

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
SA1	0.037	1.200	Type E	45.327	43.827	1.200	392461.413	164439.690
SA2	0.047	1.200	Type B	45.664	43.666	1.698	392470.363	164417.279
SA3	0.127	1.350	Type B	46.085	43.385	2.325	392482.755	164389.025
SA4	0.092	1.350	Type A	46.535	43.042	3.043	392506.963	164356.954
SA5	0.040	1.350	Type B	46.157	42.806	2.901	392528.698	164329.038
SA6	0.016	1.350	Type B	45.956	42.733	2.773	392532.609	164318.810
SA7	0.064	1.350	Type B	45.788	42.667	2.671	392535.487	164309.291
SA8	0.178	1.200	Type E	45.923	44.423	1.200	392634.651	164346.396
SA9	0.068	1.350	Type C	45.177	43.602	1.200	392597.487	164318.479
SA10	0.077	1.350	Type C	44.939	43.214	1.275	392581.869	164305.243
SA11	0.010	1.350	Type B	45.155	43.065	1.640	392564.701	164290.921
SA12	0.000	1.500	Type B	45.293	42.329	2.364	392552.396	164286.692
SA13	0.045	1.500	Type B	44.766	42.225	1.941	392549.182	164271.469
SA14	0.083	1.200	Type E	45.508	44.083	1.200	392521.149	164289.426
SA15	0.023	1.200	Type E	44.801	43.376	1.200	392537.176	164268.143
SA16	0.098	1.800	Type B	44.401	41.982	1.669	392542.892	164259.014
SA17	0.123	1.800	Type B	44.465	41.720	1.995	392512.001	164234.746
SA18	0.092	1.200	Type E	46.125	44.700	1.200	392454.094	164272.182
SA19	0.106	1.200	Type E	45.895	44.470	1.200	392418.879	164256.129
SA20	0.022	1.200	Type B	46.002	43.996	1.706	392435.913	164263.738
SA21	0.030	1.200	Type B	45.419	43.398	1.721	392448.407	164236.596
SA22	0.072	1.800	Type B	45.029	41.316	2.963	392460.081	164210.645
SA23	0.079	1.800	Type A	45.361	41.076	3.535	392427.202	164195.915
SA24	0.071	1.800	Type A	45.315	40.740	3.675	392400.659	164187.185
SA25	0.070	1.200	Type E	46.741	45.316	1.200	392461.241	164298.565
SA26	0.046	1.350	Type C	46.332	44.907	1.200	392432.338	164285.368
SA27	0.015	1.200	Type B	46.466	44.475	1.691	392441.930	164289.875
SA28	0.078	1.350	Type C	45.589	43.789	1.425	392422.739	164331.908
SA29	0.163	1.200	Type E	45.602	44.102	1.200	392447.408	164374.743
SA30	0.161	1.350	Type B	45.199	43.199	1.550	392410.732	164357.938
SA31	0.065	1.200	Type E	45.803	44.378	1.200	392404.394	164272.781
SA32	0.084	1.200	Type E	45.200	43.775	1.200	392376.032	164259.302
SA33	0.017	1.200	Type B	45.429	43.599	1.530	392385.411	164271.153
SA34	0.079	1.350	Type C	44.930	43.289	1.266	392370.806	164303.166
SA35	0.168	1.500	Type B	44.606	42.149	1.857	392357.193	164333.626
SA36	0.113	1.800	Type B	44.098	41.287	2.061	392311.960	164312.386
SA37	0.070	1.800	Type B	44.165	41.155	2.260	392310.535	164292.635
SA38	0.046	1.800	Type B	44.426	40.964	2.712	392310.378	164263.927
SA39	0.034	1.800	Type B	44.594	40.847	2.997	392310.168	164246.490
SA40	0.074	1.800	Type A	44.707	40.619	3.188	392313.743	164235.376
SA41	0.018	1.800	Type A	44.955	40.452	3.603	392324.048	164212.451
SA42	0.082	1.800	Type A	45.091	40.361	3.830	392331.357	164200.936
SA43	0.102	1.200	Type E	45.047	43.622	1.200	392361.930	164224.198
SA44	0.000	1.800	Type A	45.254	40.246	4.108	392346.358	164192.297
SA45	0.000	1.800	Type A	45.253	40.157	4.196	392357.827	164185.443
SA46	0.165	1.800	Type A	45.081	40.075	4.106	392362.174	164173.996
SA47	0.065	1.800	Type A	43.936	39.760	3.276	392376.239	164129.677
SA48	0.093	1.800	Type B	43.424	39.625	2.899	392382.152	164110.432
SA49	0.069	1.200	Type E	44.712	43.287	1.200	392331.068	164175.479
SA50	0.061	1.200	Type B	44.382	42.587	1.570	392322.643	164160.016
SA51	0.064	1.200	Type B	44.136	41.812	2.024	392315.184	164145.603
SA52	0.051	1.200	Type B	43.749	41.553	1.896	392326.719	164108.524
SA53	0.149	1.800	Type A	43.376	39.259	3.217	392331.366	164093.863
SA54	0.037	1.800	Type B	42.300	38.963	2.437	392344.825	164051.542
SA55	0.016	1.800	Type B	42.099	38.892	2.307	392344.379	164040.942
SA56	0.000	1.200	Type E	42.163	40.738	1.200	392315.854	164023.158
SA57	0.060	1.800	Type B	41.977	38.808	2.269	392336.954	164030.695
SA58	0.000	1.800	Type B	41.793	38.759	2.134	392341.949	164025.377
SA59	0.000	0.000	Type C	39.410	38.000	0.510	392347.170	164008.236
SA60	0.000	0.000	Type E	39.117	37.750	0.467	392381.026	163920.326
SA61 HB	0.000	1.800	Type C	39.206	37.713	1.193	392383.753	163915.458
SA62	0.000	0.000	Unknown	37.800	36.763	0.737	392398.740	163880.852

