

Appendix I Causeway Flow Hydraulic Calculations

Greenfield runoff rate estimation for sites

Greenfield runoff tool

Calculated by:	Stuart Burnett
Site name:	D1886 Climping
Site location:	

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.80899° N
Longitude:	0.58216° W
Reference:	2220107884
Date:	Jul 19 2021 13:21

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):

27.15

Methodology

Q_{BAR} estimation method:

Calculate from SPR and SAAR

SPR estimation method:

Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	722	722
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	80.87	80.87
1 in 1 year (l/s):	68.74	68.74
1 in 30 years (l/s):	186	186
1 in 100 year (l/s):	257.98	257.98
1 in 200 years (l/s):	302.46	302.46

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.ukds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.ukds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation for sites

Greenfield runoff tool

Calculated by:	Stuart Burnett
Site name:	Church Lane, Climping
Site location:	

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.80884° N
Longitude:	0.58194° W
Reference:	2834189257
Date:	Aug 11 2021 15:33

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	6.7
-----------------------	-----

Methodology

Q _{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	709	709
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	19.54	19.54
1 in 1 year (l/s):	16.61	16.61
1 in 30 years (l/s):	44.94	44.94
1 in 100 year (l/s):	62.32	62.32
1 in 200 years (l/s):	73.07	73.07

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.ukds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.ukds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	250.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.500
Ratio-R	0.400	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)
40		5.00	6.250	1350	499628.126	101998.427	0.900
46		5.00	7.000	1350	499857.146	101970.056	1.500
45			7.000	1350	499851.998	101980.244	1.538
44	0.048	5.00	7.450	1350	499849.046	101997.983	2.048
43			7.450	1350	499843.311	102001.186	2.070
42			7.300	1350	499840.242	102021.702	1.989
41	0.081	5.00	7.025	1350	499834.399	102045.904	1.797
39			6.700	1350	499832.456	102053.992	1.489
51	0.023	5.00	7.000	1350	499856.886	102050.782	0.560
50			6.800	1350	499855.630	102055.621	1.500
52	0.023	5.00	6.625	1350	499897.272	102058.962	0.560
49	0.038	5.00	6.400	1350	499896.017	102063.796	1.500
53	0.023	5.00	6.250	1350	499937.446	102069.000	0.560
48	0.045	5.00	6.025	1350	499936.190	102073.840	1.500
57	0.023	5.00	7.025	1350	500044.686	102101.306	0.560
56			6.825	1350	500043.395	102106.282	1.500
55	0.089	5.00	6.300	1350	499984.692	102090.899	1.500
54	0.023	5.00	6.300	1350	499962.429	102077.626	0.560
47	0.036	5.00	6.075	1350	499961.172	102082.465	1.638
38			5.800	1350	499959.330	102089.285	1.392
67	0.137	5.00	7.200	1350	499882.411	102003.736	1.500
69	0.022	5.00	6.825	1350	499928.477	101977.484	0.560
68			6.850	1350	499930.931	101981.841	1.500
70	0.022	5.00	6.625	1350	499920.441	102006.374	0.485
66	0.134	5.00	6.800	1500	499922.895	102010.731	1.550
65	0.021	5.00	7.675	1350	499989.143	102028.687	2.654
64			7.625	1350	500002.486	102039.397	2.661
63	0.274	5.00	7.250	1350	500045.949	102051.056	2.436
62			6.875	1350	500089.412	102062.716	2.211
61	0.048	5.00	6.625	1350	500114.777	102073.665	2.053
60	0.130	5.00	6.300	1350	500100.240	102115.044	1.874
59	0.024	5.00	6.350	1350	500095.185	102117.661	1.943
58	0.046	5.00	6.675	1350	500074.371	102111.789	2.340
37			6.300	1350	500072.486	102118.950	2.271
36			5.800	1350	500135.095	102136.419	1.901
35	0.035		5.250	1350	500150.409	102138.812	1.708
97	0.022	5.00	6.500	1350	500048.650	101884.920	0.560
96	0.040	5.00	6.475	1350	500047.557	101889.799	1.500
98	0.022	5.00	6.750	1350	500126.509	101903.403	0.560
95	0.077	5.00	6.725	1350	500125.415	101908.282	2.017
94	0.130	5.00	6.025	1500	500201.897	101929.387	1.581



Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
93			5.925	1500	500207.277	101936.040	1.510
92	0.044	5.00	5.900	1500	500209.094	101965.777	1.584
91	0.040	5.00	6.100	1500	500207.930	101990.823	1.868
102	0.042	5.00	6.750	1500	500052.457	101987.415	1.500
101	0.056	5.00	6.325	1500	500097.649	101998.782	1.500
104	0.109	5.00	6.575	1500	500128.756	102047.587	1.500
103		5.00	5.575	1350	500131.457	102000.381	1.500
100	0.119	5.00	6.275	1500	500142.841	102010.149	2.250
99			6.525	1350	500181.139	102019.782	2.632
90	0.059	5.00	6.400	1500	500202.012	102033.504	2.590
89	0.105	5.00	5.925	1500	500222.620	102062.926	2.235
106	0.039	5.00	5.850	1350	500246.509	102103.272	0.560
105	0.047	5.00	5.725	1350	500251.413	102104.247	1.500
107		5.00	5.925	1350	500265.198	102035.007	1.500
88	0.235	5.00	5.575	1350	500258.245	102069.971	2.006
87	0.023	5.00	5.975	1500	500322.898	102082.749	2.626
108		5.00	5.000	1350	500360.312	102076.275	1.500
86	0.039	5.00	5.450	1350	500364.625	102088.669	2.241
85	0.071		4.750	1350	500364.439	102096.450	1.567
135	0.018	5.00	7.650	1350	499877.144	101848.025	0.560
134			7.600	1350	499881.493	101850.492	1.500
136	0.018	5.00	7.350	1350	499868.474	101875.264	0.560
133	0.027	5.00	7.475	1350	499873.420	101875.999	1.500
132	0.019	5.00	7.200	1350	499873.319	101901.395	1.500
138	0.021	5.00	7.025	1350	499871.302	101949.226	1.200
137	0.041	5.00	6.975	1350	499878.722	101926.064	1.531
131	0.034	5.00	7.150	1350	499883.418	101903.497	1.783
141	0.022	5.00	6.800	1350	499935.244	101953.221	0.560
140			6.800	1350	499939.616	101950.795	1.500
139	0.022	5.00	6.450	1350	499945.801	101920.321	0.560
130	0.255	5.00	6.500	1500	499949.788	101917.304	1.500
144	0.044	5.00	7.275	1350	499924.780	101851.825	1.500
143	0.062	5.00	6.625	1350	500007.627	101880.782	1.500
142	0.062	5.00	6.850	1350	500009.016	101893.061	1.766
129	0.106	5.00	6.400	1500	499995.573	101934.297	1.675
128			6.475	1500	500006.448	101937.279	1.775
127	0.183	5.00	6.675	1500	500023.856	101947.911	2.025
149	0.050	5.00	7.475	1350	499995.898	102007.015	1.500
148	0.084	5.00	7.250	1350	500005.325	101979.738	1.500
147			7.075	1350	500016.082	101974.745	1.500
146	0.039	5.00	6.925	1350	500028.582	101972.215	1.500
145	0.045	5.00	6.775	1350	500038.771	101938.999	0.560
126			6.625	1500	500037.677	101943.878	2.000
150	0.045	5.00	6.025	1350	500098.851	101953.624	1.500
125	0.205	5.00	6.025	1500	500097.757	101958.502	1.550
124	0.100		5.575	1350	500101.822	101969.637	1.457
117		5.00	6.075	1350	500271.059	102016.491	1.500
116	0.103	5.00	5.625	1350	500281.903	101970.998	1.500
115			5.650	1350	500287.748	101967.867	1.547
114	0.032	5.00	5.900	1350	500312.544	101976.588	1.885
118	0.025	5.00	6.000	1350	500326.636	101989.214	0.560
113	0.009	5.00	6.100	1350	500322.224	101991.567	2.144



Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
119	0.025	5.00	5.675	1350	500347.052	102026.720	0.560
112	0.031	5.00	5.775	1350	500342.251	102028.118	1.958
121		5.00	6.150	1350	500294.578	102033.197	1.500
120	0.085	5.00	5.925	1350	500320.049	102038.192	1.500
122	0.025	5.00	5.700	1350	500348.394	102035.546	0.560
111	0.011	5.00	5.675	1350	500343.531	102036.707	1.887
123	0.025	5.00	5.450	1350	500342.683	102063.381	0.560
110	0.038	5.00	5.350	1350	500347.620	102064.168	1.655
109	0.015		5.025	1350	500356.244	102071.194	1.518
20		5.00	5.250	1350	500191.603	102148.027	1.750
19	0.154	5.00	6.000	1350	500198.850	102154.272	2.532
18	0.014	5.00	6.375	1350	500242.808	102164.945	3.058
13	0.039	5.00	5.975	1350	500253.819	102119.100	0.560
12			5.975	1350	500258.723	102120.076	1.500
15	0.039	5.00	5.725	1350	500313.942	102105.774	0.560
14			5.600	1350	500318.846	102106.749	1.500
16	0.039	5.00	5.525	1350	500317.414	102132.256	0.560
11	0.107	5.00	5.425	1350	500312.572	102131.010	1.500
17	0.039	5.00	5.650	1350	500302.137	102151.419	0.560
10	0.141	5.00	5.525	1350	500307.041	102152.394	1.674
9	0.202	5.00	5.825	1350	500298.229	102176.232	2.697
21		5.00	4.750	1350	500350.232	102180.026	1.500
8			4.800	1350	500334.987	102187.251	2.050
7	0.054		4.600	1350	500338.880	102212.957	2.073
75	0.050	5.00	5.650	1350	500184.759	102189.160	1.500
74	0.040	5.00	5.400	1350	500179.919	102211.618	1.500
73	0.073	5.00	5.200	1350	500161.916	102254.667	1.500
72	0.040	5.00	5.500	1350	500151.966	102285.178	1.907
71	0.062		4.750	1350	500174.000	102308.902	1.394
4		5.00	4.500	1350	500347.289	102215.756	2.000
3			4.550	1800	500352.334	102210.207	2.450
2			3.940	1350	500368.037	102213.765	2.200
1			1.860	1350	500441.039	102253.173	0.750
81	0.022	5.00	6.375	1350	500241.160	102198.405	0.560
80			6.250	1350	500246.064	102199.380	1.500
82	0.022	5.00	6.150	1350	500235.809	102219.826	0.560
79	0.047	5.00	5.900	1350	500240.712	102220.802	1.500
83	0.022	5.00	5.800	1350	500226.138	102251.599	0.560
78	0.069	5.00	5.575	1350	500231.042	102252.574	1.500
84	0.046	5.00	5.575	1350	500187.327	102295.367	1.500
77	0.189	5.00	5.200	1350	500236.682	102287.365	1.500
76	0.062		4.750	1350	500238.214	102296.809	1.394
34		5.00	6.425	1350	500197.596	102048.247	1.500
33			6.425	1350	500189.633	102054.035	1.533
32	0.058	5.00	6.425	1350	500183.544	102062.788	1.569
31	0.158	5.00	6.425	1500	500161.656	102116.842	1.763
30	0.035		5.250	1350	500164.556	102138.145	1.708
27		5.00	5.500	1350	500314.299	102206.500	1.500
26	0.090	5.00	5.200	1350	500299.774	102242.823	1.500
25	0.038	5.00	5.375	1350	500292.899	102266.019	1.756
24	0.044		4.750	1350	500316.877	102273.783	1.459
6		5.00	4.750	1350	500328.581	102262.319	1.500



Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
5	0.054		4.500	1350	500332.011	102238.566	1.973
23		5.00	4.750	1350	500279.099	102294.729	1.500
22	0.044		4.750	1350	500300.228	102291.562	1.571
29		5.00	4.750	1350	500366.027	102126.950	1.500
28	0.081		4.750	1350	500364.748	102136.975	1.534

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	40	39	211.751	0.600	5.350	5.211	0.139	1523.4	500	11.45	114.3
2.000	46	45	11.415	0.600	5.500	5.462	0.038	300.0	300	5.21	161.5
2.001	45	44	17.983	0.600	5.462	5.402	0.060	300.0	300	5.54	157.8
2.002	44	43	6.569	0.600	5.402	5.380	0.022	300.0	300	5.66	156.5
2.003	43	42	20.744	0.600	5.380	5.311	0.069	300.0	300	6.05	152.5
2.004	42	41	24.897	0.600	5.311	5.228	0.083	300.0	300	6.51	148.2
2.005	41	39	8.318	0.600	5.228	5.211	0.017	500.0	300	6.71	146.3
1.001	39	38	131.697	0.022	5.211	4.408	0.803	164.0	500	12.91	107.2
3.000	51	50	4.999	0.600	6.440	6.407	0.033	150.0	150	5.10	162.7
3.001	50	49	41.206	0.600	5.300	4.900	0.400	103.0	300	5.55	157.7
4.000	52	49	4.994	0.600	6.065	6.032	0.033	150.0	150	5.10	162.7
3.002	49	48	41.410	0.600	4.900	4.525	0.375	110.4	300	6.01	152.9
5.000	53	48	5.000	0.600	5.690	5.657	0.033	150.0	150	5.10	162.7
3.003	48	47	26.429	0.600	4.525	4.437	0.088	300.0	300	6.50	148.3
6.000	57	56	5.141	0.600	6.465	6.431	0.034	150.0	150	5.10	162.7
6.001	56	55	60.685	0.600	5.325	4.800	0.525	115.6	300	5.80	155.1
6.002	55	47	24.986	0.600	4.800	4.437	0.363	68.8	300	6.02	152.9
7.000	54	47	5.000	0.600	5.740	5.707	0.033	150.0	150	5.10	162.7
3.004	47	38	7.064	0.600	4.437	4.408	0.029	243.6	300	6.61	147.2

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	0.548	107.5	0.0	0.400	0.989	0.000	0.0
2.000	0.902	63.8	0.0	1.200	1.238	0.000	0.0
2.001	0.902	63.8	0.0	1.238	1.748	0.000	0.0
2.002	0.902	63.8	20.4	1.748	1.770	0.048	0.0
2.003	0.902	63.8	19.8	1.770	1.689	0.048	0.0
2.004	0.902	63.8	19.3	1.689	1.497	0.048	0.0
2.005	0.696	49.2	51.2	1.497	1.189	0.129	0.0
1.001	1.498	1123.3	37.5	0.989	0.892	0.129	0.0
3.000	0.818	14.5	10.1	0.410	0.243	0.023	0.0
3.001	1.549	109.5	9.8	1.200	1.200	0.023	0.0
4.000	0.818	14.5	10.1	0.410	0.218	0.023	0.0
3.002	1.495	105.7	34.8	1.200	1.200	0.084	0.0
5.000	0.818	14.5	10.1	0.410	0.218	0.023	0.0
3.003	0.902	63.8	61.1	1.200	1.338	0.152	0.0
6.000	0.818	14.5	10.1	0.410	0.244	0.023	0.0
6.001	1.461	103.3	9.7	1.200	1.200	0.023	0.0
6.002	1.897	134.1	46.4	1.200	1.338	0.112	0.0
7.000	0.818	14.5	10.1	0.410	0.218	0.023	0.0
3.004	1.003	70.9	128.9	1.338	1.092	0.323	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)
1.002	38	37	116.980	0.022	4.408	4.029	0.379	308.7	500	14.70	99.8
8.000	67	66	41.084	0.600	5.700	5.250	0.450	91.3	450	5.32	160.2
9.000	69	68	5.001	0.600	6.265	6.232	0.033	150.0	150	5.10	162.7
9.001	68	66	29.987	0.600	5.350	5.250	0.100	300.0	450	5.53	157.9
10.000	70	66	5.001	0.600	6.140	6.107	0.033	150.0	150	5.10	162.7
8.001	66	65	68.638	0.600	5.250	5.021	0.229	300.0	450	6.51	148.1
8.002	65	64	17.110	0.600	5.021	4.964	0.057	300.0	450	6.75	145.9
8.003	64	63	45.000	0.600	4.954	4.814	0.150	300.0	450	7.39	140.5
8.004	63	62	45.000	0.600	4.814	4.664	0.150	300.0	450	8.04	135.6
8.005	62	61	27.627	0.600	4.664	4.572	0.092	300.0	450	8.43	132.8
8.006	61	60	43.858	0.600	4.572	4.426	0.146	300.0	450	9.06	128.5
8.007	60	59	5.692	0.600	4.426	4.407	0.019	300.0	450	9.14	127.9
8.008	59	58	21.626	0.600	4.407	4.335	0.072	300.0	450	9.45	125.9
8.009	58	37	7.405	0.600	4.335	4.310	0.025	300.0	450	9.55	125.2
1.003	37	36	65.000	0.022	4.029	3.899	0.130	500.0	500	15.96	95.3
1.004	36	35	15.500	0.022	3.899	3.661	0.238	65.1	450	16.16	94.6
11.000	97	96	5.000	0.600	5.940	5.907	0.033	150.0	150	5.10	162.7
11.001	96	95	80.022	0.600	4.975	4.708	0.267	300.0	300	6.58	147.5
12.000	98	95	5.000	0.600	6.190	6.157	0.033	150.0	150	5.10	162.7
11.002	95	94	79.341	0.600	4.708	4.594	0.114	696.0	300	8.83	130.1
11.003	94	93	8.556	0.600	4.444	4.415	0.029	300.0	450	8.95	129.2
11.004	93	92	29.792	0.600	4.415	4.316	0.099	300.0	450	9.37	126.4
11.005	92	91	25.073	0.600	4.316	4.232	0.084	300.0	450	9.73	124.1
11.006	91	90	43.089	0.600	4.232	3.810	0.422	102.1	450	10.09	121.9

