

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S7	0.021	1.350	Type C	34.800	33.300	1.350	443286.144	120355.379
Perm Pav	0.041	1.350	Type C	34.650	33.800	0.700	443285.323	120340.464
S08	0.000	1.350	Type C	34.800	33.150	1.500	443281.996	120341.900
S11	0.000	1.200	Type B	34.800	32.980	1.670	443264.575	120347.300
S1	0.023	1.350	Type C	34.800	33.980	0.670	443268.476	120382.190
S2	0.026	1.350	Type C	34.800	33.720	0.930	443260.712	120356.801
Tank	0.000	1.200	Type B	34.800	32.900	1.750	443258.387	120349.218
S3	0.000	1.200	Type B	34.800	32.800	1.850	443253.062	120351.114
S4	0.000	1.200	Type B	34.800	32.720	1.930	443250.985	120358.740
S5	0.000	1.200	Type B	34.800	32.690	1.960	443248.201	120360.356
S6	0.000	1.200	Type B	34.800	32.490	2.160	443253.474	120378.877
Existing	0.000	1.350	Type C	31.690	31.090	0.450	443247.124	120381.119

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	S7	33.300	S08	33.150	Circ	0.15mØ	14.102	94.0	0.600	1.350	1.500
2.000	Perm Pav	33.800	S08	33.150	Circ	0.15mØ	3.623	5.6	0.600	0.700	1.500
1.001	S08	33.150	S11	32.980	Circ	0.15mØ	18.239	107.3	0.600	1.500	1.670
1.002	S11	32.980	Tank	32.900	Circ	0.15mØ	6.479	81.0	0.600	1.670	1.750
3.000	S1	33.980	S2	33.720	Circ	0.15mØ	26.550	102.1	0.600	0.670	0.930
3.001	S2	33.720	Tank	32.900	Circ	0.15mØ	7.931	9.7	0.600	0.930	1.750
1.003	Tank	32.900	S3	32.800	Circ	0.15mØ	5.652	56.5	0.600	1.750	1.850
1.004	S3	32.800	S4	32.720	Circ	0.15mØ	7.904	98.8	0.600	1.850	1.930
1.005	S4	32.720	S5	32.690	Circ	0.15mØ	3.219	107.3	0.600	1.930	1.960
1.006	S5	32.690	S6	32.490	Circ	0.15mØ	19.257	96.3	0.600	1.960	2.160
1.007	S6	32.490	Existing	31.090	Circ	0.15mØ	6.734	4.8	0.600	2.160	0.450

Permeable Paving Schedule

Permeable Paving	Assigned Manhole	Effective Storage Volume (m3)	CL (m)	IL (m)	Storage Infil Rate (m/hr)	Safety Factor	Easting (m)	Northing (m)
Permeable Paving1	Perm Pav	66.218	34.650	34.120	0.00000000	2.00	443287.220	120339.724

