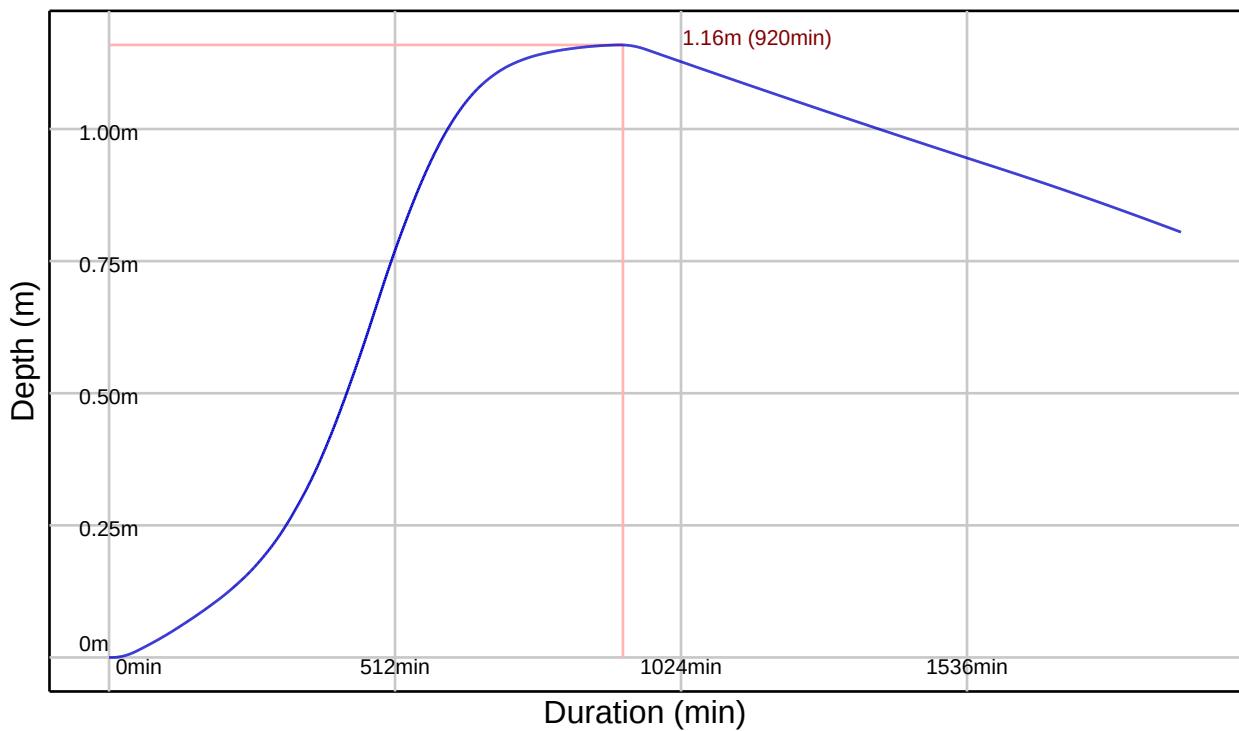
Pond Structure at Manhole HW6

Pond Invert (m)	Max Depth (m)	Volume To Water Level (m3)	Water Level (m)	Freeboard (m)	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
39.150	1.557	3182.181	40.407	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at HW6



Basin I at HW6 (100Yr+45% 960Min Winter)

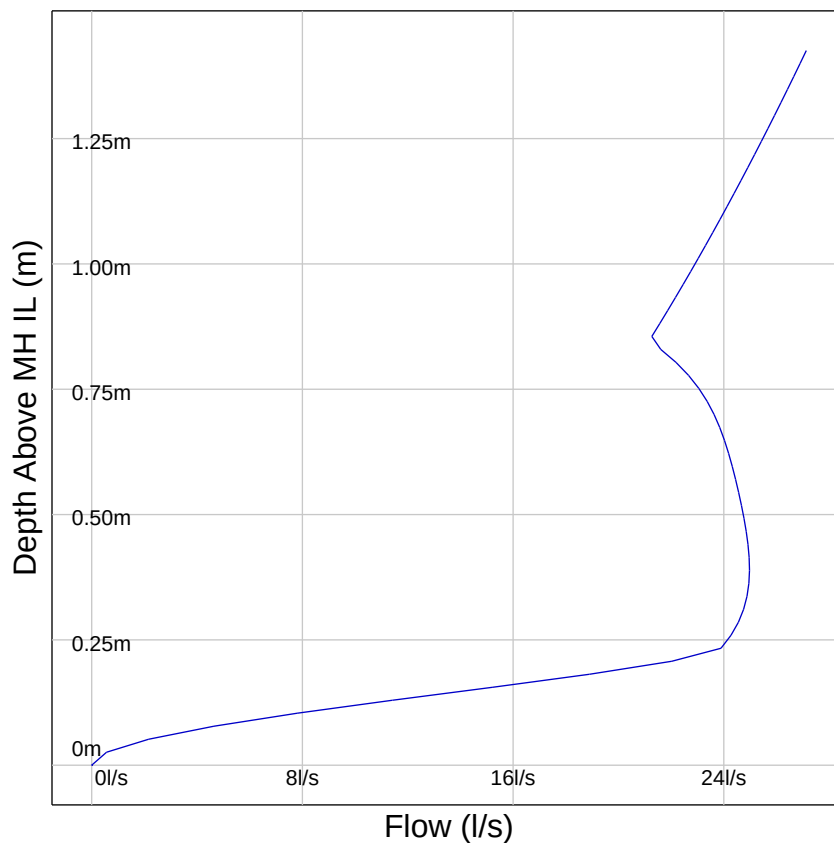


Controls within Manhole S23

Hydro-Brake® Optimum Control

Model Ref	Design Depth (m)	Design Flow (l/s)	Invert Offset (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0216-2500-1200-2500	1.200	25.000	0.000	0.391	24.976	0.845	21.150