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.002	1.092	818.8	122.3	0.892	1.771	0.452	0.0
8.000	2.128	338.4	59.5	1.050	1.100	0.137	0.0
9.000	0.818	14.5	9.7	0.410	0.468	0.022	0.0
9.001	1.168	185.8	9.4	1.050	1.100	0.022	0.0
10.000	0.818	14.5	9.7	0.335	0.543	0.022	0.0
8.001	1.168	185.8	126.5	1.100	2.204	0.315	0.0
8.002	1.168	185.8	132.9	2.204	2.211	0.336	0.0
8.003	1.168	185.8	128.0	2.211	1.986	0.336	0.0
8.004	1.168	185.8	224.2	1.986	1.761	0.610	0.0
8.005	1.168	185.8	219.5	1.761	1.603	0.610	0.0
8.006	1.168	185.8	229.2	1.603	1.424	0.658	0.0
8.007	1.168	185.8	273.3	1.424	1.493	0.788	0.0
8.008	1.168	185.8	277.1	1.493	1.890	0.812	0.0
8.009	1.168	185.8	291.2	1.890	1.540	0.858	0.0
1.003	0.858	643.3	338.3	1.771	1.401	1.310	0.0
1.004	1.313	208.8	335.9	1.451	1.139	1.310	0.0
11.000	0.818	14.5	9.7	0.410	0.418	0.022	0.0
11.001	0.902	63.8	24.8	1.200	1.717	0.062	0.0
12.000	0.818	14.5	9.7	0.410	0.418	0.022	0.0
11.002	0.588	41.6	56.8	1.717	1.131	0.161	0.0
11.003	1.168	185.8	101.9	1.131	1.060	0.291	0.0
11.004	1.168	185.8	99.7	1.060	1.134	0.291	0.0
11.005	1.168	185.8	112.6	1.134	1.418	0.335	0.0
11.006	2.012	319.9	123.9	1.418	2.140	0.375	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)
13.000	102	101	46.600	0.600	5.250	4.825	0.425	109.6	450	5.40	159.2
13.001	101	100	46.600	0.600	4.825	4.025	0.800	58.2	450	5.69	156.2
14.000	104	100	40.000	0.600	5.075	4.025	1.050	38.1	450	5.20	161.6
15.000	103	100	15.000	0.600	4.075	4.025	0.050	300.0	450	5.21	161.4
13.002	100	99	39.491	0.600	4.025	3.893	0.132	300.0	450	6.25	150.5
13.003	99	90	24.979	0.600	3.893	3.810	0.083	300.0	450	6.61	147.2
11.007	90	89	35.921	0.600	3.810	3.690	0.120	300.0	450	10.60	118.9
11.008	89	88	36.315	0.600	3.690	3.569	0.121	300.0	450	11.12	116.0
16.000	106	105	5.000	0.600	5.290	5.257	0.033	150.0	150	5.10	162.7
16.001	105	88	34.950	0.600	4.225	3.569	0.656	59.2	450	5.21	160.3
17.000	107	88	35.649	0.600	4.425	3.569	0.856	41.6	450	5.19	161.7
11.009	88	87	65.904	0.600	3.569	3.349	0.220	300.0	525	11.97	111.6
11.010	87	86	42.145	0.600	3.349	3.209	0.140	300.0	525	12.52	109.0
18.000	108	86	13.123	0.600	3.500	3.359	0.141	93.1	300	5.13	162.3
11.011	86	85	7.783	0.600	3.209	3.183	0.026	300.0	525	12.62	108.5
19.000	135	134	5.000	0.600	7.090	7.057	0.033	150.0	150	5.10	162.7
19.001	134	133	26.754	0.600	6.100	5.975	0.125	214.0	300	5.52	158.0
20.000	136	133	5.000	0.600	6.790	6.757	0.033	150.0	150	5.10	162.7
19.002	133	132	25.396	0.600	5.975	5.700	0.275	92.3	300	5.78	155.3
19.003	132	131	10.315	0.600	5.700	5.517	0.183	56.4	300	5.86	154.4
21.000	138	137	24.321	0.600	5.825	5.594	0.231	105.2	300	5.26	160.8
21.001	137	131	23.050	0.600	5.444	5.367	0.077	300.0	450	5.59	157.2
19.004	131	130	67.791	0.600	5.367	5.000	0.367	184.7	450	6.62	147.2
22.000	141	140	5.000	0.600	6.240	6.207	0.033	150.0	150	5.10	162.7

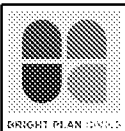
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
13.000	1.941	308.7	18.1	1.050	1.050	0.042	0.0
13.001	2.667	424.2	41.5	1.050	1.800	0.098	0.0
14.000	3.301	525.1	47.7	1.050	1.800	0.109	0.0
15.000	1.168	185.8	0.0	1.050	1.800	0.000	0.0
13.002	1.168	185.8	133.0	1.800	2.182	0.326	0.0
13.003	1.168	185.8	130.1	2.182	2.140	0.326	0.0
11.007	1.168	185.8	244.8	2.140	1.785	0.760	0.0
11.008	1.168	185.8	271.9	1.785	1.556	0.865	0.0
16.000	0.818	14.5	17.2	0.410	0.318	0.039	0.0
16.001	2.790	443.7	37.4	1.050	1.556	0.086	0.0
17.000	3.157	502.1	0.0	1.050	1.556	0.000	0.0
11.009	1.288	278.8	358.7	1.481	2.101	1.186	0.0
11.010	1.288	278.8	357.1	2.101	1.716	1.209	0.0
18.000	1.630	115.2	0.0	1.200	1.791	0.000	0.0
11.011	1.288	278.8	367.1	1.716	1.042	1.248	0.0
19.000	0.818	14.5	7.9	0.410	0.393	0.018	0.0
19.001	1.071	75.7	7.7	1.200	1.200	0.018	0.0
20.000	0.818	14.5	7.9	0.410	0.568	0.018	0.0
19.002	1.636	115.7	26.5	1.200	1.200	0.063	0.0
19.003	2.098	148.3	34.3	1.200	1.333	0.082	0.0
21.000	1.532	108.3	9.2	0.900	1.081	0.021	0.0
21.001	1.168	185.8	26.4	1.081	1.333	0.062	0.0
19.004	1.492	237.3	71.0	1.333	1.050	0.178	0.0
22.000	0.818	14.5	9.7	0.410	0.443	0.022	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)
22.001	140	130	35.002	0.600	5.300	5.150	0.150	233.3	300	5.67	156.4
23.000	139	130	5.000	0.600	5.890	5.857	0.033	150.0	150	5.10	162.7
19.005	130	129	48.837	0.600	5.000	4.800	0.200	244.2	450	7.24	141.7
24.000	144	143	87.762	0.600	5.775	5.125	0.650	135.0	450	5.84	154.7
24.001	143	142	12.357	0.600	5.125	5.084	0.041	300.0	450	6.01	152.9
24.002	142	129	43.372	0.600	5.084	4.800	0.284	152.7	450	6.45	148.7
19.006	129	128	11.276	0.600	4.725	4.700	0.025	451.1	525	7.42	140.3
19.007	128	127	20.398	0.600	4.700	4.650	0.050	408.0	525	7.73	137.9
19.008	127	126	14.397	0.600	4.650	4.625	0.025	575.9	525	7.99	135.9
25.000	149	148	28.860	0.600	5.975	5.750	0.225	128.3	300	5.25	159.9
25.001	148	147	11.861	0.600	5.750	5.575	0.175	67.8	300	5.45	158.8
25.002	147	146	12.760	0.600	5.575	5.425	0.150	85.1	300	5.58	157.4
25.003	146	126	29.761	0.600	5.425	4.796	0.629	47.3	300	5.79	155.1
26.000	145	126	5.000	0.600	6.215	6.182	0.033	150.0	150	5.10	162.7
19.009	126	125	61.834	0.600	4.625	4.475	0.150	412.2	525	8.93	129.4
27.000	150	125	4.999	0.600	4.525	4.492	0.033	150.0	150	5.10	162.7
19.010	125	124	11.854	0.600	4.475	4.450	0.025	474.2	525	9.12	128.0
28.000	117	116	46.768	0.600	4.575	4.275	0.300	155.9	300	5.62	156.9
28.001	116	115	6.631	0.600	4.125	4.103	0.022	300.0	450	5.71	155.9
28.002	115	114	26.285	0.600	4.103	4.015	0.088	300.0	450	6.09	152.1
28.003	114	113	17.835	0.600	4.015	3.956	0.059	300.0	450	6.34	149.7
29.000	118	113	5.000	0.600	5.440	5.407	0.033	150.0	150	5.10	162.7
28.004	113	112	41.678	0.600	3.956	3.817	0.139	300.0	450	6.94	144.3
30.000	119	112	5.000	0.600	5.115	5.082	0.033	150.0	150	5.10	162.7

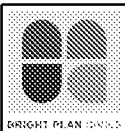
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
22.001	1.025	72.4	9.3	1.200	1.050	0.022	0.0
23.000	0.818	14.5	9.7	0.410	0.493	0.022	0.0
19.005	1.296	206.2	183.3	1.050	1.150	0.477	0.0
24.000	1.748	277.9	18.4	1.050	1.050	0.044	0.0
24.001	1.168	185.8	43.9	1.050	1.316	0.106	0.0
24.002	1.642	261.2	67.7	1.316	1.150	0.168	0.0
19.006	1.048	226.8	285.6	1.150	1.250	0.751	0.0
19.007	1.102	238.7	280.7	1.250	1.500	0.751	0.0
19.008	0.926	200.5	344.1	1.500	1.475	0.934	0.0
25.000	1.386	98.0	21.7	1.200	1.200	0.050	0.0
25.001	1.912	135.2	57.7	1.200	1.200	0.134	0.0
25.002	1.705	120.6	57.2	1.200	1.200	0.134	0.0
25.003	2.291	161.9	72.7	1.200	1.529	0.173	0.0
26.000	0.818	14.5	19.8	0.410	0.293	0.045	0.0
19.009	1.097	237.4	403.9	1.475	1.025	1.152	0.0
27.000	0.818	14.5	19.8	1.350	1.383	0.045	0.0
19.010	1.022	221.2	486.5	1.025	0.600	1.402	0.0
28.000	1.256	88.8	0.0	1.200	1.050	0.000	0.0
28.001	1.168	185.8	43.5	1.050	1.097	0.103	0.0
28.002	1.168	185.8	42.5	1.097	1.435	0.103	0.0
28.003	1.168	185.8	54.8	1.435	1.694	0.135	0.0
29.000	0.818	14.5	11.0	0.410	0.543	0.025	0.0
28.004	1.168	185.8	66.1	1.694	1.508	0.169	0.0
30.000	0.818	14.5	11.0	0.410	0.543	0.025	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)
28.005	112	111	8.684	0.600	3.817	3.788	0.029	300.0	450	7.06	143.3
31.000	121	120	25.956	0.600	4.650	4.425	0.225	115.4	300	5.30	160.5
31.001	120	111	23.529	0.600	4.425	3.788	0.637	36.9	300	5.45	158.8
32.000	122	111	5.000	0.600	5.140	5.107	0.033	150.0	150	5.10	162.7
28.006	111	110	27.764	0.600	3.788	3.695	0.093	300.0	450	7.46	140.0
33.000	123	110	4.999	0.600	4.890	4.857	0.033	150.0	150	5.10	162.7
28.007	110	109	11.124	0.600	3.695	3.658	0.037	300.0	450	7.62	138.8
34.000	20	19	9.567	0.600	3.500	3.468	0.032	300.0	300	5.18	161.8
34.001	19	18	45.235	0.600	3.468	3.317	0.151	300.0	300	6.01	152.9
34.002	18	9	56.559	0.600	3.317	3.278	0.039	1450.2	300	8.34	133.4
35.000	13	12	5.000	0.600	5.415	5.382	0.033	150.0	150	5.10	162.7
35.001	12	11	54.948	0.600	4.475	3.925	0.550	99.9	300	5.68	156.3
36.000	15	14	5.000	0.600	5.165	5.132	0.033	150.0	150	5.10	162.7
36.001	14	11	25.059	0.600	4.100	3.925	0.175	143.2	450	5.35	159.9
37.000	16	11	5.000	0.600	4.965	4.932	0.033	150.0	150	5.10	162.7
35.002	11	10	22.088	0.600	3.925	3.851	0.074	300.0	450	6.00	153.0
38.000	17	10	5.000	0.600	5.090	5.057	0.033	150.0	150	5.10	162.7
35.003	10	9	25.415	0.600	3.851	3.128	0.723	35.2	450	6.12	151.8
34.003	9	8	38.374	0.600	3.128	2.750	0.378	101.5	450	8.66	131.2
39.000	21	8	16.870	0.600	3.250	2.750	0.500	33.7	450	5.08	163.0
34.004	8	7	25.999	0.600	2.750	2.663	0.087	300.0	450	9.03	128.7
40.000	75	74	22.974	0.600	4.150	3.900	0.250	91.9	300	5.23	161.2
40.001	74	73	46.662	0.600	3.900	3.700	0.200	233.3	300	5.99	153.1
40.002	73	72	32.092	0.600	3.700	3.593	0.107	300.0	300	6.59	147.4

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
28.005	1.168	185.8	87.4	1.508	1.437	0.225	0.0
31.000	1.463	103.4	0.0	1.200	1.200	0.000	0.0
31.001	2.595	183.4	36.6	1.200	1.587	0.085	0.0
32.000	0.818	14.5	11.0	0.410	0.418	0.025	0.0
28.006	1.168	185.8	131.3	1.437	1.205	0.346	0.0
33.000	0.818	14.5	11.0	0.410	0.343	0.025	0.0
28.007	1.168	185.8	153.8	1.205	0.917	0.409	0.0
34.000	0.902	63.8	0.0	1.450	2.232	0.000	0.0
34.001	0.902	63.8	63.8	2.232	2.758	0.154	0.0
34.002	0.404	28.6	60.7	2.758	2.247	0.168	0.0
35.000	0.818	14.5	17.2	0.410	0.443	0.039	0.0
35.001	1.573	111.2	16.5	1.200	1.200	0.039	0.0
36.000	0.818	14.5	17.2	0.410	0.318	0.039	0.0
36.001	1.697	269.8	16.9	1.050	1.050	0.039	0.0
37.000	0.818	14.5	17.2	0.410	0.343	0.039	0.0
35.002	1.168	185.8	92.9	1.050	1.224	0.224	0.0
38.000	0.818	14.5	17.2	0.410	0.318	0.039	0.0
35.003	3.437	546.7	166.2	1.224	2.247	0.404	0.0
34.003	2.017	320.8	275.2	2.247	1.600	0.774	0.0
39.000	3.509	558.1	0.0	1.050	1.600	0.000	0.0
34.004	1.168	185.8	269.9	1.600	1.487	0.774	0.0
40.000	1.640	116.0	21.8	1.200	1.200	0.050	0.0
40.001	1.025	72.4	37.3	1.200	1.200	0.090	0.0
40.002	0.902	63.8	65.1	1.200	1.607	0.163	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)
40.003	72	71	32.378	0.600	3.593	3.485	0.108	300.0	300	7.18	142.2
41.000	4	3	7.500	0.600	2.500	2.100	0.400	18.7	300	5.03	163.6
41.001	3	2	16.101	0.600	2.100	1.740	0.360	44.7	300	5.15	162.2
41.002	2	1	82.960	0.600	1.740	1.110	0.630	131.7	300	6.16	151.5
42.000	81	80	5.000	0.600	5.815	5.782	0.033	150.0	150	5.10	162.7
42.001	80	79	22.080	0.600	4.750	4.400	0.350	63.1	300	5.29	160.6
43.000	82	79	4.999	0.600	5.590	5.557	0.033	150.0	150	5.10	162.7
42.002	79	78	33.211	0.600	4.400	4.075	0.325	102.2	300	5.64	156.7
44.000	83	78	5.000	0.600	5.240	5.207	0.033	150.0	150	5.10	162.7
42.003	78	77	35.245	0.600	4.075	3.850	0.225	156.6	300	6.11	151.9
45.000	84	77	49.999	0.600	4.075	3.700	0.375	123.3	300	5.61	157.0
42.004	77	76	9.567	0.600	3.700	3.668	0.032	300.0	450	6.25	150.6
46.000	34	33	9.844	0.600	4.925	4.892	0.033	300.0	300	5.18	161.8
46.001	33	32	10.663	0.600	4.892	4.856	0.036	300.0	300	5.38	159.6
46.002	32	31	53.317	0.600	4.856	4.662	0.194	300.0	300	6.46	148.6
46.003	31	30	21.499	0.600	4.662	4.447	0.215	100.0	300	6.68	146.5
47.000	27	26	39.120	0.600	4.000	3.700	0.300	130.4	300	5.47	152.5
47.001	26	25	24.193	0.600	3.700	3.619	0.081	300.0	300	5.92	153.8
47.002	25	24	25.204	0.600	3.619	3.535	0.084	300.0	300	6.39	149.3
48.000	6	5	23.999	0.600	3.250	3.170	0.080	300.0	450	5.34	160.0
49.000	23	22	21.365	0.600	3.250	3.179	0.071	300.0	450	5.20	160.4
50.000	29	28	10.106	0.600	3.250	3.216	0.034	300.0	450	5.14	162.2