Outfall Details

Outfall Manhole Existing : Free Discharge

Flow Control Details

Controls within Manhole Perm Pav

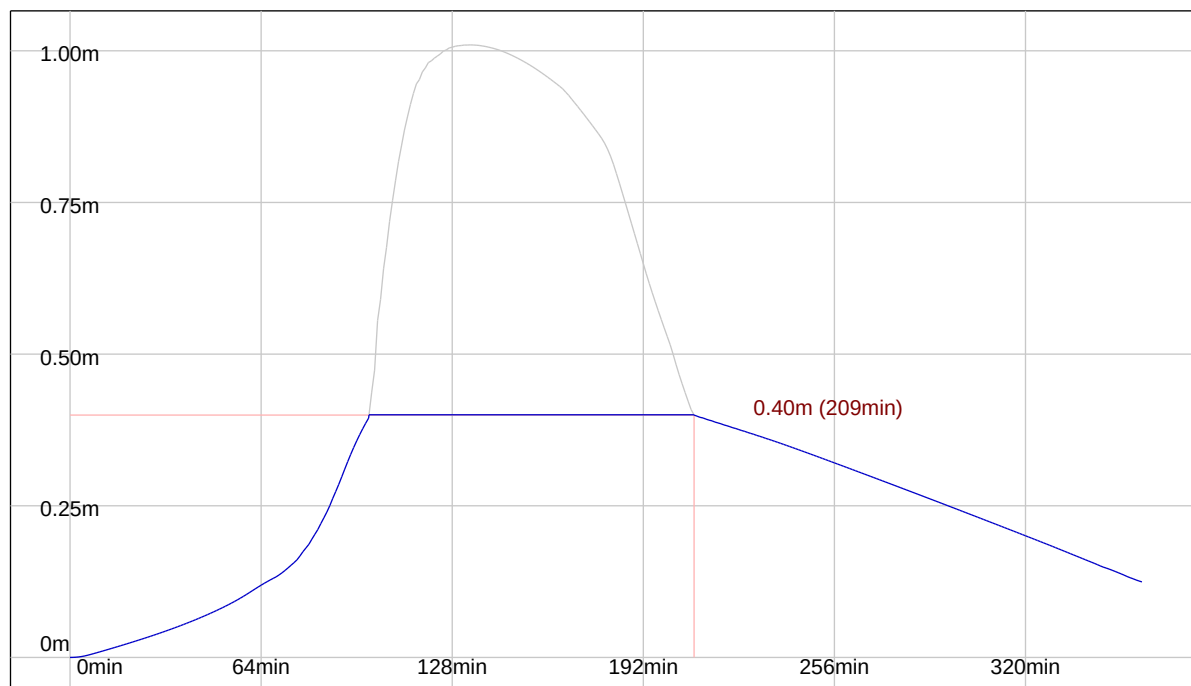
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
33.900	0.350	0.600

Tank Structure at Manhole Tank

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
32.900	0.400	95.00	60.000	57.000	22.800	0.00000000	0.00000000	2.00

Tank at Tank (100Yr+45% 180Min Summer)

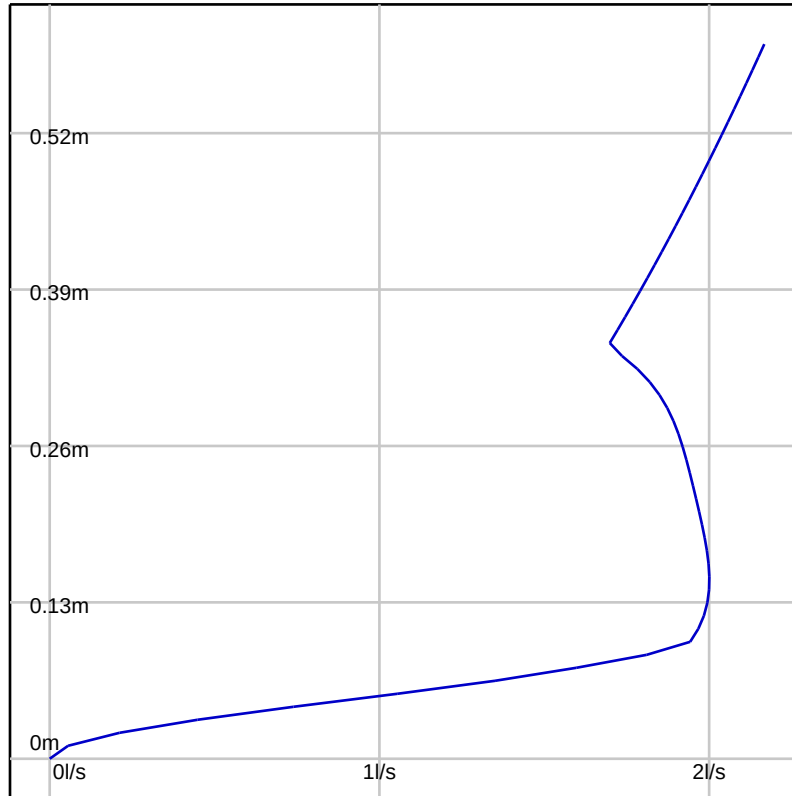


Controls within Manhole S3

Hydro-Brake® Optimum Control at Manhole S3

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)
SHE-0075-2000-0500-2000	0.500	2.000	0.000	0.148	2.001	0.343	1.692