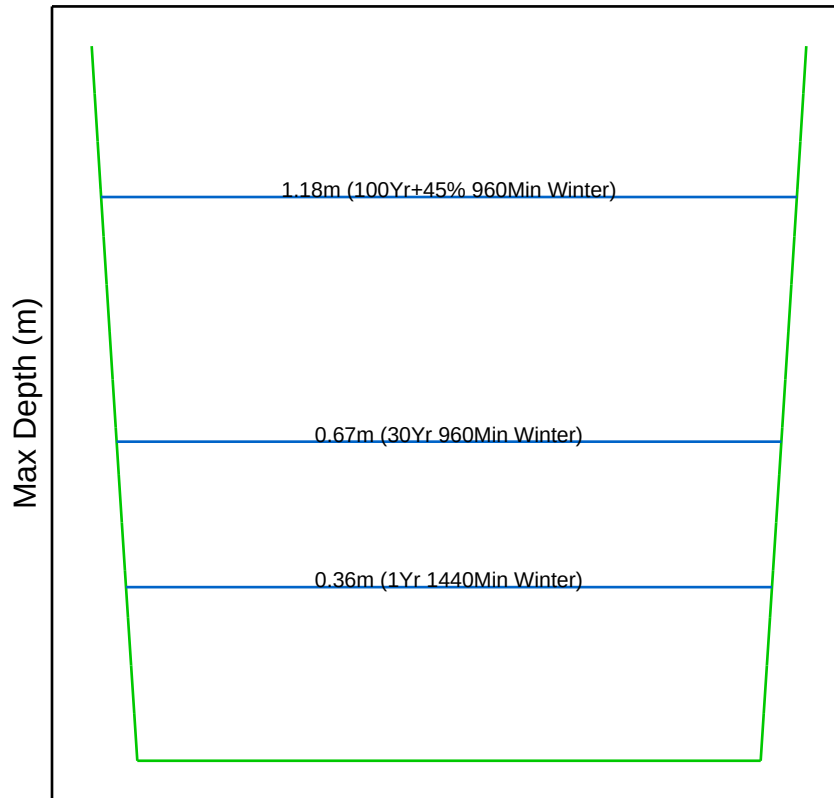
Hydro-Brake® Optimum Control from S23 to S24