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
40.003	0.902	63.8	78.3	1.607	0.965	0.203	0.0
41.000	3.647	257.8	0.0	1.700	2.150	0.000	0.0
41.001	2.357	166.6	0.0	2.150	1.900	0.000	0.0
41.002	1.368	96.7	0.0	1.900	0.450	0.000	0.0
42.000	0.818	14.5	9.7	0.410	0.318	0.022	0.0
42.001	1.982	140.1	9.6	1.200	1.200	0.022	0.0
43.000	0.818	14.5	9.7	0.410	0.193	0.022	0.0
42.002	1.555	109.9	38.6	1.200	1.200	0.091	0.0
44.000	0.818	14.5	9.7	0.410	0.218	0.022	0.0
42.003	1.253	88.6	74.9	1.200	1.050	0.182	0.0
45.000	1.360	96.1	19.6	1.200	1.200	0.046	0.0
42.004	1.168	185.8	170.2	1.050	0.632	0.417	0.0
46.000	0.902	63.8	0.0	1.200	1.233	0.000	0.0
46.001	0.902	63.8	0.0	1.233	1.269	0.000	0.0
46.002	0.902	63.8	23.4	1.269	1.463	0.058	0.0
46.003	1.572	111.1	85.8	1.463	0.503	0.216	0.0
47.000	1.375	97.2	0.0	1.200	1.200	0.000	0.0
47.001	0.902	63.8	37.5	1.200	1.456	0.090	0.0
47.002	0.902	63.8	51.8	1.456	0.915	0.128	0.0
48.000	1.168	185.8	0.0	1.050	0.880	0.000	0.0
49.000	1.168	185.8	0.0	1.050	1.121	0.000	0.0
50.000	1.168	185.8	0.0	1.050	1.084	0.000	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	211.751	1523.4	500	Circular	6.250	5.350	0.400	6.700	5.211	0.989
2.000	11.415	300.0	300	Circular	7.000	5.500	1.200	7.000	5.462	1.238
2.001	17.983	300.0	300	Circular	7.000	5.462	1.238	7.450	5.402	1.748
2.002	6.569	300.0	300	Circular	7.450	5.402	1.748	7.450	5.380	1.770
2.003	20.744	300.0	300	Circular	7.450	5.380	1.770	7.300	5.311	1.689
2.004	24.897	300.0	300	Circular	7.300	5.311	1.689	7.025	5.228	1.497
2.005	8.318	500.0	300	Circular	7.025	5.228	1.497	6.700	5.211	1.189
1.001	131.697	164.0	500	Ditch	6.700	5.211	0.989	5.800	4.408	0.892
3.000	4.999	150.0	150	Circular	7.000	6.440	0.410	6.800	6.407	0.243
3.001	41.206	103.0	300	Circular	6.800	5.300	1.200	6.400	4.900	1.200
4.000	4.994	150.0	150	Circular	6.625	6.065	0.410	6.400	6.032	0.218
3.002	41.410	110.4	300	Circular	6.400	4.900	1.200	6.025	4.525	1.200
5.000	5.000	150.0	150	Circular	6.250	5.690	0.410	6.025	5.657	0.218
3.003	26.429	300.0	300	Circular	6.025	4.525	1.200	6.075	4.437	1.338
6.000	5.141	150.0	150	Circular	7.025	6.465	0.410	6.825	6.431	0.244
6.001	60.685	115.6	300	Circular	6.825	5.325	1.200	6.300	4.800	1.200
6.002	24.986	68.8	300	Circular	6.300	4.800	1.200	6.075	4.437	1.338
7.000	5.000	150.0	150	Circular	6.300	5.740	0.410	6.075	5.707	0.218
3.004	7.064	243.6	300	Circular	6.075	4.437	1.338	5.800	4.408	1.092
1.002	116.980	308.7	500	Ditch	5.800	4.408	0.892	6.300	4.029	1.771
8.000	41.084	91.3	450	Circular	7.200	5.700	1.050	6.800	5.250	1.100
9.000	5.001	150.0	150	Circular	6.825	6.265	0.410	6.850	6.232	0.468
9.001	29.987	300.0	450	Circular	6.850	5.350	1.050	6.800	5.250	1.100
10.000	5.001	150.0	150	Circular	6.625	6.140	0.335	6.800	6.107	0.543
8.001	68.638	300.0	450	Circular	6.800	5.250	1.100	7.675	5.021	2.204

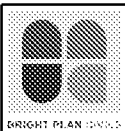
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	40	1350	Junction		39	1350	Junction	
2.000	46	1350	Manhole	Adoptable	45	1350	Manhole	Adoptable
2.001	45	1350	Manhole	Adoptable	44	1350	Manhole	Adoptable
2.002	44	1350	Manhole	Adoptable	43	1350	Manhole	Adoptable
2.003	43	1350	Manhole	Adoptable	42	1350	Manhole	Adoptable
2.004	42	1350	Manhole	Adoptable	41	1350	Manhole	Adoptable
2.005	41	1350	Manhole	Adoptable	39	1350	Junction	
1.001	39	1350	Junction		38	1350	Junction	
3.000	51	1350	Junction		50	1350	Manhole	Adoptable
3.001	50	1350	Manhole	Adoptable	49	1350	Manhole	Adoptable
4.000	52	1350	Junction		49	1350	Manhole	Adoptable
3.002	49	1350	Manhole	Adoptable	48	1350	Manhole	Adoptable
5.000	53	1350	Junction		48	1350	Manhole	Adoptable
3.003	48	1350	Manhole	Adoptable	47	1350	Manhole	Adoptable
6.000	57	1350	Junction		56	1350	Manhole	Adoptable
6.001	56	1350	Manhole	Adoptable	55	1350	Manhole	Adoptable
6.002	55	1350	Manhole	Adoptable	47	1350	Manhole	Adoptable
7.000	54	1350	Junction		47	1350	Manhole	Adoptable
3.004	47	1350	Manhole	Adoptable	38	1350	Junction	
1.002	38	1350	Junction		37	1350	Junction	
8.000	67	1350	Manhole	Adoptable	66	1500	Manhole	Adoptable
9.000	69	1350	Junction		68	1350	Manhole	Adoptable
9.001	68	1350	Manhole	Adoptable	66	1500	Manhole	Adoptable
10.000	70	1350	Junction		66	1500	Manhole	Adoptable
8.001	66	1500	Manhole	Adoptable	65	1350	Manhole	Adoptable



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)
8.002	17.110	300.0	450	Circular	7.675	5.021	2.204	7.625	4.964	2.211
8.003	45.000	300.0	450	Circular	7.625	4.964	2.211	7.250	4.814	1.986
8.004	45.000	300.0	450	Circular	7.250	4.814	1.986	6.875	4.664	1.761
8.005	27.627	300.0	450	Circular	6.875	4.664	1.761	6.625	4.572	1.603
8.006	43.858	300.0	450	Circular	6.625	4.572	1.603	6.300	4.426	1.424
8.007	5.692	300.0	450	Circular	6.300	4.426	1.424	6.350	4.407	1.493
8.008	21.626	300.0	450	Circular	6.350	4.407	1.493	6.675	4.335	1.890
8.009	7.405	300.0	450	Circular	6.675	4.335	1.890	6.300	4.310	1.540
1.003	65.000	500.0	500	Ditch	6.300	4.029	1.771	5.800	3.899	1.401
1.004	15.500	65.1	450	Circular	5.800	3.899	1.451	5.250	3.661	1.139
11.000	5.000	150.0	150	Circular	6.500	5.940	0.410	6.475	5.907	0.418
11.001	20.022	300.0	300	Circular	6.475	4.975	1.200	6.725	4.708	1.717
12.000	5.000	150.0	150	Circular	6.750	6.190	0.410	6.725	6.157	0.418
11.002	79.341	696.0	300	Circular	6.725	4.708	1.717	6.025	4.594	1.131
11.003	8.556	300.0	450	Circular	6.025	4.444	1.131	5.925	4.415	1.060
11.004	29.792	300.0	450	Circular	5.925	4.415	1.060	5.900	4.316	1.134
11.005	25.073	300.0	450	Circular	5.900	4.316	1.134	6.100	4.232	1.418
11.006	43.069	102.1	450	Circular	6.100	4.232	1.418	6.400	3.810	2.140
13.000	46.600	109.6	450	Circular	6.750	5.250	1.050	6.325	4.825	1.050
13.001	46.600	58.2	450	Circular	6.325	4.825	1.050	6.275	4.025	1.800
14.000	40.000	38.1	450	Circular	6.575	5.075	1.050	6.275	4.025	1.800
15.000	15.000	300.0	450	Circular	5.575	4.075	1.050	6.275	4.025	1.800
13.002	39.491	300.0	450	Circular	6.275	4.025	1.800	6.525	3.893	2.182
13.003	24.979	300.0	450	Circular	6.525	3.893	2.182	6.400	3.810	2.140
11.007	35.921	300.0	450	Circular	6.400	3.810	2.140	5.925	3.690	1.785

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.002	65	1350	Manhole	Adoptable	64	1350	Manhole	Adoptable
8.003	64	1350	Manhole	Adoptable	63	1350	Manhole	Adoptable
8.004	63	1350	Manhole	Adoptable	62	1350	Manhole	Adoptable
8.005	62	1350	Manhole	Adoptable	61	1350	Manhole	Adoptable
8.006	61	1350	Manhole	Adoptable	60	1350	Manhole	Adoptable
8.007	60	1350	Manhole	Adoptable	59	1350	Manhole	Adoptable
8.008	59	1350	Manhole	Adoptable	58	1350	Manhole	Adoptable
8.009	58	1350	Manhole	Adoptable	37	1350	Junction	
1.003	37	1350	Junction		36	1350	Junction	
1.004	36	1350	Junction		35	1350	Junction	
11.000	97	1350	Junction		96	1350	Manhole	Adoptable
11.001	96	1350	Manhole	Adoptable	95	1350	Manhole	Adoptable
12.000	98	1350	Manhole	Adoptable	95	1350	Manhole	Adoptable
11.002	95	1350	Manhole	Adoptable	94	1500	Manhole	Adoptable
11.003	94	1500	Manhole	Adoptable	93	1500	Manhole	Adoptable
11.004	93	1500	Manhole	Adoptable	92	1500	Manhole	Adoptable
11.005	92	1500	Manhole	Adoptable	91	1500	Manhole	Adoptable
11.006	91	1500	Manhole	Adoptable	90	1500	Manhole	Adoptable
13.000	102	1500	Manhole	Adoptable	101	1500	Manhole	Adoptable
13.001	101	1500	Manhole	Adoptable	100	1500	Manhole	Adoptable
14.000	104	1500	Manhole	Adoptable	100	1500	Manhole	Adoptable
15.000	103	1350	Junction		100	1500	Manhole	Adoptable
13.002	100	1500	Manhole	Adoptable	99	1350	Manhole	Adoptable
13.003	99	1350	Manhole	Adoptable	90	1500	Manhole	Adoptable
11.007	90	1500	Manhole	Adoptable	89	1500	Manhole	Adoptable



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)
11.008	36.315	300.0	450	Circular	5.925	3.690	1.785	5.575	3.569	1.556
16.000	5.000	150.0	150	Circular	5.850	5.290	0.410	5.725	5.257	0.318
16.001	34.950	53.3	450	Circular	5.725	4.225	1.050	5.575	3.569	1.556
17.000	35.649	41.6	450	Circular	5.925	4.425	1.050	5.575	3.569	1.556
11.009	65.904	300.0	525	Circular	5.575	3.569	1.481	5.975	3.349	2.101
11.010	42.145	300.0	525	Circular	5.975	3.349	2.101	5.450	3.209	1.716
18.000	13.123	93.1	300	Circular	5.000	3.500	1.200	5.450	3.359	1.791
11.011	7.783	300.0	525	Circular	5.450	3.209	1.716	4.750	3.183	1.042
19.000	5.000	150.0	150	Circular	7.650	7.090	0.410	7.600	7.057	0.393
19.001	26.754	214.0	300	Circular	7.600	6.100	1.200	7.475	5.975	1.200
20.000	5.000	150.0	150	Circular	7.350	6.790	0.410	7.475	6.757	0.568
19.002	25.396	92.3	300	Circular	7.475	5.975	1.200	7.200	5.700	1.200
19.003	10.315	56.4	300	Circular	7.200	5.700	1.200	7.150	5.517	1.333
21.000	24.321	105.3	300	Circular	7.025	5.825	0.900	6.975	5.594	1.081
21.001	23.050	300.0	450	Circular	6.975	5.444	1.081	7.150	5.367	1.333
19.004	67.791	184.7	450	Circular	7.150	5.367	1.333	6.500	5.000	1.050
22.000	5.000	150.0	150	Circular	6.800	6.240	0.410	6.800	6.207	0.443
22.001	35.002	233.3	300	Circular	6.800	5.300	1.200	6.500	5.150	1.050
23.000	5.000	150.0	150	Circular	6.450	5.890	0.410	6.500	5.857	0.493
19.005	48.837	244.2	450	Circular	6.500	5.000	1.050	6.400	4.800	1.150
24.000	87.762	135.0	450	Circular	7.275	5.775	1.050	6.625	5.125	1.050
24.001	12.357	300.0	450	Circular	6.625	5.125	1.050	6.850	5.064	1.316
24.002	43.372	152.7	450	Circular	6.850	5.084	1.316	6.400	4.800	1.150
19.006	11.276	451.1	525	Circular	6.400	4.725	1.150	6.475	4.700	1.250
19.007	20.398	408.0	525	Circular	6.475	4.700	1.250	6.675	4.650	1.500

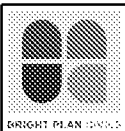
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
11.008	89	1500	Manhole	Adoptable	88	1350	Manhole	Adoptable
16.000	106	1350	Junction		105	1350	Manhole	Adoptable
16.001	105	1350	Manhole	Adoptable	88	1350	Manhole	Adoptable
17.000	107	1350	Manhole	Adoptable	88	1350	Manhole	Adoptable
11.009	88	1350	Manhole	Adoptable	87	1500	Manhole	Adoptable
11.010	87	1500	Manhole	Adoptable	86	1350	Manhole	Adoptable
18.000	108	1350	Junction		86	1350	Manhole	Adoptable
11.011	86	1350	Manhole	Adoptable	85	1350	Junction	
19.000	135	1350	Junction		134	1350	Manhole	Adoptable
19.001	134	1350	Manhole	Adoptable	133	1350	Manhole	Adoptable
20.000	136	1350	Junction		133	1350	Manhole	Adoptable
19.002	133	1350	Manhole	Adoptable	132	1350	Manhole	Adoptable
19.003	132	1350	Manhole	Adoptable	131	1350	Manhole	Adoptable
21.000	138	1350	Manhole	Adoptable	137	1350	Manhole	Adoptable
21.001	137	1350	Manhole	Adoptable	131	1350	Manhole	Adoptable
19.004	131	1350	Manhole	Adoptable	130	1500	Manhole	Adoptable
22.000	141	1350	Junction		140	1350	Manhole	Adoptable
22.001	140	1350	Manhole	Adoptable	130	1500	Manhole	Adoptable
23.000	139	1350	Junction		130	1500	Manhole	Adoptable
19.005	130	1500	Manhole	Adoptable	129	1500	Manhole	Adoptable
24.000	144	1350	Manhole	Adoptable	143	1350	Manhole	Adoptable
24.001	143	1350	Manhole	Adoptable	142	1350	Manhole	Adoptable
24.002	142	1350	Manhole	Adoptable	129	1500	Manhole	Adoptable
19.006	129	1500	Manhole	Adoptable	128	1500	Manhole	Adoptable
19.007	128	1500	Manhole	Adoptable	127	1500	Manhole	Adoptable