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	SA1	43.827	SA2	43.666	Circ	0.3mØ	24.132	150	0.600	1.200	1.698
1.001	SA2	43.666	SA3	43.460	Circ	0.3mØ	30.852	150	0.600	1.698	2.325
1.002	SA3	43.385	SA4	43.117	Circ	0.375mØ	40.182	150	0.600	2.325	3.043
1.003	SA4	43.042	SA5	42.806	Circ	0.45mØ	35.380	150	0.600	3.043	2.901
1.004	SA5	42.806	SA6	42.733	Circ	0.45mØ	10.950	150	0.600	2.901	2.773
1.005	SA6	42.733	SA7	42.667	Circ	0.45mØ	9.945	151	0.600	2.773	2.671
1.006	SA7	42.667	SA12	42.479	Circ	0.45mØ	28.225	150	0.600	2.671	2.364
2.000	SA8	44.423	SA9	43.677	Circ	0.3mØ	46.481	62	0.600	1.200	1.200
2.001	SA9	43.602	SA10	43.289	Circ	0.375mØ	20.472	65	0.600	1.200	1.275
2.002	SA10	43.214	SA11	43.065	Circ	0.45mØ	22.358	150	0.600	1.275	1.640
2.003	SA11	43.065	SA12	42.479	Circ	0.45mØ	13.011	22	0.600	1.640	2.364
1.007	SA12	42.329	SA13	42.225	Circ	0.6mØ	15.559	150	0.600	2.364	1.941
1.008	SA13	42.225	SA16	42.132	Circ	0.6mØ	13.953	150	0.600	1.941	1.669
3.000	SA14	44.083	SA15	43.376	Circ	0.225mØ	26.643	38	0.600	1.200	1.200
3.001	SA15	43.376	SA16	42.557	Circ	0.225mØ	10.771	13	0.600	1.200	1.619
1.009	SA16	41.982	SA17	41.720	Circ	0.75mØ	39.283	150	0.600	1.669	1.995
1.010	SA17	41.720	SA22	41.338	Circ	0.75mØ	57.241	150	0.600	1.995	2.941
4.000	SA18	44.700	SA20	44.071	Circ	0.225mØ	20.046	32	0.600	1.200	1.706
5.000	SA19	44.470	SA20	44.071	Circ	0.225mØ	18.656	47	0.600	1.200	1.706
4.001	SA20	43.996	SA21	43.398	Circ	0.3mØ	29.880	50	0.600	1.706	1.721
4.002	SA21	43.398	SA22	41.766	Circ	0.3mØ	28.456	17	0.600	1.721	2.963
1.011	SA22	41.316	SA23	41.076	Circ	0.75mØ	36.028	150	0.600	2.963	3.535
1.012	SA23	41.076	SA24	40.890	Circ	0.75mØ	27.942	150	0.600	3.535	3.675
1.013	SA24	40.740	SA46	40.075	Circ	0.9mØ	40.682	61	0.600	3.675	4.106
6.000	SA25	45.316	SA27	44.550	Circ	0.225mØ	21.176	28	0.600	1.200	1.691
7.000	SA26	44.907	SA27	44.550	Circ	0.225mØ	10.598	30	0.600	1.200	1.691
6.001	SA27	44.475	SA28	43.864	Circ	0.3mØ	46.207	76	0.600	1.691	1.425
6.002	SA28	43.789	SA30	43.274	Circ	0.375mØ	28.666	56	0.600	1.425	1.550
8.000	SA29	44.102	SA30	43.349	Circ	0.3mØ	40.343	54	0.600	1.200	1.550
6.003	SA30	43.199	SA35	42.299	Circ	0.45mØ	58.800	65	0.600	1.550	1.857
9.000	SA31	44.378	SA33	43.695	Circ	0.225mØ	19.053	28	0.600	1.200	1.509
10.000	SA32	43.775	SA33	43.674	Circ	0.225mØ	15.113	150	0.600	1.200	1.530
9.001	SA33	43.599	SA34	43.364	Circ	0.3mØ	35.187	150	0.600	1.530	1.266
9.002	SA34	43.289	SA35	42.428	Circ	0.375mØ	33.364	39	0.600	1.266	1.803
6.004	SA35	42.149	SA36	41.437	Circ	0.6mØ	49.972	70	0.600	1.857	2.061
6.005	SA36	41.287	SA37	41.155	Circ	0.75mØ	19.802	150	0.600	2.061	2.260
6.006	SA37	41.155	SA38	40.964	Circ	0.75mØ	28.708	150	0.600	2.260	2.712
6.007	SA38	40.964	SA39	40.847	Circ	0.75mØ	17.438	149	0.600	2.712	2.997
6.008	SA39	40.847	SA40	40.769	Circ	0.75mØ	11.675	150	0.600	2.997	3.188
6.009	SA40	40.619	SA41	40.452	Circ	0.9mØ	25.135	151	0.600	3.188	3.603
6.010	SA41	40.452	SA42	40.361	Circ	0.9mØ	13.639	150	0.600	3.603	3.830
6.011	SA42	40.361	SA44	40.246	Circ	0.9mØ	17.311	151	0.600	3.830	4.108
11.000	SA43	43.622	SA44	40.921	Circ	0.225mØ	35.499	13	0.600	1.200	4.108
6.012	SA44	40.246	SA45	40.157	Circ	0.9mØ	13.361	150	0.600	4.108	4.196
6.013	SA45	40.157	SA46	40.075	Circ	0.9mØ	12.245	149	0.600	4.196	4.106
1.014	SA46	40.075	SA47	39.760	Circ	0.9mØ	46.497	148	0.600	4.106	3.276
1.015	SA47	39.760	SA48	39.625	Circ	0.9mØ	20.133	149	0.600	3.276	2.899
1.016	SA48	39.625	SA53	39.259	Circ	0.9mØ	53.420	146	0.600	2.899	3.217
12.000	SA49	43.287	SA50	42.587	Circ	0.225mØ	17.609	25	0.600	1.200	1.570
12.001	SA50	42.587	SA51	41.887	Circ	0.225mØ	16.229	23	0.600	1.570	2.024
12.002	SA51	41.812	SA52	41.553	Circ	0.3mØ	38.832	150	0.600	2.024	1.896
12.003	SA52	41.553	SA53	39.859	Circ	0.3mØ	15.380	9	0.600	1.896	3.217
1.017	SA53	39.259	SA54	38.963	Circ	0.9mØ	44.410	150	0.600	3.217	2.437
1.018	SA54	38.963	SA55	38.892	Circ	0.9mØ	10.609	149	0.600	2.437	2.307
1.019	SA55	38.892	SA57	38.808	Circ	0.9mØ	12.654	151	0.600	2.307	2.269
13.000	SA56	40.738	SA57	39.483	Circ	0.225mØ	22.406	18	0.600	1.200	2.269
1.020	SA57	38.808	SA58	38.759	Circ	0.9mØ	7.296	149	0.600	2.269	2.134
1.021	SA58	38.759	SA59	38.000	Circ	0.9mØ	17.919	24	0.600	2.134	0.510
1.022	SA59	38.000	SA60	37.750	Circ	1.5mØ	94.204	377	0.600	-0.090	-0.133
1.023	SA60	37.750	SA61 HB	37.713	Circ	0.9mØ	5.580	151	0.600	0.467	0.593
1.024	SA61 HB	37.713	SA62	36.763	Circ	0.3mØ	37.712	40	0.600	1.193	0.737