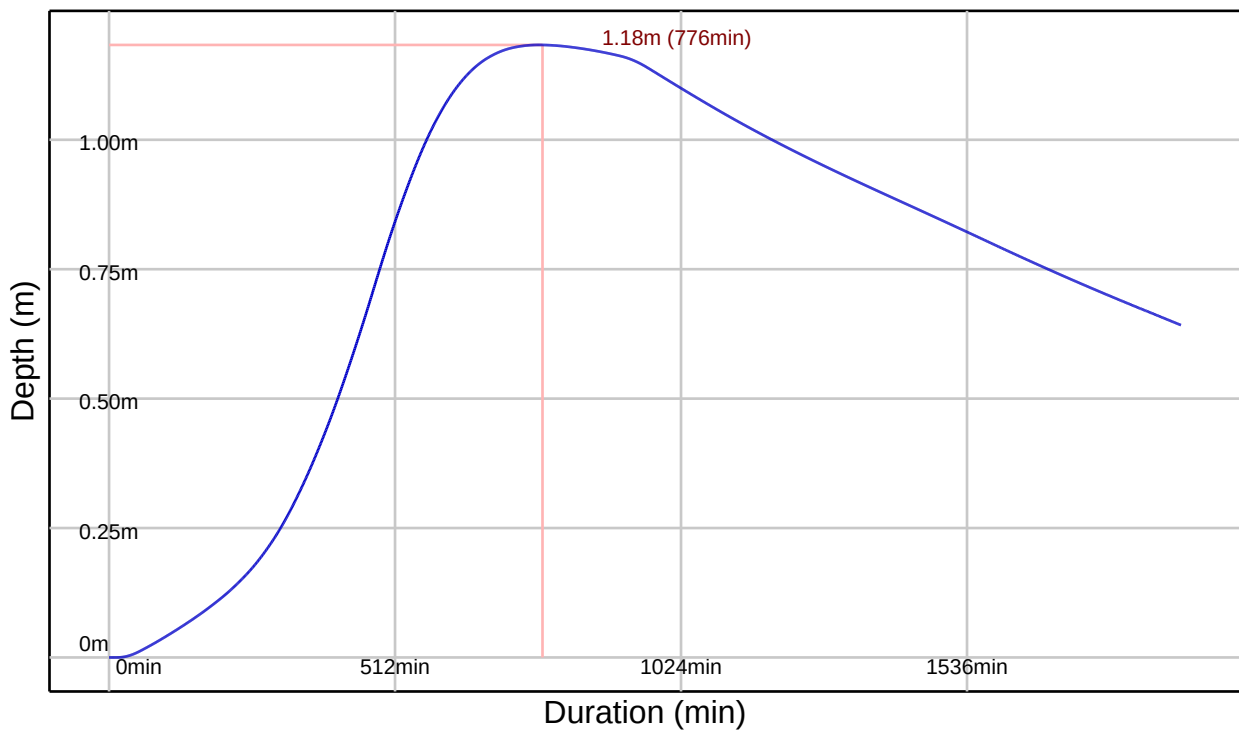
Pond Structure at Manhole HW9

Pond Invert (m)	Max Depth (m)	Volume To Water Level (m3)	Water Level (m)	Freeboard (m)	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
36.100	1.500	7328.315	37.300	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at HW9



Pond O at HW9 (100Yr+45% 960Min Winter)



Controls within Manhole S39

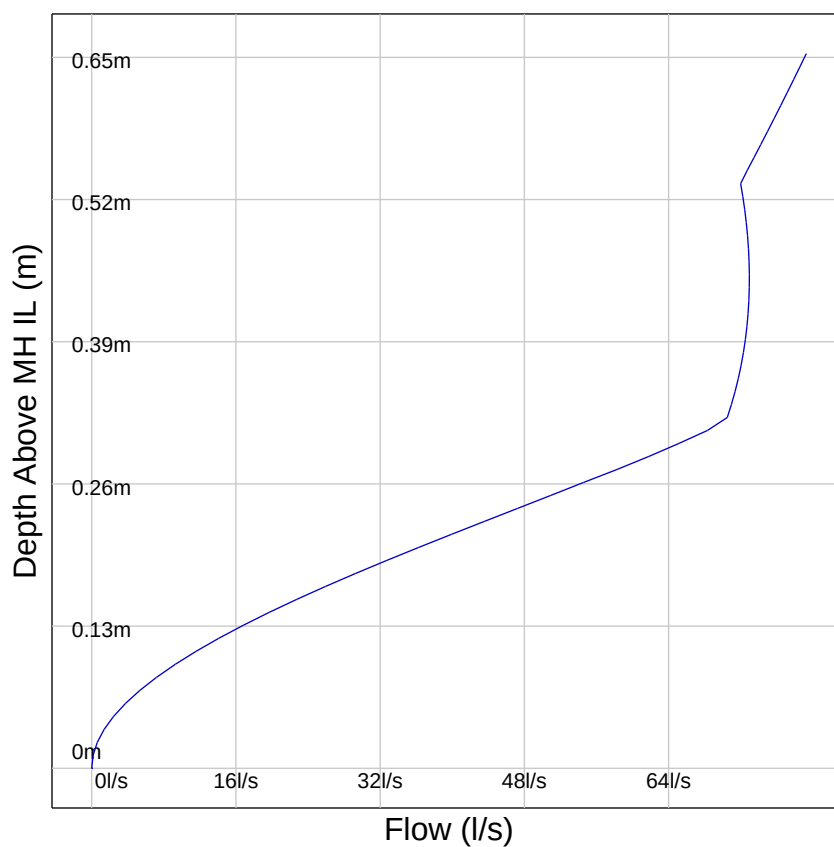
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.900	0.180	0.600

Hydro-Brake® Optimum Control

Model Ref	Design Depth (m)	Design Flow (l/s)	Invert Offset (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0354-7300-0550-7300	0.550	73.000	0.000	0.448	72.958	0.535	71.978

Hydro-Brake® Optimum Control from S39 to HW10



Simulation Settings

FSR: M5-60=20.10, R=0.39, Locale=England and Wales

Summer (Cv: 0.75), Winter (Cv: 0.84)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 600, 720, 960, 1440, 2160, 2880, 4320