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)
19.008	14.897	575.9	525	Circular	6.675	4.650	1.500	6.625	4.625	1.475
25.000	28.860	128.3	300	Circular	7.475	5.975	1.200	7.250	5.750	1.200
25.001	11.861	67.8	300	Circular	7.250	5.750	1.200	7.075	5.575	1.200
25.002	12.760	85.1	300	Circular	7.075	5.575	1.200	6.925	5.425	1.200
25.003	29.761	47.3	300	Circular	6.925	5.425	1.200	6.625	4.796	1.529
26.000	5.000	150.0	150	Circular	6.775	6.215	0.410	6.625	6.182	0.293
19.009	61.834	412.2	525	Circular	6.625	4.625	1.475	6.025	4.475	1.025
27.000	4.999	150.0	150	Circular	6.025	4.525	1.350	6.025	4.492	1.383
19.010	11.854	474.2	525	Circular	6.025	4.475	1.025	5.575	4.450	0.600
28.000	46.768	155.9	300	Circular	6.075	4.575	1.200	5.625	4.275	1.050
28.001	6.631	300.0	450	Circular	5.625	4.125	1.050	5.650	4.102	1.097
28.002	26.285	300.0	450	Circular	5.650	4.103	1.097	5.900	4.015	1.435
28.003	17.835	300.0	450	Circular	5.900	4.015	1.435	6.100	3.956	1.694
29.000	5.000	150.0	150	Circular	6.000	5.440	0.410	6.100	5.407	0.543
28.004	41.678	300.0	450	Circular	6.100	3.956	1.694	5.775	3.817	1.508
30.000	5.000	150.0	150	Circular	5.675	5.115	0.410	5.775	5.082	0.543
28.005	8.684	300.0	450	Circular	5.775	3.817	1.508	5.675	3.788	1.437
31.000	25.956	115.4	300	Circular	6.150	4.650	1.200	5.925	4.425	1.200
31.001	23.529	36.9	300	Circular	5.925	4.425	1.200	5.675	3.788	1.587
32.000	5.000	150.0	150	Circular	5.700	5.140	0.410	5.675	5.107	0.418
28.006	27.764	300.0	450	Circular	5.675	3.788	1.437	5.350	3.695	1.205
33.000	4.999	150.0	150	Circular	5.450	4.890	0.410	5.350	4.857	0.343
28.007	11.124	300.0	450	Circular	5.350	3.695	1.205	5.025	3.658	0.917
34.000	9.567	300.0	300	Circular	5.250	3.500	1.450	6.000	3.468	2.232
34.001	45.235	300.0	300	Circular	6.000	3.468	2.232	6.375	3.317	2.758

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
19.008	127	1500	Manhole	Adoptable	126	1500	Manhole	Adoptable
25.000	149	1350	Manhole	Adoptable	148	1350	Manhole	Adoptable
25.001	148	1350	Manhole	Adoptable	147	1350	Manhole	Adoptable
25.002	147	1350	Manhole	Adoptable	146	1350	Manhole	Adoptable
25.003	146	1350	Manhole	Adoptable	126	1500	Manhole	Adoptable
26.000	145	1350	Junction		126	1500	Manhole	Adoptable
19.009	126	1500	Manhole	Adoptable	125	1500	Manhole	Adoptable
27.000	150	1350	Manhole	Adoptable	125	1500	Manhole	Adoptable
19.010	125	1500	Manhole	Adoptable	124	1350	Junction	
28.000	117	1350	Manhole	Adoptable	116	1350	Manhole	Adoptable
28.001	116	1350	Manhole	Adoptable	115	1350	Manhole	Adoptable
28.002	115	1350	Manhole	Adoptable	114	1350	Manhole	Adoptable
28.003	114	1350	Manhole	Adoptable	113	1350	Manhole	Adoptable
29.000	118	1350	Junction		113	1350	Manhole	Adoptable
28.004	113	1350	Manhole	Adoptable	112	1350	Manhole	Adoptable
30.000	119	1350	Junction		112	1350	Manhole	Adoptable
28.005	112	1350	Manhole	Adoptable	111	1350	Manhole	Adoptable
31.000	121	1350	Manhole	Adoptable	120	1350	Manhole	Adoptable
31.001	120	1350	Manhole	Adoptable	111	1350	Manhole	Adoptable
32.000	122	1350	Junction		111	1350	Manhole	Adoptable
28.006	111	1350	Manhole	Adoptable	110	1350	Manhole	Adoptable
33.000	123	1350	Junction		110	1350	Manhole	Adoptable
28.007	110	1350	Manhole	Adoptable	109	1350	Junction	
34.000	20	1350	Junction		19	1350	Manhole	Adoptable
34.001	19	1350	Manhole	Adoptable	18	1350	Manhole	Adoptable



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)
34.002	56.559	1450.2	300	Circular	6.375	3.317	2.758	5.825	3.278	2.247
35.000	5.000	150.0	150	Circular	5.975	5.415	0.410	5.975	5.382	0.443
35.001	54.948	99.9	300	Circular	5.975	4.475	1.200	5.425	3.925	1.200
36.000	5.000	150.0	150	Circular	5.725	5.165	0.410	5.600	5.132	0.318
36.001	25.059	143.2	450	Circular	5.600	4.100	1.050	5.425	3.925	1.050
37.000	5.000	150.0	150	Circular	5.525	4.965	0.410	5.425	4.932	0.343
35.002	22.088	300.0	450	Circular	5.425	3.925	1.050	5.525	3.851	1.224
38.000	5.000	150.0	150	Circular	5.650	5.090	0.410	5.525	5.057	0.318
35.003	25.415	35.2	450	Circular	5.525	3.851	1.224	5.825	3.128	2.247
34.003	38.374	101.5	450	Circular	5.825	3.128	2.247	4.800	2.750	1.600
39.000	16.870	33.7	450	Circular	4.750	3.250	1.050	4.800	2.750	1.600
34.004	25.999	300.0	450	Circular	4.800	2.750	1.600	4.600	2.663	1.487
40.000	22.974	91.9	300	Circular	5.650	4.150	1.200	5.400	3.900	1.200
40.001	46.662	233.2	300	Circular	5.400	3.900	1.200	5.200	3.700	1.200
40.002	32.092	300.0	300	Circular	5.200	3.700	1.200	5.500	3.593	1.607
40.003	32.378	300.0	300	Circular	5.500	3.593	1.607	4.750	3.485	0.965
41.000	7.500	18.7	300	Circular	4.500	2.500	1.700	4.550	2.100	2.150
41.001	16.101	44.7	300	Circular	4.550	2.100	2.150	3.940	1.740	1.900
41.002	82.960	131.7	300	Circular	3.940	1.740	1.900	1.860	1.110	0.450
42.000	5.000	150.0	150	Circular	6.375	5.815	0.410	6.250	5.782	0.318
42.001	22.080	63.1	300	Circular	6.250	4.750	1.200	5.900	4.400	1.200
43.000	4.999	150.0	150	Circular	6.150	5.590	0.410	5.900	5.557	0.193
42.002	33.211	102.2	300	Circular	5.900	4.400	1.200	5.575	4.075	1.200
44.000	5.000	150.0	150	Circular	5.800	5.240	0.410	5.575	5.207	0.218
42.003	35.245	156.6	300	Circular	5.575	4.075	1.200	5.200	3.850	1.050

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
34.002	18	1350	Manhole	Adoptable	9	1350	Manhole	Adoptable
35.000	13	1350	Junction		12	1350	Manhole	Adoptable
35.001	12	1350	Manhole	Adoptable	11	1350	Manhole	Adoptable
36.000	15	1350	Junction		14	1350	Manhole	Adoptable
36.001	14	1350	Manhole	Adoptable	11	1350	Manhole	Adoptable
37.000	16	1350	Junction		11	1350	Manhole	Adoptable
35.002	11	1350	Manhole	Adoptable	10	1350	Manhole	Adoptable
38.000	17	1350	Junction		10	1350	Manhole	Adoptable
35.003	10	1350	Manhole	Adoptable	9	1350	Manhole	Adoptable
34.003	9	1350	Manhole	Adoptable	8	1350	Manhole	Adoptable
39.000	21	1350	Junction		8	1350	Manhole	Adoptable
34.004	8	1350	Manhole	Adoptable	7	1350	Junction	
40.000	75	1350	Manhole	Adoptable	74	1350	Manhole	Adoptable
40.001	74	1350	Manhole	Adoptable	73	1350	Manhole	Adoptable
40.002	73	1350	Manhole	Adoptable	72	1350	Manhole	Adoptable
40.003	72	1350	Manhole	Adoptable	71	1350	Junction	
41.000	4	1350	Junction		3	1800	Manhole	Adoptable
41.001	3	1800	Manhole	Adoptable	2	1350	Manhole	Adoptable
41.002	2	1350	Manhole	Adoptable	1	1350	Manhole	Adoptable
42.000	81	1350	Junction		80	1350	Manhole	Adoptable
42.001	80	1350	Manhole	Adoptable	79	1350	Manhole	Adoptable
43.000	82	1350	Junction		79	1350	Manhole	Adoptable
42.002	79	1350	Manhole	Adoptable	78	1350	Manhole	Adoptable
44.000	83	1350	Junction		78	1350	Manhole	Adoptable
42.003	78	1350	Manhole	Adoptable	77	1350	Manhole	Adoptable



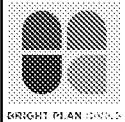
Pipeline Schedule

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)
45.000	49.999	133.3	300	Circular	5.575	4.075	1.200	5.200	3.700	1.200
42.004	9.567	300.0	450	Circular	5.200	3.700	1.050	4.750	3.668	0.632
46.000	9.844	300.0	300	Circular	6.425	4.925	1.200	6.425	4.892	1.233
46.001	10.663	300.0	300	Circular	6.425	4.892	1.233	6.425	4.856	1.269
46.002	58.317	300.0	300	Circular	6.425	4.856	1.269	6.425	4.662	1.463
46.003	21.499	100.0	300	Circular	6.425	4.662	1.463	5.250	4.447	0.503
47.000	39.120	130.4	300	Circular	5.500	4.000	1.200	5.200	3.700	1.200
47.001	24.193	300.0	300	Circular	5.200	3.700	1.200	5.375	3.619	1.456
47.002	25.204	300.0	300	Circular	5.375	3.619	1.456	4.750	3.535	0.915
48.000	23.999	300.0	450	Circular	4.750	3.250	1.050	4.500	3.170	0.880
49.000	21.365	300.0	450	Circular	4.750	3.250	1.050	4.750	3.179	1.121
50.000	10.106	300.0	450	Circular	4.750	3.250	1.050	4.750	3.216	1.084

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
45.000	84	1350	Manhole	Adoptable	77	1350	Manhole	Adoptable
42.004	77	1350	Manhole	Adoptable	76	1350	Junction	
46.000	34	1350	Manhole	Adoptable	33	1350	Manhole	Adoptable
46.001	33	1350	Manhole	Adoptable	32	1350	Manhole	Adoptable
46.002	32	1350	Manhole	Adoptable	31	1500	Manhole	Adoptable
46.003	31	1500	Manhole	Adoptable	30	1350	Junction	
47.000	27	1350	Manhole	Adoptable	26	1350	Manhole	Adoptable
47.001	26	1350	Manhole	Adoptable	25	1350	Manhole	Adoptable
47.002	25	1350	Manhole	Adoptable	24	1350	Junction	
48.000	6	1350	Junction		5	1350	Junction	
49.000	23	1350	Junction		22	1350	Junction	
50.000	29	1350	Junction		28	1350	Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
40	499628.126	101998.427	6.250	0.900	1350				
						0	1.000	5.350	500
46	499857.146	101970.056	7.000	1.500	1350				
						0	2.000	5.500	300
45	499851.998	101980.244	7.000	1.538	1350				
						1	2.000	5.462	300
						0	2.001	5.462	300
44	499849.046	101997.983	7.450	2.048	1350				
						1	2.001	5.402	300
						0	2.002	5.402	300
43	499843.311	102001.186	7.450	2.070	1350				
						1	2.002	5.380	300
						0	2.003	5.380	300

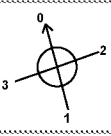
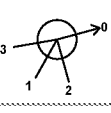
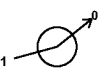
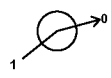
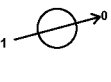
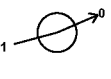
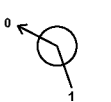


Manhole Schedule

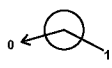
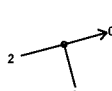
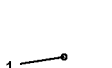
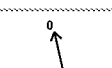
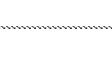
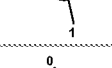
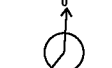
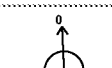
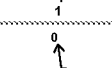
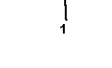
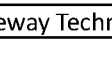
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
42	499840.242	102021.702	7.300	1.989	1350		1 2.003	5.311	300
41	499834.399	102045.904	7.025	1.797	1350		1 2.004	5.228	300
39	499832.456	102053.992	6.700	1.489	1350		1 2.005	5.211	300
51	499856.886	102050.782	7.000	0.560	1350		1 2.001	5.211	500
50	499855.630	102055.621	6.800	1.500	1350		1 3.000	6.440	150
52	499897.272	102058.962	6.625	0.560	1350		1 3.001	5.300	300
49	499896.017	102063.796	6.400	1.500	1350		1 4.000	6.065	150
53	499937.446	102069.000	6.250	0.560	1350		1 3.002	4.900	300
48	499936.190	102073.840	6.025	1.500	1350		1 5.000	5.690	150
57	500044.686	102101.306	7.025	0.560	1350		1 3.003	4.525	300
56	500043.395	102106.282	6.825	1.500	1350		1 6.000	6.431	150
55	499984.692	102090.899	6.300	1.500	1350		1 6.001	5.325	300
54	499962.429	102077.626	6.300	0.560	1350		1 6.002	4.800	300
							1 7.000	5.740	150



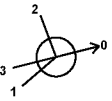
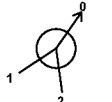
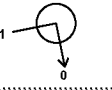
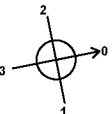
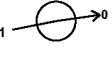
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
47	499961.172	102082.465	6.075	1.638	1350		1 2 3 0	7.000 6.002 3.003 3.004	5.707 4.437 4.437 4.437
38	499959.330	102089.285	5.800	1.392	1350		1 2 0	3.004 1.001 1.002	4.408 4.408 500
67	499882.411	102003.736	7.200	1.500	1350		0	8.000	5.700 450
69	499928.477	101977.484	6.825	0.560	1350		0	9.000	6.265 150
68	499930.931	101981.841	6.850	1.500	1350		1 0	9.000 9.001	6.232 5.350 450
70	499920.441	102006.374	6.625	0.485	1350		0	10.000	6.140 150
66	499922.895	102010.731	6.800	1.550	1500		1 2 3 0	10.000 9.001 8.000 8.001	6.107 5.250 5.250 5.250 450
65	499989.143	102028.687	7.675	2.654	1350		1 0	8.001 8.002	5.021 5.021 450
64	500002.486	102039.397	7.625	2.661	1350		1 0	8.002 8.003	4.964 4.964 450
63	500045.949	102051.056	7.250	2.436	1350		1 0	8.003 8.004	4.814 4.814 450
62	500089.412	102062.716	6.875	2.211	1350		1 0	8.004 8.005	4.664 4.664 450
61	500114.777	102073.665	6.625	2.053	1350		1 0	8.005 8.006	4.572 4.572 450
60	500100.240	102115.044	6.300	1.874	1350		1 0	8.006 8.007	4.426 4.426 450