Outfall Details

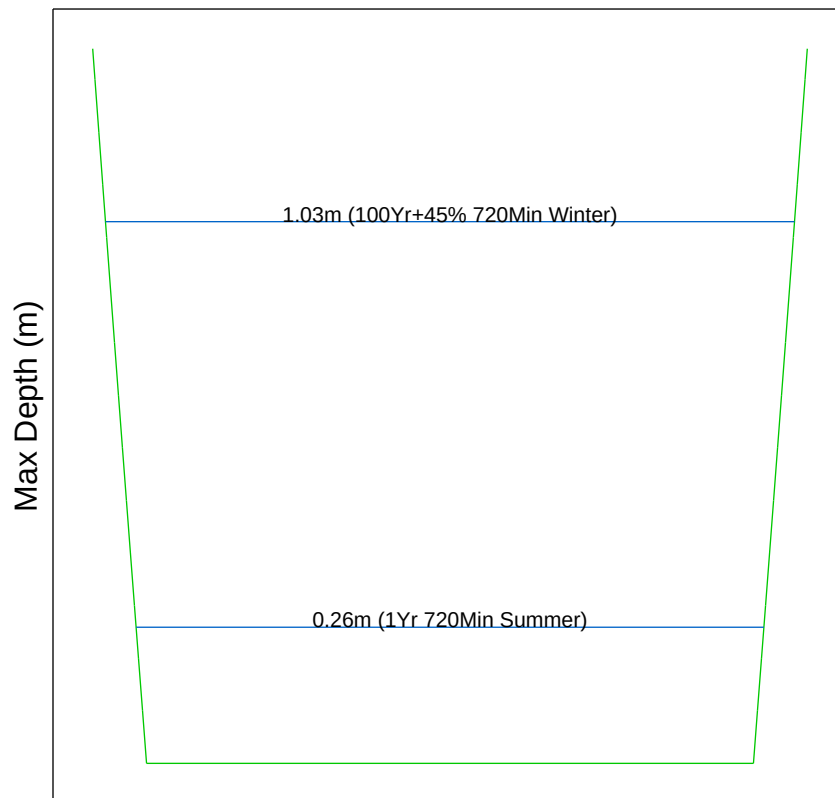
Outfall Manhole SA62 : Free Discharge

Flow Control Details

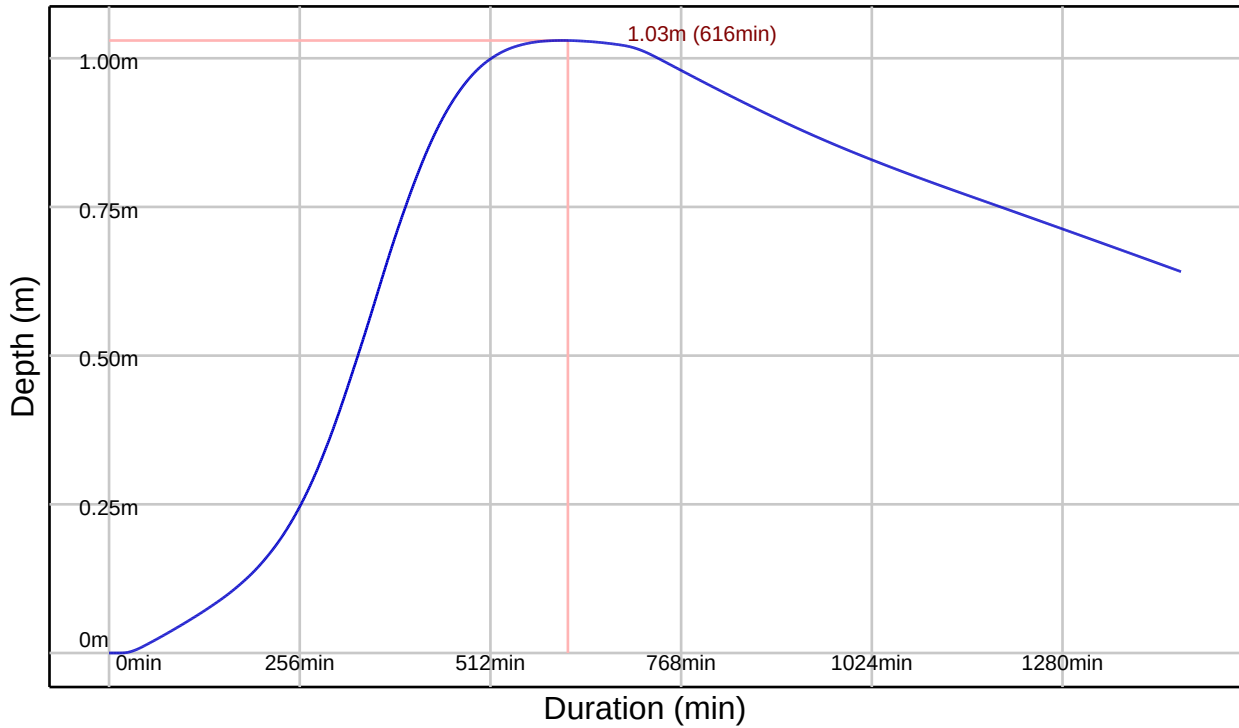
Pond Structure at Manhole SA60

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