Return Periods (yrs) + Climate Change: (1, +0%), (30, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	36.298	0.00	-0.04	30Yr 960Min Winter	3.821	0.00	0.00
1Yr 15Min Summer	36.298	0.00	-0.04	30Yr 1440Min Summer	2.786	0.00	0.00
1Yr 30Min Winter	23.156	0.00	-0.02	30Yr 1440Min Winter	2.786	0.00	0.00
1Yr 30Min Summer	23.156	0.00	-0.03	30Yr 2160Min Summer	2.029	0.00	-0.00
1Yr 600Min Winter	2.705	0.00	-0.00	30Yr 2160Min Winter	2.029	0.00	0.00
1Yr 600Min Summer	2.705	0.00	-0.00	30Yr 2880Min Summer	1.619	0.00	-0.00
1Yr 720Min Winter	2.368	0.00	-0.00	30Yr 2880Min Winter	1.619	0.00	-0.00
1Yr 720Min Summer	2.368	0.00	-0.00	30Yr 4320Min Summer	1.176	0.00	-0.00
1Yr 960Min Summer	1.919	0.00	-0.00	30Yr 4320Min Winter	1.176	0.00	-0.00
1Yr 960Min Winter	1.919	0.00	-0.00	100Yr+45% 15Min Summer	142.604	0.00	0.17
1Yr 1440Min Winter	1.428	0.00	-0.00	100Yr+45% 15Min Winter	142.604	0.00	0.13
1Yr 1440Min Summer	1.428	0.00	-0.00	100Yr+45% 30Min Summer	94.023	0.00	0.08
1Yr 2160Min Summer	1.063	0.00	-0.00	100Yr+45% 30Min Winter	94.023	0.00	0.04
1Yr 2160Min Winter	1.063	0.00	-0.00	100Yr+45% 600Min Summer	10.257	0.00	0.01
1Yr 2880Min Summer	0.862	0.00	-0.00	100Yr+45% 600Min Winter	10.257	0.00	0.03
1Yr 2880Min Winter	0.862	0.00	-0.00	100Yr+45% 720Min Summer	8.881	0.00	0.00
1Yr 4320Min Winter	0.642	0.00	-0.00	100Yr+45% 720Min Winter	8.881	0.00	0.01
1Yr 4320Min Summer	0.642	0.00	-0.00	100Yr+45% 960Min Summer	7.069	0.00	0.00
30Yr 15Min Summer	75.787	0.00	0.01	100Yr+45% 960Min Winter	7.069	0.00	0.01
30Yr 15Min Winter	75.787	0.00	0.02	100Yr+45% 1440Min Summer	5.117	0.00	0.00
30Yr 30Min Summer	49.539	0.00	-0.00	100Yr+45% 1440Min Winter	5.117	0.00	0.00
30Yr 30Min Winter	49.539	0.00	-0.01	100Yr+45% 2160Min Summer	3.698	0.00	0.00
30Yr 600Min Winter	5.502	0.00	0.00	100Yr+45% 2160Min Winter	3.698	0.00	0.01
30Yr 600Min Summer	5.502	0.00	0.00	100Yr+45% 2880Min Summer	2.933	0.00	0.00
30Yr 720Min Summer	4.777	0.00	0.00	100Yr+45% 2880Min Winter	2.933	0.00	0.00
30Yr 720Min Winter	4.777	0.00	0.00	100Yr+45% 4320Min Winter	2.113	0.00	0.00
30Yr 960Min Summer	3.821	0.00	0.00	100Yr+45% 4320Min Summer	2.113	0.00	0.00