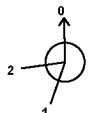
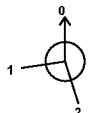
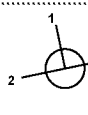
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
59	500095.185	102117.661	6.350	1.943	1350		1	8.007	4.407 450
58	500074.371	102111.789	6.675	2.340	1350		1	8.008	4.407 450
37	500072.486	102118.950	6.300	2.271	1350		1	8.009	4.310 450
36	500135.095	102136.419	5.800	1.901	1350		2	1.002	4.029 500
35	500150.409	102138.812	5.250	1.708	1350		0	1.003	4.029 500
97	500048.650	101884.920	6.500	0.560	1350		1	1.003	3.899 500
96	500047.557	101889.799	6.475	1.500	1350		0	1.004	3.899 450
98	500126.509	101903.403	6.750	0.560	1350		1	1.004	3.661 450
95	500125.415	101908.282	6.725	2.017	1350		0	11.000	5.940 150
94	500201.897	101929.387	6.025	1.581	1500		1	11.000	5.907 150
93	500207.277	101936.040	5.925	1.510	1500		0	11.001	4.975 300
92	500209.094	101965.777	5.900	1.584	1500		1	12.000	6.190 150
91	500207.930	101990.823	6.100	1.868	1500		2	11.001	4.708 300
							0	11.002	4.708 300
							1	11.002	4.594 300
							0	11.003	4.444 450
							1	11.003	4.415 450
							0	11.004	4.415 450
							1	11.004	4.316 450
							0	11.005	4.316 450
							1	11.005	4.232 450
							0	11.006	4.232 450

Manhole Schedule

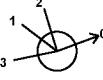
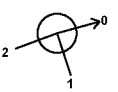
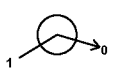
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
102	500052.457	101987.415	6.750	1.500	1500				
						0	13.000	5.250	450
101	500097.649	101998.782	6.325	1.500	1500				
						0	13.001	4.825	450
104	500128.756	102047.587	6.575	1.500	1500				
						0	14.000	5.075	450
103	500131.457	102000.381	5.575	1.500	1350				
						0	15.000	4.075	450
100	500142.841	102010.149	6.275	2.250	1500				
						1	15.000	4.025	450
						2	14.000	4.025	450
						3	13.001	4.025	450
						0	13.002	4.025	450
99	500181.139	102019.782	6.525	2.632	1350				
						1	13.002	3.893	450
						0	13.003	3.893	450
90	500202.012	102033.504	6.400	2.590	1500				
						1	13.003	3.810	450
						2	11.006	3.810	450
						0	11.007	3.810	450
89	500222.620	102062.926	5.925	2.235	1500				
						1	11.007	3.690	450
						0	11.008	3.690	450
106	500246.509	102103.272	5.850	0.560	1350				
						0	16.000	5.290	150
105	500251.413	102104.247	5.725	1.500	1350				
						1	16.000	5.257	150
						0	16.001	4.225	450
107	500265.198	102035.007	5.925	1.500	1350				
						0	17.000	4.425	450
88	500258.245	102069.971	5.575	2.006	1350				
						1	17.000	3.569	450
						2	16.001	3.569	450
						3	11.008	3.569	450
						0	11.009	3.569	525
87	500322.898	102082.749	5.975	2.626	1500				
						1	11.009	3.349	525
						0	11.010	3.349	525

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
108	500360.312	102076.275	5.000	1.500	1350					
							0	18.000	3.500	300
86	500364.625	102088.669	5.450	2.241	1350		1	18.000	3.359	300
							2	11.010	3.209	525
							0	11.011	3.209	525
85	500364.439	102096.450	4.750	1.567	1350		1	11.011	3.183	525
135	499877.144	101848.025	7.650	0.560	1350					
							0	19.000	7.090	150
134	499881.493	101850.492	7.600	1.500	1350		1	19.000	7.057	150
							0	19.001	6.100	300
136	499868.474	101875.264	7.350	0.560	1350					
							0	20.000	6.790	150
133	499873.420	101875.999	7.475	1.500	1350		1	20.000	6.757	150
							2	19.001	5.975	300
							0	19.002	5.975	300
132	499873.319	101901.395	7.200	1.500	1350		1	19.002	5.700	300
							0	19.003	5.700	300
138	499871.302	101949.226	7.025	1.200	1350					
							0	21.000	5.825	300
137	499878.722	101926.064	6.975	1.531	1350		1	21.000	5.594	300
							0	21.001	5.444	450
131	499883.418	101903.497	7.150	1.783	1350		1	21.001	5.367	450
							2	19.003	5.517	300
							0	19.004	5.367	450
141	499935.244	101953.221	6.800	0.560	1350					
							0	22.000	6.240	150
140	499939.616	101950.795	6.800	1.500	1350		1	22.000	6.207	150
							0	22.001	5.300	300



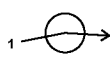
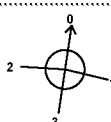
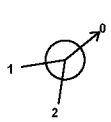
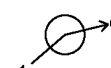
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
139	499945.801	101920.321	6.450	0.560	1350		0	23.000	5.890	150
130	499949.788	101917.304	6.500	1.500	1500		1	23.000	5.857	150
							2	22.001	5.150	300
							3	19.004	5.000	450
							0	19.005	5.000	450
144	499924.780	101851.825	7.275	1.500	1350		0	24.000	5.775	450
143	500007.627	101880.782	6.625	1.500	1350		1	24.000	5.125	450
							0	24.001	5.125	450
142	500009.016	101893.061	6.850	1.766	1350		1	24.001	5.084	450
							0	24.002	5.084	450
129	499995.573	101934.297	6.400	1.675	1500		1	24.002	4.800	450
							2	19.005	4.800	450
							0	19.006	4.725	525
128	500006.448	101937.279	6.475	1.775	1500		1	19.006	4.700	525
							0	19.007	4.700	525
127	500023.856	101947.911	6.675	2.025	1500		1	19.007	4.650	525
							0	19.008	4.650	525
149	499995.898	102007.015	7.475	1.500	1350		0	25.000	5.975	300
148	500005.325	101979.738	7.250	1.500	1350		1	25.000	5.750	300
							0	25.001	5.750	300
147	500016.082	101974.745	7.075	1.500	1350		1	25.001	5.575	300
							0	25.002	5.575	300
146	500028.582	101972.215	6.925	1.500	1350		1	25.002	5.425	300
							0	25.003	5.425	300
145	500038.771	101938.999	6.775	0.560	1350		0	26.000	6.215	150

Manhole Schedule

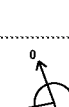
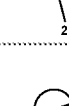
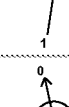
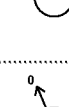
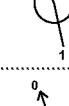
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
126	500037.677	101943.878	6.625	2.000	1500		1 2 3 0	26.000 25.003 19.008 19.009	6.182 4.796 4.625 4.625	150 300 525 525
150	500098.851	101953.624	6.025	1.500	1350		0	27.000	4.525	150
125	500097.757	101958.502	6.025	1.550	1500		1 2 0	27.000 19.009	4.402 4.475	150 525
124	500101.822	101969.637	5.575	1.457	1350		1	19.010	4.475	525
117	500271.059	102016.491	6.075	1.500	1350		0	28.000	4.575	300
116	500281.903	101970.998	5.625	1.500	1350		1 0	28.000	4.275	300
115	500287.748	101967.867	5.650	1.547	1350		0 1	28.001	4.125	450
114	500312.544	101976.588	5.900	1.885	1350		1 0	28.001	4.103	450
118	500326.636	101989.214	6.000	0.560	1350		0	28.002	4.103	450
113	500322.224	101991.567	6.100	2.144	1350		1 2 0	28.002	4.015	450
119	500347.052	102026.720	5.675	0.560	1350		0	28.003	4.015	450
112	500342.251	102028.118	5.775	1.958	1350		1 2 0	29.000 28.004	5.440 3.956	150 450
121	500294.578	102033.197	6.150	1.500	1350		0	31.000	4.650	300

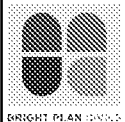
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
120	500320.049	102038.192	5.925	1.500	1350		1	31.000	4.425	300
							0	31.001	4.425	300
122	500348.394	102035.546	5.700	0.560	1350					
							0	32.000	5.140	150
111	500343.531	102036.707	5.675	1.887	1350		1	32.000	5.107	150
							2	31.001	3.788	300
							3	28.005	3.788	450
							0	28.006	3.788	450
123	500342.683	102063.381	5.450	0.560	1350					
							0	33.000	4.890	150
110	500347.620	102064.168	5.350	1.655	1350		1	33.000	4.857	150
							2	28.006	3.695	450
							0	28.007	3.695	450
109	500356.244	102071.194	5.025	1.518	1350		1	28.007	3.658	450
20	500191.603	102148.027	5.250	1.750	1350					
							0	34.000	3.500	300
19	500198.850	102154.272	6.000	2.532	1350		1	34.000	3.468	300
							0	34.001	3.468	300
18	500242.808	102164.945	6.375	3.058	1350		1	34.001	3.317	300
							0	34.002	3.317	300
13	500253.819	102119.100	5.975	0.560	1350					
							0	35.000	5.415	150
12	500258.723	102120.076	5.975	1.500	1350		1	35.000	5.382	150
							0	35.001	4.475	300
15	500313.942	102105.774	5.725	0.560	1350					
							0	36.000	5.165	150
14	500318.846	102106.749	5.600	1.500	1350		1	36.000	5.132	150
							0	36.001	4.100	450

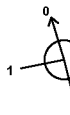
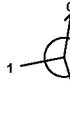
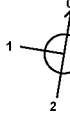


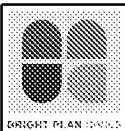
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
16	500317.414	102132.256	5.525	0.560	1350		0	37.000	4.965	150
11	500312.572	102131.010	5.425	1.500	1350		1	37.000	4.932	150
							2	36.001	3.925	450
							3	35.001	3.925	300
							0	35.002	3.925	450
17	500302.137	102151.419	5.650	0.560	1350		0	38.000	5.090	150
10	500307.041	102152.394	5.525	1.674	1350		1	38.000	5.057	150
							2	35.002	3.851	450
							0	35.003	3.851	450
9	500298.229	102176.232	5.825	2.697	1350		1	35.003	3.128	450
							2	34.002	3.278	300
							0	34.003	3.128	450
21	500350.232	102180.026	4.750	1.500	1350		0	39.000	3.250	450
8	500334.987	102187.251	4.800	2.050	1350		1	39.000	2.750	450
							2	34.003	2.750	450
							0	34.004	2.750	450
7	500338.880	102212.957	4.600	2.073	1350		1	34.004	2.663	450
75	500184.759	102189.160	5.650	1.500	1350		0	40.000	4.150	300
74	500179.919	102211.618	5.400	1.500	1350		1	40.000	3.900	300
							0	40.001	3.900	300
73	500161.916	102254.667	5.200	1.500	1350		1	40.001	3.700	300
							0	40.002	3.700	300
72	500151.966	102285.178	5.500	1.907	1350		1	40.002	3.593	300
							0	40.003	3.593	300
71	500174.000	102308.902	4.750	1.394	1350		1	40.003	3.485	300



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
4	500347.289	102215.756	4.500	2.000	1350		0	41.000	2.500	300
3	500352.334	102210.207	4.550	2.450	1800		1	41.000	2.100	300
							0	41.001	2.100	300
2	500368.037	102213.765	3.940	2.200	1350		1	41.001	1.740	300
							0	41.002	1.740	300
1	500441.039	102253.173	1.860	0.750	1350		1	41.002	1.110	300
81	500241.160	102198.405	6.375	0.560	1350		0	42.000	5.815	150
80	500246.064	102199.380	6.250	1.500	1350		1	42.000	5.782	150
							0	42.001	4.750	300
82	500235.809	102219.826	6.150	0.560	1350		0	43.000	5.590	150
79	500240.712	102220.802	5.900	1.500	1350		1	43.000	5.557	150
							2	42.001	4.400	300
							0	42.002	4.400	300
83	500226.138	102251.599	5.800	0.560	1350		0	44.000	5.240	150
78	500231.042	102252.574	5.575	1.500	1350		1	44.000	5.207	150
							2	42.002	4.075	300
							0	42.003	4.075	300
84	500187.327	102295.367	5.575	1.500	1350		0	45.000	4.075	300
77	500236.682	102287.365	5.200	1.500	1350		1	45.000	3.700	300
							2	42.003	3.850	300
							0	42.004	3.700	450
76	500238.214	102296.809	4.750	1.394	1350		1	42.004	3.668	450



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
34	500197.596	102048.247	6.425	1.500	1350					
						0	46.000	4.925	300	
33	500189.633	102054.035	6.425	1.533	1350		1	46.000	4.892	300
						0	46.001	4.892	300	
32	500183.544	102062.788	6.425	1.569	1350		1	46.001	4.856	300
						0	46.002	4.856	300	
31	500161.656	102116.842	6.425	1.763	1500		1	46.002	4.662	300
						0	46.003	4.662	300	
30	500164.556	102138.145	5.250	1.708	1350		1	46.003	4.447	300
27	500314.299	102206.500	5.500	1.500	1350					
						0	47.000	4.000	300	
26	500299.774	102242.823	5.200	1.500	1350		1	47.000	3.700	300
						0	47.001	3.700	300	
25	500292.899	102266.019	5.375	1.756	1350		1	47.001	3.619	300
						0	47.002	3.619	300	
24	500316.877	102273.783	4.750	1.459	1350		1	47.002	3.535	300
6	500328.581	102262.319	4.750	1.500	1350					
						0	48.000	3.250	450	
5	500332.011	102238.566	4.500	1.973	1350		1	48.000	3.170	450
23	500279.099	102294.729	4.750	1.500	1350					
						0	49.000	3.250	450	
22	500300.228	102291.562	4.750	1.571	1350		1	49.000	3.179	450



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
29	500366.027	102126.950	4.750	1.500	1350	0	50.000	3.250	450
28	500364.748	102136.975	4.750	1.534	1350	1	50.000	3.216	450

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	19.700	Additional Storage (m³/ha)	25.0
Ratio-R	0.400	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x
Analysis Speed	Detailed		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	0	0	0
100	40	10	0

Node 35 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.542	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 30 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.542	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 124 Online Orifice Control

Flap Valve	x	Invert Level (m)	4.118	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.525		

Node 109 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.507	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 85 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.183	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.525		



Node 28 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.216	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 7 Online Orifice Control

Flap Valve	x	Invert Level (m)	2.527	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 5 Online Orifice Control

Flap Valve	x	Invert Level (m)	2.527	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 22 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.179	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 71 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.356	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.300		

Node 76 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.356	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 24 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.291	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node 3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	2.100	Product Number	CTL-SHE-0175-1950-2450-1950
Design Depth (m)	2.450	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	19.5	Min Node Diameter (mm)	1800

Node 19 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	3.468	Product Number	CTL-SHE-0124-1000-2532-1000
Design Depth (m)	2.532	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.0	Min Node Diameter (mm)	1200



Node 103 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	4.075	Product Number	CTL-SHE-0230-3000-1500-3000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.300
Design Flow (l/s)	30.0	Min Node Diameter (mm)	1800

Node 108 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	6.510
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.500	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)	15	Main Channel n	0.025

Inlets

109

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	16.6	0.0	1.500	145.2	0.0

Node 103 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	42.700
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.075	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

124

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	558.0	0.0	1.500	998.4	0.0

Node 29 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	30.540
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.250	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

85

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	346.4	0.0	1.500	706.9	0.0

Node 23 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	106.050
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.250	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

71 76



Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	738.2	0.0	1.500	1235.2	0.0

Node 21 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	45.430
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.250	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets
28

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	416.7	0.0	1.500	806.0	0.0

Node 20 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	42.210
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.500	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets
35 30

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	297.5	0.0	1.750	705.1	0.0

Node 6 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	40.730
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.250	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets
22 24

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	467.4	0.0	1.500	875.9	0.0

Node 4 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	27.450
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	2.500	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets
5 7

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	622.6	0.0	1.500	1084.3	0.0



Node 51 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.440	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	41.113		

Node 52 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.065	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	41.113		

Node 53 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.690	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	41.113		

Node 54 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.740	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	41.113		

Node 57 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.465	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	41.113		

Node 69 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.265	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	6	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.260		

Node 70 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.140	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	9	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.260		

Node 141 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.240	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.260		



Node 139 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.890	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.260		

Node 136 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.790	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	32.336		

Node 135 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.090	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	32.336		

Node 145 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.215	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	82.352		

Node 150 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.525	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	15	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	82.352		

Node 97 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.940	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	5	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.295		

Node 98 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.190	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	39.295		

Node 106 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.290	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	71.624		



Node 118 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.440	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	45.003		

Node 119 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.115	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	45.003		

Node 122 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.140	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	45.003		

Node 123 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.890	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	45.003		

Node 13 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.415	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	71.624		

Node 15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.165	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	71.624		

Node 16 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.965	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	71.624		

Node 17 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.090	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	71.624		



Node 81 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.815	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	40.179		

Node 82 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.590	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	40.179		

Node 83 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.240	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.32	Length (m)	40.179		