Hydro-Brake® Optimum Control at S3



Simulation Settings

FSR: M5-60=20.00, R=0.35, Locale=England and Wales

Summer (Cv: 0.75)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

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

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
100Yr+45% 15Min Summer	136.560	0.00	0.00	100Yr+45% 960Min Summer	7.499	0.00	0.00
100Yr+45% 30Min Summer	91.729	0.00	0.05	100Yr+45% 1440Min Summer	5.473	0.00	0.00
100Yr+45% 60Min Summer	58.739	0.00	0.16	100Yr+45% 2160Min Summer	3.985	0.00	0.00
100Yr+45% 120Min Summer	36.254	0.00	0.00	100Yr+45% 2880Min Summer	3.178	0.00	0.00
100Yr+45% 180Min Summer	26.900	0.00	0.00	100Yr+45% 4320Min Summer	2.306	0.00	0.00
100Yr+45% 240Min Summer	21.623	0.00	0.00	100Yr+45% 5760Min Summer	1.834	0.00	1.56
100Yr+45% 360Min Summer	15.914	0.00	0.00	100Yr+45% 7200Min Summer	1.536	0.00	2.88
100Yr+45% 480Min Summer	12.782	0.00	0.00	100Yr+45% 8640Min Summer	1.330	0.00	3.93
100Yr+45% 600Min Summer	10.774	0.00	0.04	100Yr+45% 10080Min Summer	1.178	0.00	4.78
100Yr+45% 720Min Summer	9.365	0.00	0.00				

Simulation Results

Return Period Yrs: 100.0

Climate Change %: 45

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S7	180 min Summer	133	33.811	0.511	0.658		Surcharged
Perm Pav	5760 min Summer	5240	34.520	0.720	0.002		Flood Risk
S08	180 min Summer	133	33.810	0.660	0.653		Surcharged
S11	180 min Summer	134	33.810	0.830	0.672		Surcharged
S1	15 min Summer	8	34.082	0.102	14.050		OK
S2	180 min Summer	134	33.810	0.090	1.509		OK
Tank	180 min Summer	134	33.810	1.010	2.141		Surcharged
S3	180 min Summer	134	33.809	1.009	2.143		Surcharged
S4	60 min Summer	58	32.756	0.036	2.167		OK
S5	60 min Summer	58	32.728	0.038	2.167		OK
S6	60 min Summer	58	32.507	0.017	2.167		OK
Existing	60 min Summer	58	31.107	0.017	2.167		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	120 min Summer	74	S7	S08	0.150	0.910	5.899	0.322	Surcharged
2.000	180 min Summer	141	Perm Pav	S08	0.080	0.003	0.027	0.000	OK
1.001	120 min Summer	71	S08	S11	0.150	0.898	5.890	0.344	Surcharged
1.002	60 min Summer	35	S11	Tank	0.150	0.960	8.716	0.442	Surcharged
3.000	15 min Summer	8	S1	S2	0.089	1.272	13.881	0.791	OK
3.001	180 min Summer	134	S2	Tank	0.120	1.682	10.449	0.181	OK
1.003	600 min Summer	298	Tank	S3	0.150	0.612	8.116	0.343	Surcharged
1.004	120 min Summer	77	S3	S4	0.036	0.676	2.167	0.121	OK
1.005	120 min Summer	78	S4	S5	0.037	0.680	2.167	0.127	OK
1.006	120 min Summer	79	S5	S6	0.028	0.975	2.167	0.120	OK
1.007	120 min Summer	79	S6	Existing	0.017	1.999	2.167	0.027	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	10080 min Summer	6741	34.520	0.400	0.111		Surcharged