Simulation Results

Return Period (yrs) + Climate Change (%):
1yr+0%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S1	15 min Winter	8	39.746	0.176	93.408		OK
S2	15 min Winter	8	39.417	0.336	335.705		OK
S3	15 min Winter	9	39.193	0.397	361.326		OK
S4	15 min Winter	9	39.128	0.399	415.833		OK
S5	15 min Winter	9	39.049	0.379	423.851		OK
S6	15 min Winter	9	38.854	0.393	425.613		OK
S7	15 min Winter	9	38.789	0.387	446.042		OK
S8	15 min Winter	9	38.665	0.438	455.324		OK
S9	15 min Winter	8	38.645	0.208	124.618		OK
S10	15 min Winter	9	38.616	0.430	570.596		OK
S11	15 min Winter	9	38.513	0.404	568.175		OK
S12	15 min Winter	10	38.097	0.439	589.868		OK
S13	15 min Winter	10	37.926	0.442	606.161		OK
S14	15 min Winter	10	37.716	0.456	664.135		OK
S15	15 min Winter	10	37.462	0.457	684.726		OK
S16	15 min Winter	11	37.115	0.482	695.689		OK
S17	15 min Winter	11	36.881	0.511	794.761		OK
HW1	15 min Winter	11	36.653	0.328	797.567		OK
S18	15 min Winter	8	41.557	0.442	548.614		OK
HW2	15 min Winter	8	41.209	0.184	546.368		OK
HW3	1440 min Winter	1170	41.069	0.269	3.668		Surcharged
S19	1440 min Winter	1170	41.068	0.344	4.964		Surcharged
S20	15 min Winter	8	40.240	0.358	364.259		OK
HW4	15 min Winter	8	39.573	0.198	358.569		OK
S22	15 min Winter	8	39.757	0.315	320.196		OK
HW5	15 min Winter	8	39.582	0.207	319.143		OK
HW6	960 min Winter	672	39.444	0.294	12.329		OK
S23	960 min Winter	672	39.442	0.320	22.459		Surcharged
S24	15 min Winter	9	39.102	0.120	25.972		OK
S25	15 min Winter	10	38.854	0.083	24.255		OK
S26	15 min Winter	8	38.129	0.322	342.184		OK
S27	15 min Winter	9	37.529	0.314	367.259		OK
S28	15 min Winter	9	37.297	0.449	395.923		OK
S29	15 min Winter	8	38.701	0.145	68.391		OK
S30	15 min Winter	9	38.430	0.229	147.741		OK
S31	15 min Winter	9	37.990	0.250	210.326		OK
S32	15 min Winter	9	37.578	0.311	334.593		OK
S33	15 min Winter	9	37.404	0.326	341.979		OK
S34	15 min Winter	9	37.309	0.321	350.416		OK
S35	15 min Winter	9	37.277	0.503	730.969		OK
S36	15 min Winter	10	37.146	0.484	737.453		OK
S37	15 min Winter	9	36.891	0.481	751.635		OK
HW7	15 min Summer	9	36.729	0.404	708.849		OK
S38	15 min Winter	8	36.545	0.187	91.123		OK
HW8	1440 min Winter	1036	36.464	0.139	1.510		OK
HW9	1440 min Winter	1035	36.464	0.364	52.611		OK
S39	1440 min Winter	1035	36.462	0.392	52.659		OK
HW10	1440 min Winter	1035	36.170	0.123	52.659		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	8	S1	S2	0.181	1.322	92.170	0.190	OK
1.001	15 min Winter	8	S2	S3	0.364	1.554	331.022	0.380	OK
1.002	15 min Winter	9	S3	S4	0.398	1.541	367.312	0.421	OK
1.003	15 min Winter	9	S4	S5	0.389	1.804	417.772	0.479	OK
1.004	15 min Winter	9	S5	S6	0.360	2.034	425.613	0.488	OK
1.005	15 min Winter	9	S6	S7	0.390	1.613	426.283	0.303	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.006	15 min Winter	9	S7	S8	0.413	1.572	447.199	0.318	OK
1.007	15 min Winter	9	S8	S10	0.434	1.499	452.933	0.322	OK
2.000	15 min Winter	9	S9	S10	0.245	1.290	122.925	0.141	OK
1.008	15 min Winter	9	S10	S11	0.417	1.970	568.175	0.404	OK
1.009	15 min Winter	10	S11	S12	0.418	1.962	568.107	0.404	OK
1.010	15 min Winter	10	S12	S13	0.440	1.927	596.388	0.427	OK
1.011	15 min Winter	10	S13	S14	0.449	1.932	605.880	0.434	OK
1.012	15 min Winter	10	S14	S15	0.456	2.048	658.983	0.472	OK
1.013	15 min Winter	11	S15	S16	0.469	2.055	688.638	0.493	OK
1.014	15 min Winter	11	S16	S17	0.496	1.972	701.673	0.503	OK
1.015	15 min Winter	11	S17	HW1	0.482	2.300	797.567	0.572	OK
1.016	1440 min Winter	1037	HW1	HW9	0.252	0.285	44.953		OK
3.000	15 min Winter	8	S18	HW2	0.313	3.389	546.368	0.826	OK
3.001	1440 min Winter	1203	HW2	HW3	0.157	0.301	27.253		OK
3.002	720 min Summer	607	HW3	S19	0.225	0.531	13.376	0.333	OK
3.003	1440 min Winter	1176	S19	S20	0.050	0.755	4.967	0.112	OK
3.004	15 min Winter	8	S20	HW4	0.278	2.621	358.569	0.542	OK
3.005	960 min Winter	677	HW4	HW6	0.193	0.359	57.043		OK
4.000	15 min Winter	8	S22	HW5	0.261	2.500	319.143	0.483	OK
4.001	960 min Winter	670	HW5	HW6	0.181	0.301	21.380		OK
3.006	960 min Winter	678	HW6	S23	0.297	0.533	22.550	0.285	OK
3.007	960 min Winter	672	S23	S24	0.110	0.958	22.482	0.273	OK
3.008	15 min Winter	9	S24	S25	0.117	0.999	25.553	0.335	OK
3.009	15 min Winter	10	S25	S26	0.083	1.257	25.318	0.078	OK
3.010	15 min Winter	9	S26	S27	0.316	1.911	337.419	0.387	OK
3.011	15 min Winter	9	S27	S28	0.381	1.470	373.505	0.266	OK
3.012	15 min Winter	9	S28	S35	0.476	1.124	383.706	0.273	OK
5.000	15 min Winter	9	S29	S30	0.186	0.899	66.661	0.137	OK
5.001	15 min Winter	9	S30	S31	0.225	1.557	150.819	0.311	OK
5.002	15 min Winter	9	S31	S32	0.246	1.677	210.420	0.241	OK
5.003	15 min Winter	9	S32	S33	0.319	1.660	334.565	0.238	OK
5.004	15 min Winter	9	S33	S34	0.323	1.659	339.905	0.242	OK
5.005	15 min Winter	9	S34	S35	0.412	1.224	347.262	0.216	OK
3.013	15 min Winter	10	S35	S36	0.493	2.068	737.453	0.524	OK
3.014	15 min Winter	10	S36	S37	0.482	2.152	746.659	0.531	OK
3.015	15 min Winter	10	S37	HW7	0.442	2.678	787.159	0.613	OK
3.016	1440 min Winter	1036	HW7	HW9	0.252	0.449	56.760		OK
6.000	15 min Winter	8	S38	HW8	0.137	2.224	90.856	0.399	OK
6.001	1440 min Winter	1036	HW8	HW9	0.252	0.145	4.555		OK
1.017	1440 min Winter	1035	HW9	S39	0.370	0.617	52.659	0.374	OK
1.018	1440 min Winter	1035	S39	HW10	0.130	1.262	52.659	0.154	OK

Return Period (yrs) + Climate Change (%):

