

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S38-4	0.174	1.350	Type C	6.043	4.325	1.268	488883.235	98125.981
S38-5	0.000	1.350	Type B	6.134	4.175	1.509	488827.698	98148.516
S38-7	0.025	0.000	Type C	5.250	4.100	0.700	488790.356	98178.405
S38-6	0.095	1.350	Type C	5.764	4.050	1.264	488785.300	98162.923
S38-8	0.000	1.350	Type C	5.477	3.935	1.092	488743.861	98177.112
S38-9	0.000	1.350	Type C	5.392	3.890	1.277	488731.597	98185.453
S38 Headwall F	0.000	0.000	Type C	5.000	3.800	0.975	488740.396	98200.397

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	S38-4	4.325	S38-5	4.175	Circ	0.45mØ	59.935	399.6	0.600	1.268	1.509
1.001	S38-5	4.175	S38-6	4.050	Circ	0.45mØ	44.779	358.2	0.600	1.509	1.264
2.000	S38-7	4.100	S38-6	4.050	Circ	0.45mØ	16.287	325.7	0.600	0.700	1.264
1.002	S38-6	4.050	S38-8	3.935	Circ	0.45mØ	43.801	380.9	0.600	1.264	1.092
1.003	S38-8	3.935	S38-9	3.890	Circ	0.45mØ	14.832	329.6	0.600	1.092	1.052
1.004	S38-9	3.890	S38 Headwall	3.800	Circ	0.225mØ	17.342	192.7	0.600	1.277	0.975

Outfall Details

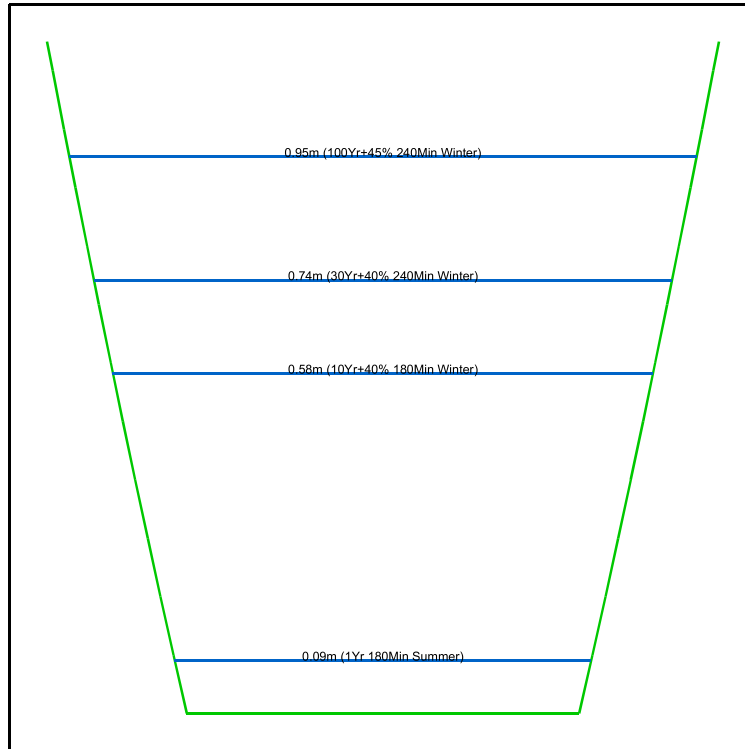
Outfall Manhole S38 Headwall F : Free Discharge