37.750	1.359	3107.425	38.809	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at SA60



Pond 1 at SA60 (100Yr+45% 720Min Winter)

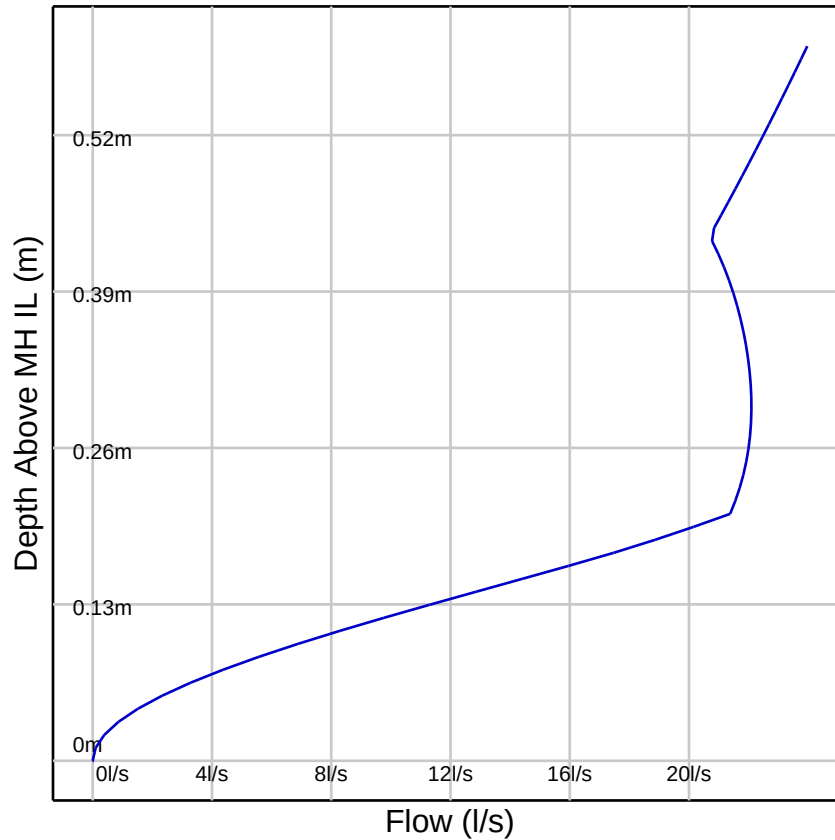


Controls within Manhole SA61 HB

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-0214-2210-0500-2210	0.500	22.100	0.000	0.294	22.093	0.436	20.686