30yr+0%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S1	15 min Winter	8	39.823	0.253	195.088		OK
S2	15 min Winter	9	39.644	0.563	665.038		OK
S3	15 min Winter	9	39.486	0.689	749.150		OK
S4	15 min Winter	9	39.397	0.669	855.824		OK
S5	15 min Winter	9	39.276	0.606	870.370		OK
S6	15 min Winter	9	39.125	0.664	872.153		OK
S7	15 min Winter	9	39.054	0.653	913.438		OK
S8	15 min Winter	9	38.958	0.731	928.961		OK
S9	15 min Winter	9	38.902	0.465	244.857		OK
S10	15 min Winter	9	38.896	0.709	1167.639		OK
S11	15 min Winter	9	38.766	0.657	1163.721		OK
S12	15 min Winter	10	38.410	0.751	1196.578		OK
S13	15 min Winter	10	38.242	0.758	1222.480		OK
S14	15 min Winter	10	38.051	0.790	1341.407		OK
S15	15 min Winter	11	37.819	0.813	1329.547		OK
S16	15 min Winter	11	37.500	0.867	1366.008		OK
S17	15 min Winter	10	37.242	0.871	1602.007		OK
HW1	15 min Winter	10	36.819	0.494	1596.094		OK
S18	15 min Summer	7	41.774	0.658	1049.655		OK
HW2	2160 min Winter	2049	41.386	0.361	4.671		OK
HW3	2160 min Winter	2050	41.386	0.586	4.662		Surcharged
S19	2160 min Winter	2050	41.386	0.661	4.663		Surcharged
S20	15 min Winter	8	40.468	0.586	763.097		OK
HW4	720 min Winter	593	39.745	0.370	15.590		OK
S22	15 min Winter	8	39.955	0.513	668.745		OK
HW5	720 min Winter	593	39.743	0.368	9.438		OK
HW6	720 min Winter	594	39.743	0.593	26.426		Surcharged
S23	720 min Winter	594	39.741	0.619	24.718		Surcharged
S24	15 min Winter	9	39.178	0.196	56.243		OK
S25	15 min Winter	9	38.894	0.124	57.275		OK
S26	15 min Winter	8	38.319	0.511	721.434		OK
S27	15 min Winter	10	37.749	0.533	703.794		OK
S28	15 min Winter	10	37.705	0.857	759.582		OK
S29	15 min Winter	8	38.769	0.213	142.839		OK
S30	15 min Winter	9	38.556	0.354	307.992		OK
S31	15 min Winter	9	38.121	0.381	441.236		OK
S32	15 min Winter	9	37.794	0.527	703.978		OK
S33	15 min Winter	10	37.729	0.651	659.011		OK
S34	15 min Winter	10	37.699	0.712	688.911		OK
S35	15 min Winter	10	37.670	0.896	1469.041		OK
S36	15 min Winter	10	37.479	0.817	1475.889		OK
S37	15 min Winter	10	37.162	0.752	1548.099		OK
HW7	15 min Summer	9	36.914	0.589	1470.332		OK
S38	960 min Winter	771	36.770	0.412	2.305		OK
HW8	960 min Winter	771	36.770	0.445	2.306		OK
HW9	960 min Winter	770	36.770	0.670	71.234		Surcharged
S39	960 min Winter	770	36.764	0.694	72.025		Surcharged
HW10	1440 min Summer	1083	36.192	0.145	72.956		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	8	S1	S2	0.332	1.371	191.990	0.396	OK
1.001	15 min Winter	9	S2	S3	0.626	1.739	678.779	0.778	OK
1.002	15 min Winter	9	S3	S4	0.679	1.795	754.559	0.865	OK
1.003	15 min Winter	9	S4	S5	0.638	2.143	857.681	0.984	OK
1.004	15 min Winter	9	S5	S6	0.573	2.410	872.153	1.000	OK
1.005	15 min Winter	9	S6	S7	0.658	1.762	872.197	0.620	OK
1.006	15 min Winter	9	S7	S8	0.692	1.738	912.003	0.649	OK
1.007	15 min Winter	9	S8	S10	0.720	1.697	924.999	0.658	OK
2.000	15 min Winter	9	S9	S10	0.515	1.304	247.403	0.284	OK
1.008	15 min Winter	9	S10	S11	0.683	2.246	1163.721	0.828	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.009	15 min Winter	10	S11	S12	0.700	2.195	1152.299	0.819	OK
1.010	15 min Winter	10	S12	S13	0.755	2.123	1202.100	0.861	OK
1.011	15 min Winter	10	S13	S14	0.774	2.095	1219.924	0.874	OK
1.012	15 min Winter	11	S14	S15	0.797	2.253	1331.699	0.954	OK
1.013	15 min Winter	11	S15	S16	0.840	2.241	1358.042	0.973	OK
1.014	15 min Winter	11	S16	S17	0.865	2.271	1383.018	0.991	OK
1.015	15 min Winter	10	S17	HW1	0.807	2.655	1596.094	1.144	OK
1.016	960 min Winter	768	HW1	HW9	0.557	0.440	116.213		OK
3.000	15 min Summer	8	S18	HW2	0.470	4.365	1131.349	1.711	OK
3.001	2160 min Winter	2049	HW2	HW3	0.474	0.301	39.370		OK
3.002	30 min Winter	21	HW3	S19	0.225	0.630	16.039	0.399	OK
3.003	15 min Winter	21	S19	S20	0.086	0.750	4.860	0.110	OK
3.004	15 min Winter	8	S20	HW4	0.448	3.037	745.523	1.127	OK
3.005	720 min Winter	593	HW4	HW6	0.481	0.507	99.823		OK
4.000	15 min Winter	8	S22	HW5	0.417	2.868	666.316	1.009	OK
4.001	720 min Winter	595	HW5	HW6	0.480	0.427	52.465		OK
3.006	30 min Winter	22	HW6	S23	0.300	0.648	27.116	0.342	Surcharged
3.007	30 min Winter	32	S23	S24	0.135	0.987	24.312	0.295	OK
3.008	15 min Winter	9	S24	S25	0.189	1.218	57.275	0.751	OK
3.009	15 min Winter	9	S25	S26	0.167	1.526	56.662	0.174	OK
3.010	15 min Winter	9	S26	S27	0.499	2.272	709.279	0.814	OK
3.011	15 min Winter	10	S27	S28	0.695	1.598	757.427	0.539	OK
3.012	15 min Winter	10	S28	S35	0.876	1.242	777.844	0.553	OK
5.000	15 min Winter	9	S29	S30	0.282	1.073	140.090	0.289	OK
5.001	15 min Winter	9	S30	S31	0.346	1.875	317.039	0.653	OK
5.002	15 min Winter	9	S31	S32	0.379	1.984	444.819	0.510	OK
5.003	15 min Winter	10	S32	S33	0.584	1.781	695.385	0.494	OK
5.004	15 min Winter	10	S33	S34	0.681	1.704	686.468	0.488	OK
5.005	15 min Winter	10	S34	S35	0.804	1.265	697.585	0.434	OK
3.013	15 min Winter	10	S35	S36	0.856	2.363	1475.889	1.050	OK
3.014	15 min Winter	10	S36	S37	0.784	2.509	1475.177	1.049	OK
3.015	15 min Summer	10	S37	HW7	0.658	3.178	1510.661	1.176	OK
3.016	960 min Winter	769	HW7	HW9	0.557	0.664	131.334		OK
6.000	960 min Winter	771	S38	HW8	0.428	1.382	12.054	0.053	OK
6.001	960 min Winter	769	HW8	HW9	0.557	0.241	11.343		OK
1.017	720 min Winter	448	HW9	S39	0.375	0.662	73.128	0.519	Surcharged
1.018	600 min Winter	389	S39	HW10	0.154	1.380	72.956	0.213	OK