Flow Control Details

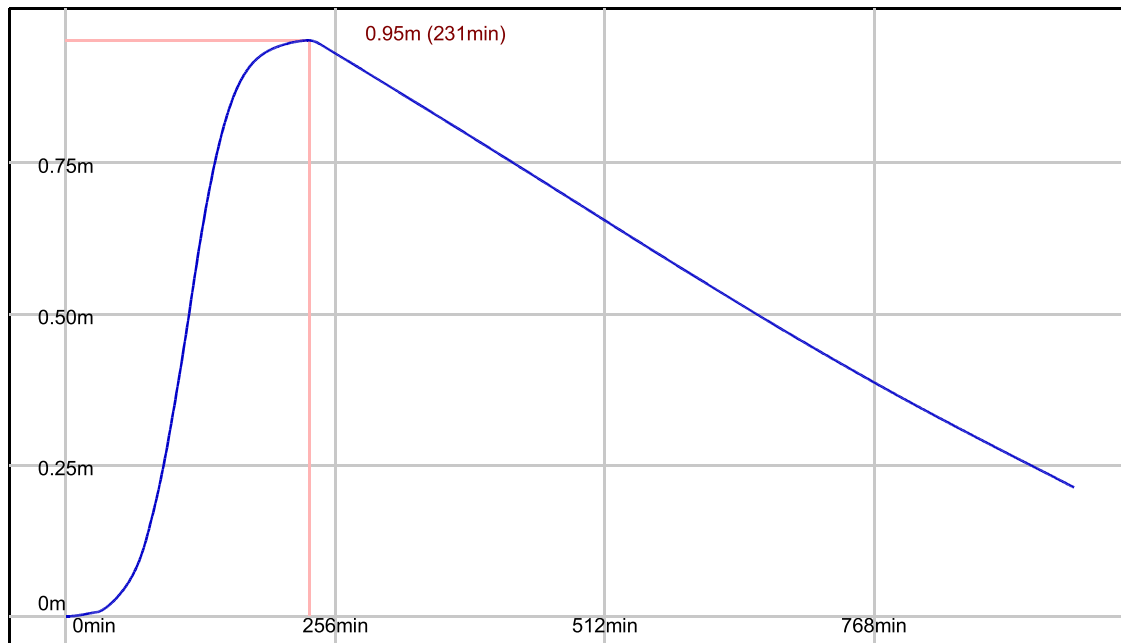
Pond Structure at Manhole S38-7

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
4.100	1.150	118.991	4.950	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at S38-7



Pond at S38-7 (100Yr+45% 240Min Winter)

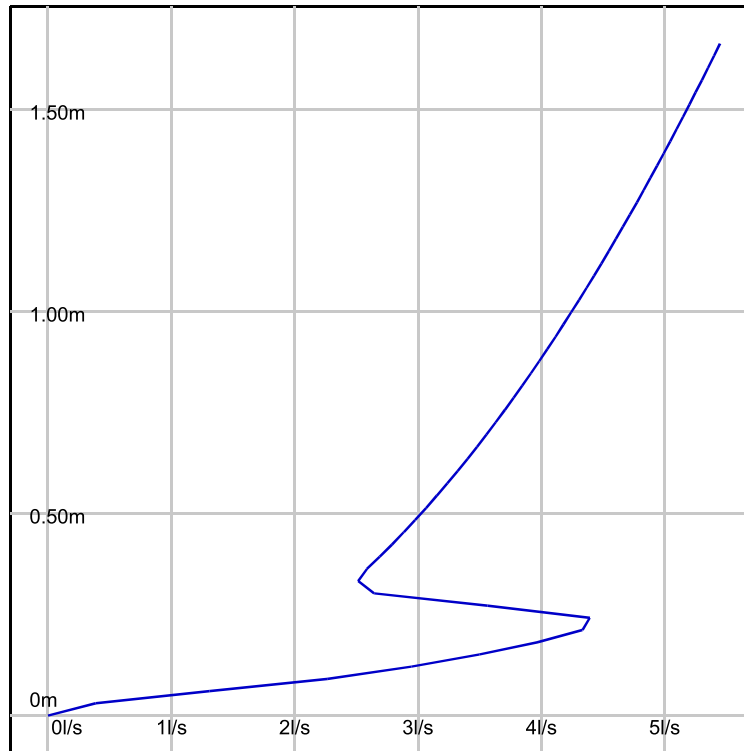


Controls within Manhole S38-9

Hydro-Brake® Optimum Control at Manhole S38-9

Model Ref	Design Depth (m)	Design Flow (l/s)	Depth Above Invert (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
CHE-0094-5000-1400-5000 ID:612416	1.400	5.000	0.000	0.232	4.431	0.329	2.512