Hydro-Brake® Optimum Control from SA61 HB to SA62



Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.800	0.130	0.600

Simulation Settings

FSR: M5-60=20.00, R=0.40, Locale=England and Wales

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%), (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	36.405	0.00	-0.38	100Yr+45% 15Min Summer	143.087	0.00	-0.34
1Yr 15Min Summer	36.405	0.00	-0.42	100Yr+45% 15Min Winter	143.087	0.00	-0.22
1Yr 30Min Winter	23.138	0.00	-0.24	100Yr+45% 30Min Summer	93.944	0.00	-0.12
1Yr 30Min Summer	23.138	0.00	-0.28	100Yr+45% 30Min Winter	93.944	0.00	-0.07
1Yr 60Min Winter	14.222	0.00	-0.20	100Yr+45% 60Min Summer	58.739	0.00	-0.01
1Yr 60Min Summer	14.222	0.00	-0.21	100Yr+45% 60Min Winter	58.739	0.00	-0.04
1Yr 120Min Winter	8.605	0.00	-0.16	100Yr+45% 120Min Summer	35.469	0.00	-0.02
1Yr 120Min Summer	8.605	0.00	-0.16	100Yr+45% 120Min Winter	35.469	0.00	-0.03
1Yr 180Min Summer	6.400	0.00	-0.14	100Yr+45% 180Min Summer	26.047	0.00	-0.03
1Yr 180Min Winter	6.400	0.00	-0.13	100Yr+45% 180Min Winter	26.047	0.00	-0.02
1Yr 240Min Summer	5.190	0.00	-0.11	100Yr+45% 240Min Summer	20.795	0.00	-0.02
1Yr 240Min Winter	5.190	0.00	-0.11	100Yr+45% 240Min Winter	20.795	0.00	-0.02
1Yr 360Min Summer	3.857	0.00	-0.07	100Yr+45% 360Min Summer	15.106	0.00	-0.02
1Yr 360Min Winter	3.857	0.00	-0.07	100Yr+45% 360Min Winter	15.106	0.00	-0.02
1Yr 480Min Winter	3.121	0.00	-0.05	100Yr+45% 480Min Summer	12.038	0.00	-0.02
1Yr 480Min Summer	3.121	0.00	-0.05	100Yr+45% 480Min Winter	12.038	0.00	-0.02
1Yr 600Min Summer	2.648	0.00	-0.04	100Yr+45% 600Min Summer	10.086	0.00	-0.02
1Yr 600Min Winter	2.648	0.00	-0.04	100Yr+45% 600Min Winter	10.086	0.00	-0.02
1Yr 720Min Summer	2.315	0.00	-0.03	100Yr+45% 720Min Summer	8.725	0.00	-0.02
1Yr 720Min Winter	2.315	0.00	-0.03	100Yr+45% 720Min Winter	8.725	0.00	-0.02
1Yr 960Min Winter	1.872	0.00	-0.00	100Yr+45% 960Min Summer	6.936	0.00	-0.02
1Yr 960Min Summer	1.872	0.00	-0.00	100Yr+45% 960Min Winter	6.936	0.00	-0.02
1Yr 1440Min Summer	1.389	0.00	0.01	100Yr+45% 1440Min Winter	5.012	0.00	-0.03
1Yr 1440Min Winter	1.389	0.00	0.00	100Yr+45% 1440Min Summer	5.012	0.00	-0.03

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
SA1	15 min Summer	8	43.885	0.058	7.883		OK
SA2	15 min Summer	9	43.756	0.090	17.318		OK
SA3	15 min Summer	9	43.520	0.135	43.723		OK
SA4	15 min Summer	9	43.197	0.155	63.177		OK
SA5	15 min Summer	9	42.991	0.185	71.789		OK
SA6	15 min Summer	9	42.922	0.189	75.310		OK
SA7	15 min Summer	9	42.854	0.187	88.421		OK
SA8	15 min Summer	8	44.530	0.107	38.396		OK
SA9	15 min Summer	8	43.723	0.121	52.354		OK
SA10	15 min Summer	8	43.373	0.159	68.557		OK
SA11	15 min Summer	8	43.167	0.102	70.246		OK
SA12	15 min Summer	9	42.575	0.246	158.423		OK
SA13	15 min Summer	9	42.467	0.242	167.796		OK
SA14	15 min Summer	8	44.155	0.072	17.849		OK
SA15	15 min Summer	8	43.438	0.062	22.657		OK
SA16	15 min Summer	9	42.226	0.244	209.783		OK
SA17	15 min Summer	9	41.974	0.254	234.876		OK
SA18	15 min Summer	8	44.772	0.072	19.754		OK
SA19	15 min Summer	8	44.557	0.087	22.843		OK
SA20	15 min Summer	8	44.113	0.117	46.954		OK
SA21	15 min Summer	8	43.490	0.092	53.114		OK
SA22	15 min Summer	9	41.619	0.303	300.556		OK
SA23	15 min Summer	9	41.382	0.306	315.382		OK
SA24	15 min Summer	9	40.965	0.225	324.011		OK
SA25	15 min Summer	8	45.376	0.060	15.079		OK
SA26	15 min Summer	8	44.956	0.049	9.902		OK
SA27	15 min Summer	8	44.570	0.095	28.118		OK
SA28	15 min Summer	9	43.894	0.105	43.907		OK
SA29	15 min Summer	8	44.200	0.098	35.002		OK
SA30	15 min Summer	9	43.365	0.166	111.535		OK
SA31	15 min Summer	8	44.436	0.058	13.896		OK
SA32	15 min Summer	8	43.881	0.106	18.195		OK
SA33	15 min Summer	8	43.731	0.132	35.385		OK
SA34	15 min Summer	9	43.392	0.103	51.403		OK
SA35	15 min Summer	9	42.356	0.207	199.240		OK
SA36	15 min Summer	9	41.557	0.270	223.932		OK
SA37	15 min Summer	9	41.428	0.273	238.824		OK
SA38	15 min Summer	9	41.251	0.287	248.585		OK
SA39	15 min Summer	9	41.127	0.280	254.987		OK
SA40	15 min Summer	9	40.900	0.281	269.216		OK
SA41	15 min Summer	10	40.756	0.304	267.776		OK
SA42	15 min Summer	10	40.677	0.316	284.471		OK
SA43	15 min Summer	8	43.681	0.059	21.950		OK
SA44	15 min Summer	10	40.600	0.354	304.417		OK
SA45	15 min Summer	10	40.550	0.393	305.665		OK
SA46	15 min Summer	10	40.523	0.448	664.127		OK
SA47	15 min Summer	10	40.240	0.480	678.020		OK
SA48	15 min Summer	10	40.079	0.454	690.683		OK
SA49	15 min Summer	8	43.343	0.056	14.809		OK
SA50	15 min Summer	8	42.667	0.080	27.946		OK
SA51	15 min Summer	8	41.960	0.148	41.451		OK
SA52	15 min Summer	8	41.631	0.078	51.991		OK
SA53	15 min Summer	10	39.757	0.498	756.213		OK
SA54	15 min Summer	11	39.519	0.556	752.785		OK
SA55	15 min Summer	11	39.403	0.511	760.988		OK
SA56	15 min Winter	0	40.738	0.000	0.000		OK
SA57	15 min Summer	11	39.258	0.450	769.235		OK
SA58	15 min Summer	11	39.073	0.314	770.456		OK
SA59	15 min Summer	11	38.429	0.429	771.403		OK
SA60	720 min Summer	487	38.009	0.259	28.223		OK