Return Period (yrs) + Climate Change (%):

100yr+45%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S1	15 min Winter	10	41.731	2.160	288.056		Flood Risk
S2	15 min Winter	10	41.621	2.540	1032.239		Flood Risk
S3	15 min Winter	10	41.229	2.432	1123.247		Flood Risk
S4	15 min Winter	11	41.065	2.336	1126.813		Flood Risk
S5	15 min Winter	11	40.894	2.224	1154.262		Flood Risk
S6	15 min Winter	11	40.714	2.254	1162.210		Flood Risk
S7	15 min Winter	11	40.636	2.234	1214.011		Flood Risk
S8	15 min Winter	11	40.475	2.248	1238.646		Surcharged
S9	15 min Winter	11	40.404	1.967	282.126		Surcharged
S10	15 min Winter	11	40.396	2.209	1523.141		Surcharged
S11	15 min Winter	11	40.241	2.132	1524.053		Surcharged
S12	15 min Winter	11	39.710	2.052	1584.112		Flood Risk
S13	15 min Winter	11	39.434	1.950	1597.226		Flood Risk
S14	15 min Winter	11	39.091	1.831	1755.487		Flood Risk
S15	15 min Winter	11	38.635	1.630	1823.377		Surcharged
S16	15 min Winter	11	37.966	1.334	1846.172		Surcharged
S17	15 min Winter	10	37.462	1.091	2265.709		Surcharged
HW1	960 min Winter	768	37.283	0.958	43.997		OK
S18	15 min Winter	8	42.932	1.817	2156.592		Surcharged
HW2	2880 min Winter	2775	41.940	0.915	4.923		OK
HW3	2880 min Winter	2775	41.940	1.140	4.924		Surcharged
S19	2880 min Winter	2775	41.939	1.215	4.932		Surcharged
S20	15 min Winter	9	42.110	2.228	1346.032		Surcharged
HW4	960 min Winter	915	40.309	0.934	14.945		Surcharged
S22	960 min Winter	915	40.309	0.867	8.960		Surcharged
HW5	960 min Winter	916	40.309	0.934	8.763		Surcharged
HW6	960 min Winter	915	40.309	1.159	23.898		Surcharged
S23	960 min Winter	915	40.307	1.185	23.716		Surcharged
S24	15 min Winter	10	39.727	0.745	75.332		Surcharged
S25	15 min Winter	10	39.691	0.920	52.525		Surcharged
S26	15 min Winter	10	39.648	1.840	1041.883		Flood Risk
S27	15 min Winter	10	38.995	1.779	1188.918		Surcharged
S28	15 min Winter	10	38.727	1.878	1254.345		Surcharged
S29	15 min Winter	10	39.460	0.905	210.908		Surcharged
S30	15 min Winter	10	39.401	1.199	457.951		Surcharged
S31	15 min Winter	10	39.126	1.387	656.607		Surcharged
S32	15 min Winter	10	38.937	1.671	1045.318		Surcharged
S33	15 min Winter	10	38.817	1.739	1034.831		Surcharged
S34	15 min Winter	11	38.742	1.755	1022.806		Surcharged
S35	15 min Winter	11	38.630	1.856	2213.453		Surcharged
S36	15 min Winter	11	38.219	1.557	2235.426		Surcharged
S37	15 min Winter	11	37.491	1.081	2352.652		Surcharged
HW7	960 min Winter	770	37.284	0.959	62.126		Surcharged
S38	960 min Winter	770	37.283	0.925	4.282		Surcharged
HW8	960 min Winter	770	37.283	0.958	4.283		Surcharged
HW9	960 min Winter	769	37.283	1.183	111.145		Surcharged
S39	960 min Winter	769	37.270	1.201	110.315		Surcharged
HW10	960 min Winter	769	36.227	0.180	110.314		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	9	S1	S2	0.600	1.230	284.092	0.585	Surcharged
1.001	15 min Winter	9	S2	S3	0.750	2.419	1068.527	1.225	Surcharged