Hydro-Brake® Optimum Control at S38-9



Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_488693_97897_v5_0_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Periods (yrs) + Climate Change: (1, +0%), (10, +40%), (30, +40%), (100, +45%)

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	16.942	0.00	-0.70	30Yr+40% 15Min Summer	112.863	0.00	1.02
1Yr 15Min Summer	16.942	0.00	-0.76	30Yr+40% 15Min Winter	112.863	0.00	0.98
1Yr 30Min Winter	10.755	0.00	-0.48	30Yr+40% 30Min Summer	74.071	0.00	1.89
1Yr 30Min Summer	10.755	0.00	-0.30	30Yr+40% 30Min Winter	74.071	0.00	1.91
1Yr 60Min Winter	6.786	0.00	-0.18	30Yr+40% 60Min Summer	46.547	0.00	1.58
1Yr 60Min Summer	6.786	0.00	-0.14	30Yr+40% 60Min Winter	46.547	0.00	1.59
1Yr 120Min Summer	5.246	0.00	0.00	30Yr+40% 120Min Summer	27.731	0.00	0.29
1Yr 120Min Winter	5.246	0.00	0.00	30Yr+40% 120Min Winter	27.731	0.00	0.30
1Yr 180Min Summer	4.383	0.00	0.00	30Yr+40% 180Min Summer	20.307	0.00	-0.13
1Yr 180Min Winter	4.383	0.00	0.00	30Yr+40% 180Min Winter	20.307	0.00	-0.14
1Yr 240Min Summer	3.631	0.00	0.00	30Yr+40% 240Min Summer	16.265	0.00	-0.03
1Yr 240Min Winter	3.631	0.00	-0.08	30Yr+40% 240Min Winter	16.265	0.00	-0.04
1Yr 360Min Summer	2.818	0.00	-0.06	30Yr+40% 360Min Summer	11.803	0.00	0.00
1Yr 360Min Winter	2.818	0.00	-0.08	30Yr+40% 360Min Winter	11.803	0.00	0.00
1Yr 480Min Summer	2.343	0.00	0.00	30Yr+40% 480Min Summer	9.367	0.00	0.00
1Yr 480Min Winter	2.343	0.00	0.00	30Yr+40% 480Min Winter	9.367	0.00	-0.01
1Yr 600Min Summer	2.004	0.00	0.00	30Yr+40% 600Min Summer	7.810	0.00	0.00
1Yr 600Min Winter	2.004	0.00	0.00	30Yr+40% 600Min Winter	7.810	0.00	-0.01
1Yr 720Min Winter	1.752	0.00	0.00	30Yr+40% 720Min Summer	6.721	0.00	0.00
1Yr 720Min Summer	1.752	0.00	0.00	30Yr+40% 720Min Winter	6.721	0.00	-0.01
1Yr 960Min Summer	1.420	0.00	0.00	30Yr+40% 960Min Summer	5.302	0.00	0.00
1Yr 960Min Winter	1.420	0.00	0.00	30Yr+40% 960Min Winter	5.302	0.00	-0.01
1Yr 1440Min Summer	1.059	0.00	0.00	30Yr+40% 1440Min Summer	3.817	0.00	0.00