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
SA61 HB	600 min Summer	382	38.060	0.347	24.898		Surcharged
SA62	960 min Summer	646	36.833	0.070	21.686		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	8	SA1	SA2	0.074	0.578	7.797	0.086	OK
1.001	15 min Summer	9	SA2	SA3	0.089	1.004	17.613	0.195	OK
1.002	15 min Summer	9	SA3	SA4	0.133	1.267	44.261	0.272	OK
1.003	15 min Summer	9	SA4	SA5	0.170	1.154	63.541	0.241	OK
1.004	15 min Summer	9	SA5	SA6	0.187	1.151	71.939	0.273	OK
1.005	15 min Summer	9	SA6	SA7	0.188	1.198	75.290	0.286	OK
1.006	15 min Summer	9	SA7	SA12	0.180	1.485	88.102	0.335	OK
2.000	15 min Summer	8	SA8	SA9	0.106	1.699	37.767	0.268	OK
2.001	15 min Summer	8	SA9	SA10	0.117	1.769	51.931	0.210	OK
2.002	15 min Summer	8	SA10	SA11	0.131	1.787	68.192	0.259	OK
2.003	15 min Summer	9	SA11	SA12	0.099	2.764	70.321	0.102	OK
1.007	15 min Summer	9	SA12	SA13	0.244	1.464	158.468	0.282	OK
1.008	15 min Summer	9	SA13	SA16	0.227	1.710	167.461	0.298	OK
3.000	15 min Summer	8	SA14	SA15	0.067	1.795	17.744	0.209	OK
3.001	15 min Summer	8	SA15	SA16	0.060	2.672	22.520	0.156	OK
1.009	15 min Summer	9	SA16	SA17	0.249	1.636	209.567	0.208	OK
1.010	15 min Summer	9	SA17	SA22	0.267	1.682	233.222	0.231	OK
4.000	15 min Summer	8	SA18	SA20	0.070	1.848	19.610	0.212	OK
5.000	15 min Summer	8	SA19	SA20	0.084	1.666	22.665	0.297	OK
4.001	15 min Summer	8	SA20	SA21	0.105	2.125	46.699	0.297	OK
4.002	15 min Summer	8	SA21	SA22	0.090	2.953	52.671	0.197	OK
1.011	15 min Summer	9	SA22	SA23	0.304	1.780	299.069	0.297	OK
1.012	15 min Summer	10	SA23	SA24	0.289	2.000	314.659	0.312	OK
1.013	15 min Summer	10	SA24	SA46	0.335	1.532	329.428	0.129	OK
6.000	15 min Summer	8	SA25	SA27	0.059	1.810	14.962	0.151	OK
7.000	15 min Summer	8	SA26	SA27	0.048	1.580	9.843	0.103	OK
6.001	15 min Summer	9	SA27	SA28	0.094	1.460	27.737	0.217	OK
6.002	15 min Summer	9	SA28	SA30	0.102	1.809	44.251	0.165	OK
8.000	15 min Summer	8	SA29	SA30	0.097	1.750	34.528	0.227	OK
6.003	15 min Summer	9	SA30	SA35	0.162	2.183	112.826	0.282	OK
9.000	15 min Summer	8	SA31	SA33	0.056	1.764	13.795	0.140	OK
10.000	15 min Summer	8	SA32	SA33	0.102	1.022	18.004	0.425	OK
9.001	15 min Summer	9	SA33	SA34	0.129	1.207	35.087	0.387	OK
9.002	15 min Summer	9	SA34	SA35	0.101	2.158	51.760	0.161	OK
6.004	15 min Summer	9	SA35	SA36	0.201	2.415	200.523	0.244	OK
6.005	15 min Summer	9	SA36	SA37	0.272	1.553	224.359	0.223	OK
6.006	15 min Summer	9	SA37	SA38	0.280	1.589	239.162	0.238	OK
6.007	15 min Summer	9	SA38	SA39	0.284	1.620	247.994	0.245	OK
6.008	15 min Summer	9	SA39	SA40	0.259	1.878	253.970	0.252	OK
6.009	15 min Summer	9	SA40	SA41	0.292	1.497	267.946	0.165	OK
6.010	15 min Summer	10	SA41	SA42	0.310	1.394	270.453	0.166	OK
6.011	15 min Summer	10	SA42	SA44	0.335	1.340	286.244	0.176	OK
11.000	15 min Summer	8	SA43	SA44	0.059	2.637	21.773	0.151	OK
6.012	15 min Summer	10	SA44	SA45	0.373	1.250	305.665	0.188	OK
6.013	15 min Summer	10	SA45	SA46	0.420	1.061	306.351	0.188	OK
1.014	15 min Summer	10	SA46	SA47	0.464	2.016	666.812	0.407	OK
1.015	15 min Summer	10	SA47	SA48	0.467	2.035	674.680	0.414	OK
1.016	15 min Summer	10	SA48	SA53	0.476	2.032	684.940	0.416	OK
12.000	15 min Summer	8	SA49	SA50	0.068	1.455	14.754	0.142	OK
12.001	15 min Summer	8	SA50	SA51	0.078	2.272	27.745	0.256	OK
12.002	15 min Summer	8	SA51	SA52	0.113	1.688	41.086	0.454	OK
12.003	15 min Summer	8	SA52	SA53	0.075	3.709	51.693	0.139	OK
1.017	15 min Summer	11	SA53	SA54	0.525	1.942	749.002	0.461	OK
1.018	15 min Summer	11	SA54	SA55	0.533	1.934	759.407	0.466	OK
1.019	15 min Summer	11	SA55	SA57	0.480	2.209	763.120	0.471	OK
13.000	15 min Winter	0	SA56	SA57	0.000	0.000	0.000	0.000	OK
1.020	15 min Summer	11	SA57	SA58	0.382	2.995	770.456	0.472	OK
1.021	15 min Summer	11	SA58	SA59	0.372	3.111	771.403	0.188	OK
1.022	15 min Summer	12	SA59	SA60	0.244	4.220	765.650	0.197	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
1.023	600 min Summer	387	SA60	SA61 HB	0.300	0.478	80.722	0.050	OK
1.024	720 min Summer	517	SA61 HB	SA62	0.071	1.722	21.673	0.123	OK