1.002	15 min Winter	9	S3	S4	0.750	2.522	1114.224	1.278	Surcharged
1.003	15 min Winter	9	S4	S5	0.750	2.863	1264.706	1.450	Surcharged
1.004	15 min Winter	9	S5	S6	0.750	2.831	1250.721	1.434	Surcharged
1.005	15 min Winter	10	S6	S7	0.900	1.922	1222.753	0.870	OK
1.006	15 min Winter	10	S7	S8	0.900	1.970	1253.262	0.891	OK
1.007	15 min Winter	10	S8	S10	0.900	1.959	1246.518	0.886	OK
2.000	15 min Winter	8	S9	S10	0.750	1.360	446.074	0.512	Surcharged
1.008	15 min Winter	10	S10	S11	0.900	2.486	1581.550	1.125	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.009	15 min Winter	11	S11	S12	0.900	2.392	1521.481	1.082	OK
1.010	15 min Winter	11	S12	S13	0.900	2.466	1569.097	1.124	OK
1.011	15 min Winter	12	S13	S14	0.900	2.530	1609.840	1.154	OK
1.012	15 min Winter	12	S14	S15	0.900	2.754	1752.146	1.256	OK
1.013	15 min Winter	12	S15	S16	0.900	2.877	1830.393	1.312	OK
1.014	15 min Winter	12	S16	S17	0.900	2.937	1868.434	1.339	OK
1.015	960 min Winter	702	S17	HW1	0.900	1.488	220.881	0.158	OK
1.016	960 min Winter	768	HW1	HW9	1.071	0.543	213.505		OK
3.000	960 min Winter	751	S18	HW2	0.675	2.479	134.750	0.204	Surcharged
3.001	2880 min Winter	2775	HW2	HW3	1.028	0.309	54.872		OK
3.002	30 min Winter	15	HW3	S19	0.225	0.689	16.170	0.402	OK
3.003	15 min Winter	12	S19	S20	0.225	0.893	27.370	0.618	OK
3.004	15 min Winter	9	S20	HW4	0.562	4.207	1339.160	2.025	OK
3.005	1440 min Winter	1053	HW4	HW6	0.900	0.434	129.563		Surcharged
4.000	720 min Summer	504	S22	HW5	0.675	1.824	137.982	0.209	Surcharged
4.001	720 min Winter	590	HW5	HW6	0.900	0.519	95.389		Surcharged
3.006	30 min Summer	19	HW6	S23	0.300	0.738	29.732	0.375	Surcharged
3.007	15 min Winter	12	S23	S24	0.300	0.993	37.495	0.455	Surcharged
3.008	15 min Winter	9	S24	S25	0.300	1.424	95.376	1.250	Surcharged
3.009	30 min Summer	19	S25	S26	0.450	1.563	141.493	0.434	OK
3.010	15 min Winter	9	S26	S27	0.750	2.515	1111.100	1.274	Surcharged
3.011	15 min Winter	10	S27	S28	0.900	1.856	1180.909	0.840	OK
3.012	15 min Winter	10	S28	S35	0.900	1.939	1233.268	0.877	OK
5.000	15 min Winter	9	S29	S30	0.600	1.201	241.087	0.497	Surcharged
5.001	15 min Winter	8	S30	S31	0.600	1.983	485.288	1.000	Surcharged
5.002	15 min Winter	8	S31	S32	0.750	1.877	692.063	0.794	Surcharged
5.003	15 min Winter	8	S32	S33	0.900	1.846	1012.472	0.720	OK
5.004	15 min Winter	10	S33	S34	0.900	1.726	1009.615	0.718	OK
5.005	15 min Winter	11	S34	S35	0.900	1.637	1041.249	0.647	OK
3.013	15 min Winter	10	S35	S36	0.900	3.515	2235.869	1.590	OK
3.014	15 min Winter	11	S36	S37	0.900	3.540	2252.008	1.601	OK
3.015	960 min Winter	770	S37	HW7	0.887	2.089	222.758	0.173	OK
3.016	720 min Winter	498	HW7	HW9	0.900	0.918	271.116		OK
6.000	720 min Summer	371	S38	HW8	0.450	1.431	39.168	0.172	OK
6.001	720 min Winter	499	HW8	HW9	0.900	0.335	25.802		Surcharged
1.017	960 min Winter	766	HW9	S39	0.375	0.999	110.316	0.783	Surcharged
1.018	960 min Winter	769	S39	HW10	0.191	1.545	110.314	0.323	OK