1Yr 1440Min Winter	1.059	0.00	0.00	30Yr+40% 1440Min Winter	3.817	0.00	-0.02
10Yr+40% 15Min Summer	87.036	0.00	0.18	100Yr+45% 15Min Summer	146.276	0.00	2.65
10Yr+40% 15Min Winter	87.036	0.00	0.12	100Yr+45% 15Min Winter	146.276	0.00	2.54
10Yr+40% 30Min Summer	56.678	0.00	0.58	100Yr+45% 30Min Summer	96.982	0.00	4.00
10Yr+40% 30Min Winter	56.678	0.00	0.60	100Yr+45% 30Min Winter	96.982	0.00	4.01
10Yr+40% 60Min Summer	35.401	0.00	0.35	100Yr+45% 60Min Summer	61.530	0.00	3.72
10Yr+40% 60Min Winter	35.401	0.00	0.34	100Yr+45% 60Min Winter	61.530	0.00	3.73
10Yr+40% 120Min Winter	21.745	0.00	-0.19	100Yr+45% 120Min Summer	35.946	0.00	1.61
10Yr+40% 120Min Summer	21.745	0.00	-0.18	100Yr+45% 120Min Winter	35.946	0.00	1.61
10Yr+40% 180Min Summer	16.178	0.00	-0.11	100Yr+45% 180Min Summer	26.053	0.00	0.27
10Yr+40% 180Min Winter	16.178	0.00	-0.13	100Yr+45% 180Min Winter	26.053	0.00	0.27
10Yr+40% 240Min Summer	13.001	0.00	0.00	100Yr+45% 240Min Summer	20.923	0.00	-0.10
10Yr+40% 240Min Winter	13.001	0.00	-0.02	100Yr+45% 240Min Winter	20.923	0.00	-0.10
10Yr+40% 360Min Summer	9.488	0.00	0.00	100Yr+45% 360Min Summer	15.176	0.00	0.00
10Yr+40% 360Min Winter	9.488	0.00	0.00	100Yr+45% 360Min Winter	15.176	0.00	-0.01
10Yr+40% 480Min Summer	7.563	0.00	0.00	100Yr+45% 480Min Summer	12.028	0.00	0.00
10Yr+40% 480Min Winter	7.563	0.00	-0.02	100Yr+45% 480Min Winter	12.028	0.00	-0.01
10Yr+40% 600Min Winter	6.323	0.00	-0.01	100Yr+45% 600Min Summer	10.033	0.00	0.00
10Yr+40% 600Min Summer	6.323	0.00	0.00	100Yr+45% 600Min Winter	10.033	0.00	-0.01
10Yr+40% 720Min Summer	5.451	0.00	0.00	100Yr+45% 720Min Summer	8.641	0.00	0.00
10Yr+40% 720Min Winter	5.451	0.00	-0.01	100Yr+45% 720Min Winter	8.641	0.00	-0.01
10Yr+40% 960Min Summer	4.313	0.00	0.00	100Yr+45% 960Min Summer	6.827	0.00	0.00
10Yr+40% 960Min Winter	4.313	0.00	-0.01	100Yr+45% 960Min Winter	6.827	0.00	-0.01
10Yr+40% 1440Min Summer	3.111	0.00	0.00	100Yr+45% 1440Min Winter	4.922	0.00	0.00
10Yr+40% 1440Min Winter	3.111	0.00	0.00	100Yr+45% 1440Min Summer	4.922	0.00	0.00