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

100yr+45%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
SA1	15 min Summer	10	44.084	0.257	24.653		OK
SA2	15 min Summer	10	44.065	0.399	57.914		Surcharged
SA3	15 min Summer	10	43.976	0.591	142.551		Surcharged
SA4	15 min Summer	10	43.756	0.714	204.852		Surcharged
SA5	15 min Summer	10	43.606	0.800	223.705		Surcharged
SA6	15 min Summer	11	43.523	0.790	209.750		Surcharged
SA7	15 min Summer	11	43.441	0.774	240.499		Surcharged
SA8	15 min Summer	9	44.754	0.331	144.555		Surcharged
SA9	15 min Summer	8	43.898	0.296	203.081		OK
SA10	15 min Summer	8	43.578	0.364	267.906		OK
SA11	15 min Summer	10	43.358	0.293	246.283		OK
SA12	15 min Summer	11	43.232	0.903	440.184		Surcharged
SA13	15 min Summer	11	43.116	0.891	471.544		Surcharged
SA14	15 min Summer	8	44.249	0.166	70.175		OK
SA15	15 min Summer	8	43.518	0.142	89.120		OK
SA16	15 min Summer	11	42.993	1.011	565.208		Surcharged
SA17	15 min Summer	11	42.888	1.168	622.791		Surcharged
SA18	15 min Summer	9	44.929	0.229	74.372		Surcharged
SA19	15 min Summer	9	45.087	0.617	85.999		Surcharged
SA20	15 min Summer	9	44.511	0.515	174.646		Surcharged
SA21	15 min Summer	10	43.630	0.232	191.528		OK
SA22	15 min Summer	11	42.717	1.401	819.702		Surcharged
SA23	15 min Summer	11	42.500	1.424	850.107		Surcharged
SA24	15 min Summer	11	42.301	1.561	872.663		Surcharged
SA25	15 min Summer	8	45.445	0.129	59.283		OK
SA26	15 min Summer	8	45.012	0.105	38.932		OK
SA27	15 min Summer	8	44.698	0.223	110.922		OK
SA28	15 min Summer	10	44.102	0.313	147.425		OK
SA29	15 min Summer	9	44.362	0.260	131.781		OK
SA30	15 min Summer	10	43.951	0.752	369.085		Surcharged
SA31	15 min Summer	9	44.520	0.142	52.318		OK
SA32	15 min Summer	9	44.472	0.697	68.503		Surcharged
SA33	15 min Summer	9	44.167	0.568	134.075		Surcharged
SA34	15 min Summer	10	43.551	0.262	181.814		OK
SA35	15 min Summer	11	43.204	1.055	544.461		Surcharged
SA36	15 min Summer	11	42.816	1.529	616.933		Surcharged
SA37	15 min Summer	11	42.730	1.575	646.125		Surcharged
SA38	15 min Summer	11	42.615	1.651	662.585		Surcharged
SA39	15 min Summer	11	42.520	1.673	671.632		Surcharged
SA40	15 min Summer	11	42.437	1.818	696.938		Surcharged
SA41	15 min Summer	11	42.383	1.931	698.198		Surcharged
SA42	15 min Summer	11	42.340	1.979	724.008		Surcharged
SA43	15 min Summer	9	43.749	0.127	82.639		OK
SA44	15 min Summer	11	42.290	2.044	761.853		Surcharged
SA45	15 min Summer	11	42.239	2.082	754.897		Surcharged
SA46	15 min Summer	11	42.190	2.115	1679.935		Surcharged
SA47	15 min Summer	11	41.739	1.979	1692.842		Surcharged
SA48	15 min Summer	11	41.444	1.819	1723.097		Surcharged
SA49	15 min Summer	9	43.499	0.212	55.753		OK
SA50	15 min Summer	9	43.310	0.723	103.436		Surcharged
SA51	15 min Summer	9	42.596	0.784	152.747		Surcharged
SA52	15 min Summer	10	41.745	0.192	182.292		OK
SA53	15 min Summer	11	40.916	1.657	1935.776		Surcharged
SA54	15 min Summer	11	40.328	1.365	1952.751		Surcharged
SA55	15 min Summer	11	40.014	1.122	1959.355		Surcharged
SA56	15 min Summer	0	40.738	0.000	0.000		OK
SA57	15 min Summer	11	39.678	0.870	1983.581		OK
SA58	15 min Summer	11	39.378	0.619	1984.071		OK
SA59	720 min Winter	609	38.780	0.780	39.853		OK
SA60	720 min Winter	609	38.780	1.030	39.855		Surcharged
SA61 HB	720 min Winter	609	38.780	1.067	39.821		Surcharged
SA62	720 min Winter	609	36.858	0.095	39.821		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	10	SA1	SA2	0.278	0.779	30.782	0.340	OK
1.001	15 min Summer	9	SA2	SA3	0.300	1.152	63.434	0.701	Surcharged
1.002	15 min Winter	9	SA3	SA4	0.375	1.623	152.556	0.936	Surcharged
1.003	15 min Winter	9	SA4	SA5	0.450	1.343	204.667	0.777	OK