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	40	1	5.350	0.000	0.0	0.0000	0.0000	OK
15 minute winter	46	11	5.549	0.049	1.0	0.0694	0.0000	OK
15 minute winter	45	11	5.548	0.086	2.2	0.1225	0.0000	OK
15 minute winter	44	11	5.546	0.144	25.2	0.2900	0.0000	OK
15 minute winter	43	11	5.515	0.135	23.8	0.1928	0.0000	OK
15 minute winter	42	11	5.465	0.154	23.3	0.2204	0.0000	OK
15 minute winter	41	11	5.449	0.221	62.8	0.5652	0.0000	OK
15 minute winter	39	13	5.322	0.111	71.3	0.0000	0.0000	OK
15 minute winter	51	11	6.540	0.100	12.1	0.9945	0.0000	OK
15 minute winter	50	12	5.362	0.062	10.4	0.0889	0.0000	OK
15 minute winter	52	11	6.165	0.100	12.1	0.9941	0.0000	OK
15 minute winter	49	11	5.025	0.125	39.4	0.2580	0.0000	OK
15 minute winter	53	11	5.790	0.100	12.1	0.9946	0.0000	OK
15 minute winter	48	12	4.946	0.421	71.8	0.9172	0.0000	SURCHARGED
15 minute winter	57	11	6.565	0.100	12.1	0.9924	0.0000	OK
15 minute winter	56	12	5.389	0.064	10.4	0.0914	0.0000	OK
15 minute winter	55	11	4.932	0.132	55.6	0.3840	0.0000	OK
15 minute winter	54	11	5.840	0.100	12.1	0.9946	0.0000	OK
720 minute winter	47	705	4.858	0.421	13.7	0.8345	0.0000	SURCHARGED
720 minute winter	38	705	4.858	0.450	18.8	0.0000	0.0000	OK
15 minute winter	67	13	6.077	0.377	72.0	1.4008	0.0000	OK
15 minute winter	69	11	6.363	0.098	11.6	0.9401	0.0000	OK
15 minute winter	68	13	6.054	0.704	58.5	1.0076	0.0000	SURCHARGED
15 minute winter	70	11	6.237	0.097	11.6	0.9527	0.0000	OK
15 minute winter	66	13	5.996	0.746	156.0	2.9321	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	40	1.000	39	0.0	0.000	0.000	3.4277	
15 minute winter	46	2.000	45	-1.0	-0.171	-0.016	0.1365	
15 minute winter	45	2.001	44	-2.2	-0.149	-0.034	0.4486	
15 minute winter	44	2.002	43	23.8	0.743	0.373	0.2102	
15 minute winter	43	2.003	42	23.3	0.715	0.365	0.6957	
15 minute winter	42	2.004	41	25.5	0.589	0.399	1.1458	
15 minute winter	41	2.005	39	71.3	1.834	1.448	0.3208	
15 minute winter	39	1.001	38	53.3	0.372	0.047	20.3933	
15 minute winter	51	3.000	50	10.4	0.866	0.721	0.0603	
15 minute winter	50	3.001	49	10.5	0.582	0.096	0.7844	
15 minute winter	52	4.000	49	10.4	0.866	0.721	0.0602	
15 minute winter	49	3.002	48	39.1	0.697	0.370	2.0326	
15 minute winter	53	5.000	48	10.4	0.866	0.721	0.0603	
15 minute winter	48	3.003	47	69.3	0.984	1.086	1.8611	
15 minute winter	57	6.000	56	10.4	0.867	0.722	0.0619	
15 minute winter	56	6.001	55	10.4	0.605	0.101	1.2258	
15 minute winter	55	6.002	47	54.5	0.944	0.406	1.2516	
15 minute winter	54	7.000	47	10.4	0.866	0.721	0.0603	
720 minute winter	47	3.004	38	13.5	0.886	0.191	0.4974	
720 minute winter	38	1.002	37	18.5	0.204	0.023	141.5857	
15 minute winter	67	8.000	66	71.1	0.943	0.210	6.1687	
15 minute winter	69	9.000	68	10.0	0.859	0.694	0.0585	
15 minute winter	68	9.001	66	-48.5	0.339	-0.261	4.7512	
15 minute winter	70	10.000	66	10.0	0.859	0.693	0.0584	
15 minute winter	66	8.001	65	152.3	1.139	0.820	10.8752	



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	65	13	5.943	0.922	163.3	1.5014	0.0000	SURCHARGED
15 minute winter	64	13	5.910	0.946	138.5	1.3538	0.0000	SURCHARGED
15 minute winter	63	12	5.851	1.037	213.9	4.4005	0.0000	SURCHARGED
15 minute winter	62	12	5.615	0.951	210.2	1.3610	0.0000	SURCHARGED
15 minute winter	61	12	5.452	0.880	226.2	1.7736	0.0000	SURCHARGED
15 minute winter	60	11	5.203	0.777	277.9	2.4586	0.0000	SURCHARGED
15 minute winter	59	11	5.084	0.677	285.2	1.1788	0.0000	SURCHARGED
720 minute winter	58	705	4.858	0.523	35.5	1.0062	0.0000	SURCHARGED
720 minute winter	37	705	4.858	0.829	53.7	0.0000	0.0000	SURCHARGED
720 minute winter	36	705	4.858	0.959	39.0	0.0000	0.0000	SURCHARGED
720 minute winter	35	705	4.860	1.318	33.7	0.6749	0.0000	OK
15 minute winter	97	11	6.037	0.097	11.6	0.9406	0.0000	OK
15 minute winter	96	13	5.475	0.500	30.2	1.0482	0.0000	SURCHARGED
15 minute winter	98	12	6.290	0.100	11.6	1.1362	0.0000	OK
15 minute winter	95	14	5.283	0.575	77.4	1.3720	0.0000	SURCHARGED
15 minute winter	94	12	5.171	0.727	126.3	2.7804	0.0000	SURCHARGED
15 minute winter	93	12	5.193	0.778	124.1	1.3751	0.0000	SURCHARGED
15 minute winter	92	12	5.128	0.812	133.8	1.9987	0.0000	SURCHARGED
15 minute winter	91	12	5.139	0.907	139.2	2.0870	0.0000	SURCHARGED
15 minute winter	102	10	5.330	0.080	22.1	0.1964	0.0000	OK
15 minute winter	101	14	5.070	0.245	51.0	0.6615	0.0000	OK
15 minute winter	104	10	5.174	0.099	57.3	0.3531	0.0000	OK
180 minute winter	103	172	4.917	0.842	106.5	0.0000	0.0000	SURCHARGED
15 minute winter	100	14	5.058	1.033	194.4	3.1923	0.0000	SURCHARGED
15 minute winter	99	13	5.048	1.155	109.2	1.6530	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	65	8.002	64	138.5	1.081	0.745	2.7110	
15 minute winter	64	8.003	63	143.4	0.946	0.772	7.1300	
15 minute winter	63	8.004	62	210.2	1.327	1.131	7.1300	
15 minute winter	62	8.005	61	211.3	1.333	1.137	4.3773	
15 minute winter	61	8.006	60	226.6	1.430	1.219	6.9490	
15 minute winter	60	8.007	59	273.3	1.725	1.471	0.9019	
15 minute winter	59	8.008	58	282.5	1.783	1.520	3.4265	
720 minute winter	58	8.009	37	35.2	0.913	0.189	1.1733	
720 minute winter	37	1.003	36	39.0	0.366	0.061	133.5819	
720 minute winter	36	1.004	35	32.5	0.705	0.156	2.4559	
720 minute winter	35	Flow through pond	20	23.3	0.053	0.001	605.7728	
15 minute winter	97	11.000	96	10.0	0.859	0.694	0.0585	
15 minute winter	96	11.001	95	29.3	0.543	0.460	5.6351	
15 minute winter	98	12.000	95	9.7	0.826	0.672	0.0588	
15 minute winter	95	11.002	94	62.0	0.950	1.491	5.5871	
15 minute winter	94	11.003	93	124.1	1.066	0.668	1.3556	
15 minute winter	93	11.004	92	110.7	1.066	0.596	4.7203	
15 minute winter	92	11.005	91	118.2	1.391	0.636	3.9727	
15 minute winter	91	11.006	90	119.9	0.980	0.375	6.8272	
15 minute winter	102	13.000	101	21.6	0.946	0.070	2.3813	
15 minute winter	101	13.001	100	49.7	0.712	0.117	5.7465	
15 minute winter	104	14.000	100	56.7	0.873	0.108	3.6809	
180 minute winter	103	15.000	100	30.0	0.836	0.161	0.8657	
15 minute winter	100	13.002	99	109.2	0.994	0.588	6.2571	
15 minute winter	99	13.003	90	100.1	0.823	0.539	3.9578	



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	90	12	5.052	1.242	214.1	2.9034	0.0000	SURCHARGED
15 minute winter	89	13	4.902	1.212	236.5	3.5659	0.0000	SURCHARGED
15 minute winter	106	12	5.444	0.154	20.5	1.5948	0.0000	SURCHARGED
15 minute winter	105	13	4.707	0.482	40.8	1.0684	0.0000	SURCHARGED
15 minute winter	107	13	4.712	0.287	25.0	0.4110	0.0000	OK
15 minute winter	88	13	4.696	1.127	342.5	4.9152	0.0000	SURCHARGED
30 minute winter	87	22	4.385	1.036	296.7	2.0581	0.0000	SURCHARGED
30 minute winter	108	24	4.281	0.781	86.0	0.0000	0.0000	SURCHARGED
30 minute winter	86	23	4.205	0.996	357.8	1.8594	0.0000	SURCHARGED
30 minute winter	85	23	4.130	0.947	377.6	1.0728	0.0000	OK
15 minute winter	135	11	7.176	0.086	9.5	0.7339	0.0000	OK
15 minute winter	134	12	6.167	0.067	8.4	0.0954	0.0000	OK
15 minute winter	136	11	6.876	0.086	9.5	0.7339	0.0000	OK
15 minute winter	133	13	6.127	0.152	30.0	0.2861	0.0000	OK
15 minute winter	132	13	6.107	0.407	39.3	0.7118	0.0000	SURCHARGED
15 minute winter	138	13	6.079	0.254	18.9	0.4750	0.0000	OK
15 minute winter	137	13	6.044	0.600	58.6	1.2596	0.0000	SURCHARGED
15 minute winter	131	13	6.098	0.731	87.0	1.3945	0.0000	SURCHARGED
15 minute winter	141	11	6.338	0.098	11.6	0.9400	0.0000	OK
15 minute winter	140	13	6.064	0.764	11.6	1.0928	0.0000	SURCHARGED
15 minute winter	139	14	6.029	0.139	17.0	1.8346	0.0000	OK
15 minute winter	130	13	6.039	1.039	209.6	6.2507	0.0000	SURCHARGED
15 minute winter	144	14	5.908	0.133	23.1	0.2878	0.0000	OK
15 minute winter	143	13	5.895	0.770	71.7	1.8986	0.0000	SURCHARGED
15 minute winter	142	13	5.896	0.812	86.9	1.8747	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	90	11.007	89	193.4	1.221	1.041	5.6914	
15 minute winter	89	11.008	88	216.4	1.366	1.165	5.7539	
15 minute winter	106	16.000	105	17.2	1.015	1.188	0.0821	
15 minute winter	105	16.001	88	36.2	0.429	0.082	5.5376	
15 minute winter	107	17.000	88	-25.0	-0.203	-0.050	4.7277	
15 minute winter	88	11.009	87	310.3	1.436	1.113	14.2374	
30 minute winter	87	11.010	86	294.4	1.363	1.056	9.1047	
30 minute winter	108	18.000	86	87.6	1.279	0.760	0.9241	
30 minute winter	86	11.011	85	357.6	1.655	1.283	1.6814	
30 minute winter	85	Flow through pond	29	286.7	0.158	0.013	232.4822	
15 minute winter	135	19.000	134	8.4	0.825	0.580	0.0508	
15 minute winter	134	19.001	133	8.4	0.488	0.111	0.6272	
15 minute winter	136	20.000	133	8.4	0.825	0.580	0.0508	
15 minute winter	133	19.002	132	29.9	1.247	0.259	1.3494	
15 minute winter	132	19.003	131	59.9	1.638	0.404	0.7264	
15 minute winter	138	21.000	137	12.1	0.972	0.111	1.6302	
15 minute winter	137	21.001	131	33.5	0.648	0.180	3.6521	
15 minute winter	131	19.004	130	94.2	0.710	0.397	10.7410	
15 minute winter	141	22.000	140	10.0	0.859	0.694	0.0585	
15 minute winter	140	22.001	130	23.7	0.445	0.327	2.4648	
15 minute winter	139	23.000	130	15.9	0.994	1.099	0.0863	
15 minute winter	130	19.005	129	162.5	1.071	0.788	7.7379	
15 minute winter	144	24.000	143	22.2	0.564	0.080	8.6677	
15 minute winter	143	24.001	142	62.3	0.780	0.335	1.9579	
15 minute winter	142	24.002	129	79.4	0.690	0.304	6.8720	



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	129	13	5.889	1.164	240.7	3.8997	0.0000	SURCHARGED
15 minute winter	128	13	5.832	1.132	248.2	2.0001	0.0000	SURCHARGED
15 minute winter	127	12	5.753	1.103	294.0	4.4420	0.0000	SURCHARGED
15 minute winter	149	10	6.079	0.104	26.3	0.2361	0.0000	OK
15 minute winter	148	10	5.926	0.176	70.1	0.4986	0.0000	OK
15 minute winter	147	12	5.843	0.268	68.9	0.3830	0.0000	OK
15 minute winter	146	12	5.807	0.382	88.3	0.7944	0.0000	SURCHARGED
15 minute winter	145	12	6.394	0.179	23.7	1.9075	0.0000	SURCHARGED
15 minute winter	126	12	5.658	1.033	383.1	1.8259	0.0000	SURCHARGED
30 minute winter	150	23	5.137	0.612	31.0	19.3621	0.0000	SURCHARGED
15 minute winter	125	12	5.208	0.733	457.1	3.7193	0.0000	SURCHARGED
15 minute winter	124	12	5.061	0.944	474.6	1.6192	0.0000	OK
15 minute winter	117	1	4.575	0.000	0.0	0.0000	0.0000	OK
30 minute winter	116	23	4.361	0.236	42.0	0.7444	0.0000	OK
30 minute winter	115	23	4.359	0.256	42.0	0.3663	0.0000	OK
30 minute winter	114	23	4.357	0.342	54.9	0.6343	0.0000	OK
15 minute winter	118	12	5.546	0.106	13.1	1.1070	0.0000	OK
30 minute winter	113	23	4.357	0.401	67.0	0.6163	0.0000	OK
15 minute winter	119	12	5.221	0.106	13.1	1.1070	0.0000	OK
30 minute winter	112	23	4.349	0.532	82.0	0.9720	0.0000	SURCHARGED
15 minute winter	121	1	4.650	0.000	0.0	0.0000	0.0000	OK
15 minute winter	120	10	4.525	0.100	44.7	0.2834	0.0000	OK
15 minute winter	122	12	5.246	0.106	13.1	1.1070	0.0000	OK
30 minute winter	111	23	4.345	0.557	121.7	0.8779	0.0000	SURCHARGED
15 minute winter	123	12	4.996	0.106	13.1	1.1069	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	129	19.006	128	248.2	1.149	1.094	2.4360	
15 minute winter	128	19.007	127	252.3	1.168	1.057	4.4066	
15 minute winter	127	19.008	126	294.7	1.364	1.470	3.1102	
15 minute winter	149	25.000	148	25.9	0.803	0.265	0.9341	
15 minute winter	148	25.001	147	68.9	1.559	0.510	0.6199	
15 minute winter	147	25.002	146	67.8	1.617	0.563	0.8726	
15 minute winter	146	25.003	126	82.5	1.657	0.509	2.0957	
15 minute winter	145	26.000	126	19.7	1.124	1.361	0.0841	
15 minute winter	126	19.009	125	383.3	1.775	1.615	13.3582	
30 minute winter	150	27.000	125	22.7	1.287	1.567	0.0880	
15 minute winter	125	19.010	124	433.5	2.007	1.960	2.5609	
15 minute winter	124	Flow through pond	103	312.1	0.255	0.013	354.2101	
15 minute winter	117	28.000	116	0.0	0.000	0.000	0.3555	
30 minute winter	116	28.001	115	42.0	0.838	0.226	0.5884	
30 minute winter	115	28.002	114	41.9	0.767	0.226	2.9212	
30 minute winter	114	28.003	113	54.0	0.873	0.291	2.4828	
15 minute winter	118	29.000	113	11.3	0.885	0.781	0.0638	
30 minute winter	113	28.004	112	60.7	0.728	0.327	6.4116	
15 minute winter	119	30.000	112	11.3	0.885	0.781	0.0638	
30 minute winter	112	28.005	111	74.2	0.686	0.399	1.3759	
15 minute winter	121	31.000	120	0.0	0.000	0.000	0.2648	
15 minute winter	120	31.001	111	44.2	0.945	0.241	1.0684	
15 minute winter	122	32.000	111	11.3	0.885	0.781	0.0638	
30 minute winter	111	28.006	110	113.4	1.018	0.610	4.3990	
15 minute winter	123	33.000	110	11.3	0.885	0.781	0.0638	