Simulation Results

Return Period Yrs: 1.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S38-4	15 min Summer	8	4.423	0.098	17.344		OK
S38-5	15 min Summer	10	4.267	0.092	15.538		OK
S38-7	180 min Summer	116	4.190	0.090	0.313		OK
S38-6	180 min Summer	116	4.190	0.140	4.170		OK
S38-8	180 min Summer	115	4.190	0.255	4.176		OK
S38-9	180 min Summer	117	4.190	0.300	4.175		Surcharged
S38 Headwall F	180 min Summer	105	3.852	0.052	4.393		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 Summer	9	S38-4	S38-5	0.094	0.737	17.215	0.107	OK
1.001	30 min Summer	19	S38-5	S38-6	0.107	0.607	14.144	0.083	OK
2.000	180 min Summer	158	S38-7	S38-6	0.115	0.218	2.137	0.012	OK
1.002	180 min Summer	116	S38-6	S38-8	0.198	0.311	6.908	0.042	OK
1.003	180 min Summer	117	S38-8	S38-9	0.278	0.256	4.781	0.027	OK
1.004	180 min Summer	105	S38-9	S38 Headwall	0.052	0.639	4.393	0.118	OK

Return Period Yrs: 10.0

Climate Change %: 40

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S38-4	180 min Winter	171	4.681	0.356	2.284		OK
S38-5	180 min Winter	171	4.681	0.506	2.281		Surcharged
S38-7	180 min Winter	172	4.682	0.582	0.305		Surcharged
S38-6	180 min Winter	171	4.682	0.632	3.704		Surcharged
S38-8	180 min Winter	171	4.681	0.746	3.695		Surcharged
S38-9	180 min Winter	171	4.681	0.791	3.681		Surcharged
S38 Headwall F	720 min Summer	1037	3.852	0.052	4.394		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	180 min Winter	171	S38-4	S38-5	0.403	0.661	19.445	0.121	OK
1.001	120 min Summer	89	S38-5	S38-6	0.450	0.416	30.981	0.183	OK
2.000	120 min Summer	124	S38-7	S38-6	0.450	0.025	3.964	0.022	OK
1.002	30 min Winter	24	S38-6	S38-8	0.450	0.566	21.620	0.131	OK
1.003	30 min Winter	18	S38-8	S38-9	0.450	0.403	14.162	0.080	OK
1.004	360 min Summer	816	S38-9	S38 Headwall	0.052	0.639	4.394	0.118	OK

Return Period Yrs: 30.0

Climate Change %: 40

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S38-4	240 min Winter	226	4.841	0.516	2.437		Surcharged
S38-5	240 min Winter	227	4.841	0.666	2.389		Surcharged
S38-7	240 min Winter	227	4.841	0.741	0.342		Surcharged
S38-6	240 min Winter	227	4.841	0.791	4.036		Surcharged
S38-8	240 min Winter	227	4.841	0.906	4.037		Surcharged
S38-9	240 min Winter	227	4.841	0.951	4.038		Surcharged
S38 Headwall F	480 min Winter	1055	3.852	0.052	4.394		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	180 min Summer	122	S38-4	S38-5	0.450	0.680	34.016	0.212	OK
1.001	30 min Winter	25	S38-5	S38-6	0.450	0.772	70.225	0.414	OK
2.000	60 min Summer	72	S38-7	S38-6	0.450	0.038	6.098	0.034	OK
1.002	15 min Winter	12	S38-6	S38-8	0.450	0.704	43.135	0.262	OK
1.003	15 min Winter	9	S38-8	S38-9	0.450	0.481	20.833	0.118	OK
1.004	720 min Summer	1190	S38-9	S38 Headwall	0.052	0.639	4.393	0.118	OK

Return Period Yrs: 100.0

Climate Change %: 45

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S38-4	240 min Winter	229	5.053	0.728	2.828		Surcharged
S38-5	240 min Winter	230	5.053	0.878	2.647		Surcharged
S38-7	240 min Winter	230	5.053	0.953	0.377		Flood Risk
S38-6	240 min Winter	230	5.053	1.003	4.467		Surcharged
S38-8	240 min Winter	230	5.053	1.118	4.470		Surcharged
S38-9	240 min Winter	230	5.053	1.163	4.471		Surcharged
S38 Headwall F	240 min Winter	230	3.852	0.052	4.471		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	30 min Winter	25	S38-4	S38-5	0.450	1.096	106.321	0.662	OK
1.001	15 min Winter	13	S38-5	S38-6	0.450	0.978	125.844	0.742	OK
2.000	30 min Summer	42	S38-7	S38-6	0.450	0.058	9.217	0.052	OK
1.002	15 min Winter	10	S38-6	S38-8	0.450	0.731	53.880	0.328	OK
1.003	15 min Winter	8	S38-8	S38-9	0.450	0.481	25.660	0.145	OK
1.004	240 min Winter	230	S38-9	S38 Headwall	0.052	0.643	4.471	0.120	OK