1.004	15 min Winter	9	SA5	SA6	0.450	1.450	230.584	0.875	OK
1.005	15 min Winter	9	SA6	SA7	0.450	1.516	241.099	0.917	OK
1.006	15 min Winter	9	SA7	SA12	0.450	1.866	286.634	1.089	OK
2.000	15 min Summer	9	SA8	SA9	0.269	2.254	145.733	1.034	OK
2.001	15 min Summer	8	SA9	SA10	0.293	2.190	202.538	0.818	OK
2.002	15 min Summer	10	SA10	SA11	0.322	2.307	266.360	1.011	OK
2.003	15 min Summer	10	SA11	SA12	0.371	2.742	271.751	0.395	OK
1.007	15 min Winter	10	SA12	SA13	0.600	1.939	539.916	0.961	Surcharged
1.008	15 min Winter	10	SA13	SA16	0.600	2.279	572.513	1.020	Surcharged
3.000	15 min Summer	8	SA14	SA15	0.154	2.411	69.806	0.822	OK
3.001	15 min Summer	10	SA15	SA16	0.176	3.683	88.675	0.615	OK
1.009	15 min Winter	10	SA16	SA17	0.750	1.962	710.795	0.705	Surcharged
1.010	15 min Winter	10	SA17	SA22	0.750	1.888	766.800	0.760	Surcharged
4.000	15 min Summer	9	SA18	SA20	0.225	2.130	75.896	0.821	OK
5.000	15 min Winter	9	SA19	SA20	0.225	2.068	78.984	1.037	OK
4.001	15 min Summer	10	SA20	SA21	0.266	2.707	175.172	1.112	OK
4.002	15 min Summer	10	SA21	SA22	0.266	3.972	196.436	0.735	OK
1.011	15 min Winter	9	SA22	SA23	0.750	2.227	961.252	0.954	Surcharged
1.012	15 min Winter	9	SA23	SA24	0.750	2.456	979.493	0.973	Surcharged
1.013	15 min Winter	9	SA24	SA46	0.900	1.731	877.268	0.344	OK
6.000	15 min Summer	8	SA25	SA27	0.138	2.372	59.095	0.595	OK
7.000	15 min Summer	8	SA26	SA27	0.127	1.931	38.802	0.405	OK
6.001	15 min Summer	10	SA27	SA28	0.215	2.019	108.824	0.851	OK
6.002	15 min Summer	10	SA28	SA30	0.344	1.923	172.054	0.641	OK
8.000	15 min Summer	9	SA29	SA30	0.280	2.216	134.571	0.885	OK
6.003	15 min Summer	9	SA30	SA35	0.450	2.786	400.820	1.001	OK
9.000	15 min Summer	9	SA31	SA33	0.183	1.993	53.784	0.544	OK
10.000	15 min Winter	8	SA32	SA33	0.225	1.581	62.878	1.485	OK
9.001	15 min Summer	9	SA33	SA34	0.286	1.895	131.669	1.454	OK
9.002	15 min Summer	10	SA34	SA35	0.319	2.868	189.154	0.587	OK
6.004	15 min Winter	9	SA35	SA36	0.600	2.873	691.269	0.841	Surcharged
6.005	15 min Winter	9	SA36	SA37	0.750	1.830	767.699	0.762	Surcharged
6.006	30 min Summer	16	SA37	SA38	0.750	1.915	746.092	0.741	Surcharged
6.007	30 min Summer	16	SA38	SA39	0.750	1.977	748.924	0.741	Surcharged
6.008	30 min Summer	16	SA39	SA40	0.750	2.338	713.781	0.707	Surcharged
6.009	15 min Winter	8	SA40	SA41	0.900	1.623	730.319	0.450	OK
6.010	15 min Winter	8	SA41	SA42	0.900	1.443	674.364	0.415	OK
6.011	15 min Winter	12	SA42	SA44	0.900	1.361	704.532	0.434	OK
11.000	15 min Summer	9	SA43	SA44	0.176	3.693	86.047	0.597	OK
6.012	15 min Winter	12	SA44	SA45	0.900	1.320	747.178	0.460	OK
6.013	15 min Winter	12	SA45	SA46	0.900	1.400	753.247	0.462	OK
1.014	15 min Winter	12	SA46	SA47	0.900	2.574	1637.225	0.999	OK
1.015	15 min Winter	12	SA47	SA48	0.900	2.623	1668.785	1.024	OK
1.016	15 min Winter	13	SA48	SA53	0.900	2.689	1710.845	1.038	OK
12.000	15 min Summer	9	SA49	SA50	0.218	1.851	55.762	0.536	OK
12.001	15 min Winter	9	SA50	SA51	0.225	2.382	94.698	0.873	OK
12.002	15 min Summer	10	SA51	SA52	0.246	2.431	148.813	1.644	OK
12.003	15 min Summer	10	SA52	SA53	0.246	4.674	187.378	0.505	OK
1.017	15 min Winter	11	SA53	SA54	0.900	2.984	1898.224	1.168	OK
1.018	15 min Winter	11	SA54	SA55	0.900	3.007	1913.076	1.175	OK
1.019	15 min Summer	11	SA55	SA57	0.885	3.093	1959.618	1.208	OK
13.000	15 min Summer	11	SA56	SA57	0.098	0.000	0.000	0.000	OK
1.020	15 min Summer	11	SA57	SA58	0.745	3.525	1984.071	1.216	OK
1.021	15 min Summer	11	SA58	SA59	0.668	3.922	1984.334	0.483	OK
1.022	720 min Winter	609	SA59	SA60	0.905	1.352	232.259	0.060	OK
1.023	240 min Summer	176	SA60	SA61 HB	0.900	0.668	233.684	0.144	OK
1.024	720 min Winter	609	SA61 HB	SA62	0.097	2.023	39.821	0.225	OK