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	110	24	4.328	0.633	137.5	1.2684	0.0000	SURCHARGED
30 minute winter	109	24	4.318	0.811	129.6	0.2004	0.0000	OK
720 minute winter	20	705	4.857	1.357	23.3	0.0000	0.0000	SURCHARGED
720 minute winter	19	705	4.856	1.388	8.8	4.0988	0.0000	SURCHARGED
1440 minute winter	18	1440	4.044	0.727	8.8	1.1245	0.0000	SURCHARGED
15 minute winter	13	12	5.569	0.154	20.5	1.5948	0.0000	SURCHARGED
15 minute winter	12	12	4.554	0.079	17.2	0.1130	0.0000	OK
15 minute winter	15	12	5.319	0.154	20.5	1.5948	0.0000	SURCHARGED
15 minute winter	14	12	4.176	0.076	17.2	0.1086	0.0000	OK
15 minute winter	16	12	5.119	0.154	20.5	1.5948	0.0000	SURCHARGED
15 minute winter	11	11	4.163	0.238	103.6	0.7645	0.0000	OK
15 minute winter	17	12	5.244	0.154	20.5	1.5948	0.0000	SURCHARGED
1440 minute winter	10	1440	4.041	0.190	9.5	0.6706	0.0000	OK
1440 minute winter	9	1440	4.041	0.913	22.2	3.0152	0.0000	SURCHARGED
1440 minute winter	21	1440	4.040	0.790	49.2	0.0000	0.0000	SURCHARGED
1440 minute winter	8	1440	4.040	1.290	63.6	1.8463	0.0000	SURCHARGED
1440 minute winter	7	1470	4.041	1.513	64.5	0.9851	0.0000	OK
15 minute winter	75	12	4.321	0.171	26.3	0.3874	0.0000	OK
15 minute winter	74	12	4.305	0.405	47.0	0.8505	0.0000	SURCHARGED
15 minute winter	73	12	4.240	0.540	75.9	1.4305	0.0000	SURCHARGED
15 minute winter	72	12	4.085	0.492	87.3	0.9615	0.0000	SURCHARGED
1440 minute winter	71	1500	4.038	0.682	6.4	0.7586	0.0000	OK
1440 minute winter	4	1440	4.037	1.537	49.1	0.0000	0.0000	SURCHARGED
1440 minute winter	3	1440	4.034	1.934	35.0	4.9230	0.0000	SURCHARGED
600 minute winter	2	210	1.832	0.092	19.5	0.1313	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)
30 minute winter	110	28.007	109	123.5	1.229	0.665	1.7625	
30 minute winter	109	Flow through pond	108	86.0	0.110	0.006	38.8013	
720 minute winter	20	34.000	19	8.3	0.118	0.130	0.6737	
720 minute winter	19	34.001	18	8.5	0.440	0.134	3.1854	
1440 minute winter	18	34.002	9	9.2	0.465	0.321	3.9828	
15 minute winter	13	35.000	12	17.2	1.015	1.188	0.0821	
15 minute winter	12	35.001	11	17.2	0.501	0.154	2.0437	
15 minute winter	15	36.000	14	17.2	1.015	1.188	0.0821	
15 minute winter	14	36.001	11	17.2	0.386	0.064	1.2818	
15 minute winter	16	37.000	11	17.2	1.015	1.188	0.0821	
15 minute winter	11	35.002	10	104.7	1.452	0.564	1.6220	
15 minute winter	17	38.000	10	17.2	1.015	1.188	0.0821	
1440 minute winter	10	35.003	9	9.5	0.611	0.017	2.8193	
1440 minute winter	9	34.003	8	22.0	0.555	0.069	6.0801	
1440 minute winter	21	39.000	8	45.2	0.901	0.081	2.6729	
1440 minute winter	8	34.004	7	63.2	0.909	0.340	4.1194	
1440 minute winter	7	Flow through pond	4	49.1	0.021	0.001	1305.6425	
15 minute winter	75	40.000	74	26.0	0.870	0.224	1.2854	
15 minute winter	74	40.001	73	42.0	0.731	0.580	3.2859	
15 minute winter	73	40.002	72	69.1	0.982	1.084	2.2599	
15 minute winter	72	40.003	71	86.1	1.223	1.350	2.2800	
1440 minute winter	71	Flow through pond	23	14.2	0.035	0.001	631.6158	
1440 minute winter	4	41.000	3	35.0	0.641	0.136	0.5281	
1440 minute winter	3	Hydro-Brake®	2	19.5				
600 minute winter	2	41.002	1	19.5	1.080	0.201	1.4968	788.9



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	210	1.200	0.090	19.5	0.0000	0.0000	OK
15 minute winter	81	11	5.912	0.097	11.6	0.9403	0.0000	OK
15 minute winter	80	12	4.804	0.054	10.0	0.0774	0.0000	OK
15 minute winter	82	11	5.687	0.097	11.6	0.9402	0.0000	OK
15 minute winter	79	11	4.529	0.129	43.3	0.2864	0.0000	OK
15 minute winter	83	11	5.337	0.097	11.6	0.9403	0.0000	OK
15 minute winter	78	11	4.334	0.259	87.4	0.6687	0.0000	OK
15 minute winter	84	10	4.175	0.100	24.2	0.2207	0.0000	OK
15 minute winter	77	11	4.062	0.362	203.4	1.6602	0.0000	OK
1440 minute winter	76	1470	4.038	0.682	11.3	0.7584	0.0000	OK
15 minute winter	34	11	4.997	0.072	1.2	0.1034	0.0000	OK
15 minute winter	33	11	4.996	0.104	2.4	0.1492	0.0000	OK
15 minute winter	32	11	4.995	0.139	30.5	0.3279	0.0000	OK
15 minute winter	31	11	4.913	0.251	110.7	1.0071	0.0000	OK
600 minute winter	30	585	4.858	1.316	12.0	0.6738	0.0000	OK
1440 minute winter	27	1470	4.037	0.037	0.2	0.0536	0.0000	OK
1440 minute winter	26	1440	4.037	0.337	2.1	0.9868	0.0000	SURCHARGED
1440 minute winter	25	1470	4.037	0.418	3.0	0.8233	0.0000	SURCHARGED
1440 minute winter	24	1440	4.041	0.750	5.5	0.5658	0.0000	OK
1440 minute winter	6	1470	4.036	0.786	20.8	0.0000	0.0000	SURCHARGED
1440 minute winter	5	1500	4.036	1.509	21.6	1.0321	0.0000	OK
1440 minute winter	23	1470	4.037	0.787	14.2	0.0000	0.0000	SURCHARGED
1440 minute winter	22	1500	4.038	0.859	13.8	0.6011	0.0000	OK
1440 minute winter	29	1440	4.041	0.791	63.7	0.0000	0.0000	SURCHARGED
1440 minute winter	28	1440	4.043	0.827	57.1	1.0910	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	81	42.000	80	10.0	0.859	0.694	0.0585	
15 minute winter	80	42.001	79	10.1	0.587	0.072	0.4148	
15 minute winter	82	43.000	79	10.0	0.859	0.694	0.0585	
15 minute winter	79	42.002	78	43.2	0.914	0.393	1.5562	
15 minute winter	83	44.000	78	10.0	0.859	0.694	0.0585	
15 minute winter	78	42.003	77	86.1	1.406	0.971	2.1557	
15 minute winter	84	45.000	77	23.7	0.438	0.246	2.2769	
15 minute winter	77	42.004	76	203.7	1.583	1.096	1.2280	
1440 minute winter	76	Flow through pond	23	14.2	0.035	0.001	631.6158	
15 minute winter	34	46.000	33	-1.2	-0.176	-0.019	0.1712	
15 minute winter	33	46.001	32	-2.4	-0.157	-0.038	0.2865	
15 minute winter	32	46.002	31	28.7	0.599	0.450	2.7701	
15 minute winter	31	46.003	30	108.3	1.772	0.974	1.3129	
600 minute winter	30	Flow through pond	20	25.8	0.055	0.001	605.4105	
1440 minute winter	27	47.000	26	0.2	0.005	0.002	1.4762	
1440 minute winter	26	47.001	25	2.1	0.373	0.033	1.7037	
1440 minute winter	25	47.002	24	3.1	0.490	0.049	1.7748	
1440 minute winter	24	Flow through pond	6	16.5	0.030	0.001	438.2466	
1440 minute winter	6	48.000	5	-20.8	0.721	-0.112	3.8025	
1440 minute winter	5	Flow through pond	4	49.1	0.021	0.001	1305.6425	
1440 minute winter	23	49.000	22	12.9	0.344	0.069	3.3851	
1440 minute winter	22	Flow through pond	6	16.5	0.030	0.001	438.2466	
1440 minute winter	29	50.000	28	55.2	0.726	0.297	1.6012	
1440 minute winter	28	Flow through pond	21	49.2	0.074	0.003	396.7175	



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	40	15	5.351	0.001	0.2	0.0000	0.0000	OK
15 minute winter	46	11	5.599	0.099	1.7	0.1414	0.0000	OK
15 minute winter	45	11	5.598	0.136	4.4	0.1939	0.0000	OK
15 minute winter	44	11	5.596	0.194	38.9	0.4029	0.0000	OK
15 minute winter	43	11	5.566	0.186	36.3	0.2664	0.0000	OK
15 minute winter	42	11	5.519	0.208	36.1	0.2978	0.0000	OK
15 minute winter	41	10	5.491	0.263	99.6	0.7022	0.0000	OK
15 minute winter	39	12	5.353	0.142	114.7	0.0000	0.0000	OK
15 minute winter	51	12	6.574	0.134	18.6	1.7376	0.0000	OK
15 minute winter	50	13	5.398	0.098	15.4	0.1405	0.0000	OK
15 minute winter	52	12	6.199	0.134	18.6	1.7369	0.0000	OK
15 minute winter	49	12	5.393	0.493	58.9	1.0490	0.0000	SURCHARGED
15 minute winter	53	12	5.824	0.134	18.6	1.7377	0.0000	OK
15 minute winter	48	12	5.294	0.769	96.7	1.7355	0.0000	SURCHARGED
15 minute winter	57	12	6.599	0.134	18.6	1.7361	0.0000	OK
15 minute winter	56	12	5.402	0.077	15.3	0.1105	0.0000	OK
960 minute winter	55	945	5.246	0.446	5.7	1.3657	0.0000	SURCHARGED
15 minute winter	54	12	5.874	0.134	18.6	1.7377	0.0000	OK
960 minute winter	47	945	5.246	0.809	16.0	1.6469	0.0000	SURCHARGED
960 minute winter	38	945	5.246	0.838	22.2	0.0000	0.0000	SURCHARGED
15 minute winter	67	11	6.901	1.201	110.9	4.7359	0.0000	FLOOD RISK
15 minute winter	69	14	6.620	0.355	55.4	11.4767	0.0000	FLOOD RISK
15 minute winter	68	11	6.804	1.454	51.3	2.0807	0.0000	FLOOD RISK
15 minute winter	70	14	6.530	0.390	61.5	13.8735	0.0000	FLOOD RISK
15 minute winter	66	11	6.800	1.550	218.5	6.4248	7.6184	FLOOD

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	40	1.000	39	-0.2	-0.012	-0.002	4.8419	
15 minute winter	46	2.000	45	-1.7	-0.207	-0.027	0.2916	
15 minute winter	45	2.001	44	-4.4	0.170	-0.069	0.7112	
15 minute winter	44	2.002	43	36.3	0.786	0.569	0.3092	
15 minute winter	43	2.003	42	36.1	0.746	0.567	1.0173	
15 minute winter	42	2.004	41	37.9	0.669	0.594	1.4556	
15 minute winter	41	2.005	39	114.7	2.405	2.331	0.4016	
15 minute winter	39	1.001	38	84.1	0.445	0.075	35.5093	
15 minute winter	51	3.000	50	15.4	0.984	1.062	0.0776	
15 minute winter	50	3.001	49	20.1	0.532	0.184	1.8633	
15 minute winter	52	4.000	49	15.4	0.984	1.062	0.0776	
15 minute winter	49	3.002	48	55.3	0.786	0.523	2.9161	
15 minute winter	53	5.000	48	15.3	0.984	1.062	0.0777	
15 minute winter	48	3.003	47	94.7	1.345	1.485	1.8611	
15 minute winter	57	6.000	56	15.3	0.983	1.061	0.0798	
15 minute winter	56	6.001	55	15.3	0.661	0.148	2.5715	
960 minute winter	55	6.002	47	5.7	0.432	0.043	1.7595	
15 minute winter	54	7.000	47	15.3	0.984	1.062	0.0777	
960 minute winter	47	3.004	38	15.7	0.869	0.222	0.4974	
960 minute winter	38	1.002	37	17.1	0.193	0.021	315.4654	
15 minute winter	67	8.000	66	116.4	1.023	0.344	6.5095	
15 minute winter	69	9.000	68	-38.6	-2.190	-2.667	0.0880	
15 minute winter	68	9.001	66	-44.2	0.469	-0.238	4.7512	
15 minute winter	70	10.000	66	-44.7	-2.538	-3.090	0.0880	
15 minute winter	66	8.001	65	145.9	1.168	0.785	10.8752	



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	65	11	6.855	1.834	148.5	3.0239	0.0000	SURCHARGED
15 minute winter	64	11	6.883	1.919	154.8	2.7466	0.0000	SURCHARGED
15 minute winter	63	11	6.825	2.011	283.2	9.0977	0.0000	SURCHARGED
15 minute winter	62	11	6.439	1.775	268.0	2.5398	0.0000	SURCHARGED
15 minute winter	61	11	6.180	1.608	301.5	3.3347	0.0000	SURCHARGED
15 minute winter	60	11	5.713	1.287	395.9	4.2973	0.0000	SURCHARGED
15 minute winter	59	11	5.479	1.072	402.2	1.8992	0.0000	SURCHARGED
960 minute winter	58	945	5.246	0.911	41.1	1.7962	0.0000	SURCHARGED
960 minute winter	37	945	5.246	1.217	50.6	0.0000	0.0000	SURCHARGED
960 minute winter	36	945	5.246	1.347	36.8	0.0000	0.0000	SURCHARGED
960 minute winter	35	945	5.248	1.706	31.8	0.9621	0.0000	OK
15 minute winter	97	14	6.230	0.290	38.0	7.7119	0.0000	FLOOD RISK
15 minute winter	96	12	6.282	1.307	55.5	2.8305	0.0000	FLOOD RISK
15 minute winter	98	12	6.330	0.140	17.8	2.0766	0.0000	OK
15 minute winter	95	11	6.319	1.611	99.7	3.9967	0.0000	SURCHARGED
15 minute winter	94	11	6.000	1.556	165.5	6.2693	0.0000	FLOOD RISK
30 minute winter	93	19	5.925	1.510	139.2	2.6682	10.0232	FLOOD
30 minute winter	92	19	5.900	1.584	139.4	4.0091	19.0940	FLOOD
15 minute winter	91	12	5.930	1.698	164.7	4.0007	0.0000	FLOOD RISK
15 minute winter	102	13	6.281	1.031	80.1	2.6154	0.0000	SURCHARGED
15 minute winter	101	12	6.325	1.500	168.6	4.1910	1.5954	FLOOD
15 minute winter	104	12	6.329	1.254	88.3	4.7204	0.0000	FLOOD RISK
180 minute winter	103	180	5.335	1.260	133.4	0.0000	0.0000	FLOOD RISK
15 minute winter	100	12	6.275	2.250	240.6	7.2495	1.7776	FLOOD
15 minute winter	99	12	6.112	2.219	176.4	3.1750	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	65	8.002	64	154.8	1.073	0.833	2.7110	
15 minute winter	64	8.003	63	160.1	1.011	0.862	7.1300	
15 minute winter	63	8.004	62	268.0	1.691	1.442	7.1300	
15 minute winter	62	8.005	61	264.9	1.672	1.426	4.3773	
15 minute winter	61	8.006	60	296.8	1.873	1.597	6.9490	
15 minute winter	60	8.007	59	383.9	2.423	2.066	0.9019	
15 minute winter	59	8.008	58	400.5	2.528	2.155	3.4265	
960 minute winter	58	8.009	37	40.7	0.900	0.219	1.1733	
960 minute winter	37	1.003	36	36.8	0.339	0.057	255.8507	
960 minute winter	36	1.004	35	30.4	0.707	0.146	2.4559	
960 minute winter	35	Flow through pond	20	22.0	0.051	0.001	859.3096	
15 minute winter	97	11.000	96	25.2	1.433	1.745	0.0880	
15 minute winter	96	11.001	95	38.7	0.581	0.607	5.6351	
15 minute winter	98	12.000	95	14.3	0.922	0.987	0.0852	
15 minute winter	95	11.002	94	66.9	0.989	1.609	5.5871	
15 minute winter	94	11.003	93	150.9	1.133	0.812	1.3556	
30 minute winter	93	11.004	92	111.8	1.038	0.602	4.7203	
30 minute winter	92	11.005	91	117.4	1.394	0.632	3.9727	
15 minute winter	91	11.006	90	150.5	1.004	0.470	6.8272	
15 minute winter	102	13.000	101	81.9	1.047	0.265	7.3835	
15 minute winter	101	13.001	100	91.7	0.757	0.216	7.3835	
15 minute winter	104	14.000	100	84.0	0.930	0.160	6.3377	
180 minute winter	103	15.000	100	30.2	0.852	0.163	2.3767	
15 minute winter	100	13.002	99	176.4	1.113	0.949	6.2571	
15 minute winter	99	13.003	90	178.4	1.126	0.960	3.9578	



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	90	12	5.992	2.182	209.3	5.2226	0.0000	SURCHARGED
15 minute winter	89	12	5.822	2.132	260.1	6.5215	0.0000	FLOOD RISK
15 minute winter	106	13	5.560	0.270	31.6	4.5816	0.0000	FLOOD RISK
15 minute winter	105	12	5.522	1.297	61.0	2.9733	0.0000	FLOOD RISK
15 minute winter	107	12	5.563	1.138	15.5	1.6287	0.0000	SURCHARGED
15 minute winter	88	12	5.546	1.977	450.8	9.2009	0.0000	FLOOD RISK
30 minute winter	87	21	4.963	1.614	421.1	3.2405	0.0000	SURCHARGED
30 minute winter	108	25	4.774	1.274	115.8	0.0000	0.0000	FLOOD RISK
30 minute winter	86	23	4.649	1.440	454.6	2.7498	0.0000	SURCHARGED
30 minute winter	85	24	4.526	1.343	482.6	1.6735	0.0000	OK
15 minute winter	135	12	7.203	0.113	14.6	1.2330	0.0000	OK
15 minute winter	134	11	6.940	0.840	12.5	1.2023	0.0000	SURCHARGED
15 minute winter	136	12	6.911	0.121	18.0	1.4056	0.0000	OK
15 minute winter	133	11	6.884	0.909	81.4	1.7506	0.0000	SURCHARGED
15 minute winter	132	11	6.766	1.066	78.9	1.8974	0.0000	SURCHARGED
15 minute winter	138	11	6.620	0.795	28.5	1.5199	0.0000	SURCHARGED
15 minute winter	137	11	6.708	1.264	65.5	2.7394	0.0000	FLOOD RISK
15 minute winter	131	11	6.682	1.315	139.4	2.5713	0.0000	SURCHARGED
15 minute winter	141	14	6.513	0.273	36.6	6.8788	0.0000	FLOOD RISK
30 minute winter	140	22	6.506	1.206	24.8	1.7258	0.0000	FLOOD RISK
30 minute winter	139	24	6.400	0.510	52.3	18.1210	0.0000	FLOOD RISK
15 minute winter	130	11	6.500	1.500	307.2	9.6630	15.5721	FLOOD
15 minute winter	144	11	6.789	1.014	111.2	2.2703	0.0000	SURCHARGED
15 minute winter	143	11	6.625	1.500	134.3	3.8520	5.2630	FLOOD
15 minute winter	142	11	6.516	1.432	105.4	3.4330	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	90	11.007	89	216.9	1.369	1.167	5.6914	
15 minute winter	89	11.008	88	255.5	1.613	1.375	5.7539	
15 minute winter	106	16.000	105	26.4	1.498	1.824	0.0880	
15 minute winter	105	16.001	88	51.1	0.466	0.115	5.5376	
15 minute winter	107	17.000	88	15.8	-0.156	0.031	5.6484	
15 minute winter	88	11.009	87	433.9	2.009	1.557	14.2374	
30 minute winter	87	11.010	86	418.6	1.938	1.502	9.1047	
30 minute winter	108	18.000	86	118.3	1.680	1.027	0.9241	
30 minute winter	86	11.011	85	453.9	2.101	1.628	1.6814	
30 minute winter	85	Flow through pond	29	342.5	0.178	0.016	355.7181	
15 minute winter	135	19.000	134	12.5	0.915	0.862	0.0680	
15 minute winter	134	19.001	133	15.5	0.462	0.205	1.8840	
15 minute winter	136	20.000	133	13.7	0.946	0.947	0.0772	
15 minute winter	133	19.002	132	64.4	1.260	0.557	1.7884	
15 minute winter	132	19.003	131	70.6	1.627	0.476	0.7264	
15 minute winter	138	21.000	137	17.1	1.060	0.158	1.7127	
15 minute winter	137	21.001	131	47.4	0.684	0.255	3.6521	
15 minute winter	131	19.004	130	146.0	0.922	0.615	10.7410	
15 minute winter	141	22.000	140	25.0	1.419	1.727	0.0880	
30 minute winter	140	22.001	130	27.7	0.507	0.383	2.4648	
30 minute winter	139	23.000	130	-39.2	-2.227	-2.712	0.0880	
15 minute winter	130	19.005	129	169.9	1.080	0.824	7.7379	
15 minute winter	144	24.000	143	83.0	0.565	0.298	13.9053	
15 minute winter	143	24.001	142	74.2	0.775	0.399	1.9579	
15 minute winter	142	24.002	129	107.2	0.685	0.410	6.8720	



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	129	11	6.400	1.675	329.7	5.8742	19.6825	FLOOD
15 minute winter	128	11	6.387	1.687	260.4	2.9817	0.0000	FLOOD RISK
15 minute winter	127	11	6.359	1.709	329.8	7.2679	0.0000	SURCHARGED
15 minute winter	149	12	6.843	0.868	42.9	2.0386	0.0000	SURCHARGED
15 minute winter	148	12	6.813	1.063	100.7	3.1578	0.0000	SURCHARGED
15 minute winter	147	12	6.704	1.129	91.8	1.6158	0.0000	SURCHARGED
15 minute winter	146	12	6.589	1.164	108.7	2.4986	0.0000	SURCHARGED
15 minute winter	145	12	6.478	0.263	36.4	3.9201	0.0000	FLOOD RISK
15 minute winter	126	11	6.253	1.628	432.2	2.8773	0.0000	SURCHARGED
60 minute winter	150	45	5.469	0.944	46.2	44.2839	0.0000	SURCHARGED
15 minute winter	125	11	5.663	1.188	578.8	6.4191	0.0000	SURCHARGED
30 minute winter	124	20	5.450	1.332	555.0	2.5132	0.0000	OK
15 minute winter	117	13	5.037	0.462	25.5	0.6604	0.0000	SURCHARGED
30 minute winter	116	22	5.018	0.893	64.6	2.9660	0.0000	SURCHARGED
30 minute winter	115	22	5.014	0.911	59.0	1.3030	0.0000	SURCHARGED
30 minute winter	114	22	5.002	0.987	76.1	1.8729	0.0000	SURCHARGED
15 minute winter	118	12	5.583	0.143	20.2	1.9835	0.0000	OK
30 minute winter	113	22	4.996	1.040	78.4	1.6089	0.0000	SURCHARGED
15 minute winter	119	12	5.258	0.143	20.2	1.9835	0.0000	OK
30 minute winter	112	22	4.974	1.157	98.1	2.1592	0.0000	SURCHARGED
15 minute winter	121	13	5.009	0.359	22.1	0.5140	0.0000	SURCHARGED
30 minute winter	120	22	4.989	0.564	53.3	1.6859	0.0000	SURCHARGED
15 minute winter	122	12	5.283	0.143	20.2	1.9835	0.0000	OK
30 minute winter	111	22	4.960	1.172	147.2	1.8655	0.0000	SURCHARGED
15 minute winter	123	12	5.033	0.143	20.2	1.9833	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	129	19.006	128	260.4	1.205	1.148	2.4360	
15 minute winter	128	19.007	127	263.5	1.220	1.104	4.4066	
15 minute winter	127	19.008	126	313.9	1.453	1.566	3.1102	
15 minute winter	149	25.000	148	36.7	0.833	0.375	2.0323	
15 minute winter	148	25.001	147	91.8	1.591	0.679	0.8352	
15 minute winter	147	25.002	146	84.0	1.553	0.697	0.8986	
15 minute winter	146	25.003	126	108.8	1.659	0.672	2.0957	
15 minute winter	145	26.000	126	27.1	1.542	1.878	0.0870	
15 minute winter	126	19.009	125	435.1	2.014	1.833	13.3582	
60 minute winter	150	27.000	125	-27.7	-1.575	-1.918	0.0880	
15 minute winter	125	19.010	124	521.5	2.414	2.358	2.5609	
30 minute winter	124	Flow through pond	103	259.2	0.192	0.011	665.4318	
15 minute winter	117	28.000	116	-25.5	-0.541	-0.288	3.2934	
30 minute winter	116	28.001	115	59.0	0.894	0.317	1.0506	
30 minute winter	115	28.002	114	57.1	0.796	0.307	4.1647	
30 minute winter	114	28.003	113	62.3	0.891	0.336	2.8258	
15 minute winter	118	29.000	113	16.3	1.002	1.127	0.0805	
30 minute winter	113	28.004	112	70.4	0.728	0.379	6.6036	
15 minute winter	119	30.000	112	16.3	1.002	1.127	0.0805	
30 minute winter	112	28.005	111	96.4	0.675	0.519	1.3759	
15 minute winter	121	31.000	120	-22.1	-0.332	-0.213	1.8278	
30 minute winter	120	31.001	111	52.8	0.955	0.288	1.6569	
15 minute winter	122	32.000	111	16.3	1.002	1.127	0.0805	
30 minute winter	111	28.006	110	145.7	1.017	0.784	4.3990	
15 minute winter	123	33.000	110	16.3	1.002	1.127	0.0805	



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	110	23	4.899	1.204	176.5	2.4830	0.0000	SURCHARGED
30 minute winter	109	23	4.866	1.360	180.4	0.3699	0.0000	OK
960 minute winter	20	945	5.245	1.745	22.0	0.0000	0.0000	FLOOD RISK
960 minute winter	19	945	5.244	1.776	8.8	5.5129	0.0000	SURCHARGED
2160 minute winter	18	2160	4.492	1.175	8.7	1.8297	0.0000	SURCHARGED
15 minute winter	13	12	5.641	0.226	31.6	3.2692	0.0000	SURCHARGED
15 minute winter	12	12	4.568	0.093	23.9	0.1336	0.0000	OK
15 minute winter	15	12	5.391	0.226	31.6	3.2692	0.0000	SURCHARGED
15 minute winter	14	12	4.490	0.390	24.8	0.5574	0.0000	OK
15 minute winter	16	12	5.191	0.226	31.6	3.2692	0.0000	SURCHARGED
15 minute winter	11	12	4.494	0.569	150.6	1.9311	0.0000	SURCHARGED
15 minute winter	17	12	5.316	0.226	31.6	3.2692	0.0000	SURCHARGED
2160 minute winter	10	2160	4.488	0.637	10.5	2.3885	0.0000	SURCHARGED
2160 minute winter	9	2160	4.488	1.360	24.3	4.7486	0.0000	SURCHARGED
2160 minute winter	21	2160	4.488	1.238	49.7	0.0000	0.0000	FLOOD RISK
2160 minute winter	8	2160	4.488	1.738	65.0	2.4868	0.0000	SURCHARGED
2160 minute winter	7	2160	4.488	1.961	66.4	1.4057	0.0000	OK
15 minute winter	75	12	5.321	1.171	48.9	2.7504	0.0000	SURCHARGED
15 minute winter	74	12	5.297	1.397	62.5	3.0250	0.0000	FLOOD RISK
15 minute winter	73	12	5.154	1.454	105.1	4.0282	0.0000	FLOOD RISK
15 minute winter	72	12	4.817	1.224	127.2	2.4568	0.0000	SURCHARGED
2160 minute winter	71	2160	4.489	1.133	6.4	1.3854	0.0000	OK
2160 minute winter	4	2160	4.484	1.984	41.3	0.0000	0.0000	FLOOD RISK
2160 minute winter	3	2160	4.481	2.381	58.0	6.0598	0.0000	FLOOD RISK
960 minute winter	2	240	1.832	0.092	19.5	0.1313	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)
30 minute winter	110	28.007	109	173.6	1.204	0.935	1.7625	
30 minute winter	109	Flow through pond	108	115.8	0.107	0.008	90.3175	
960 minute winter	20	34.000	19	8.3	-0.119	0.131	0.6737	
960 minute winter	19	34.001	18	8.5	0.449	0.134	3.1854	
2160 minute winter	18	34.002	9	8.7	0.463	0.305	3.9828	
15 minute winter	13	35.000	12	23.9	1.360	1.656	0.0862	
15 minute winter	12	35.001	11	23.8	0.560	0.214	2.4477	
15 minute winter	15	36.000	14	23.9	1.360	1.656	0.0862	
15 minute winter	14	36.001	11	35.1	0.430	0.130	3.8119	
15 minute winter	16	37.000	11	23.9	1.360	1.656	0.0862	
15 minute winter	11	35.002	10	158.2	1.587	0.851	3.4997	
15 minute winter	17	38.000	10	23.9	1.360	1.656	0.0862	
2160 minute winter	10	35.003	9	10.5	0.499	0.019	4.0268	
2160 minute winter	9	34.003	8	24.1	0.508	0.075	6.0801	
2160 minute winter	21	39.000	8	41.2	0.810	0.074	2.6729	
2160 minute winter	8	34.004	7	65.0	0.845	0.350	4.1194	
2160 minute winter	7	Flow through pond	4	41.3	0.021	0.001	1790.6870	
15 minute winter	75	40.000	74	31.7	0.913	0.274	1.6178	
15 minute winter	74	40.001	73	58.0	0.824	0.801	3.2859	
15 minute winter	73	40.002	72	101.9	1.447	1.597	2.2599	
15 minute winter	72	40.003	71	127.7	1.814	2.002	2.2800	
2160 minute winter	71	Flow through pond	23	10.1	0.031	0.001	1108.0164	
2160 minute winter	4	41.000	3	58.0	1.022	0.225	0.5281	
2160 minute winter	3	Hydro-Brake®	2	19.5				
960 minute winter	2	41.002	1	19.5	1.080	0.201	1.4968	1216.4



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	240	1.200	0.090	19.5	0.0000	0.0000	OK
15 minute winter	81	12	5.945	0.130	17.8	1.6323	0.0000	OK
15 minute winter	80	12	4.927	0.177	14.8	0.2531	0.0000	OK
15 minute winter	82	12	5.720	0.130	17.8	1.6322	0.0000	OK
15 minute winter	79	12	4.916	0.516	64.6	1.1830	0.0000	SURCHARGED
15 minute winter	83	12	5.370	0.130	17.8	1.6323	0.0000	OK
15 minute winter	78	12	4.794	0.719	118.1	1.9390	0.0000	SURCHARGED
2160 minute winter	84	2160	4.488	0.413	1.6	0.9403	0.0000	SURCHARGED
2160 minute winter	77	2160	4.486	0.786	11.0	3.8461	0.0000	SURCHARGED
2160 minute winter	76	2160	4.488	1.132	12.4	1.3844	0.0000	OK
15 minute winter	34	11	5.312	0.387	6.5	0.5533	0.0000	SURCHARGED
15 minute winter	33	11	5.301	0.409	16.0	0.5855	0.0000	SURCHARGED
15 minute winter	32	11	5.291	0.435	47.0	1.0659	0.0000	SURCHARGED
960 minute winter	31	945	5.246	0.584	10.9	2.4716	0.0000	SURCHARGED
960 minute winter	30	930	5.250	1.708	12.7	0.9633	1.7990	FLOOD
2160 minute winter	27	2160	4.486	0.486	0.4	0.6957	0.0000	SURCHARGED
2160 minute winter	26	2160	4.487	0.787	2.4	2.4249	0.0000	SURCHARGED
2160 minute winter	25	2160	4.486	0.867	3.2	1.7575	0.0000	SURCHARGED
2160 minute winter	24	2160	4.489	1.198	8.3	0.9933	0.0000	OK
2160 minute winter	6	2160	4.486	1.236	21.4	0.0000	0.0000	FLOOD RISK
2160 minute winter	5	2160	4.491	1.963	24.6	1.4785	0.0000	OK
2160 minute winter	23	2160	4.487	1.237	13.5	0.0000	0.0000	FLOOD RISK
2160 minute winter	22	2160	4.490	1.311	11.0	1.0092	0.0000	OK
2160 minute winter	29	2100	4.489	1.239	63.2	0.0000	0.0000	FLOOD RISK
2160 minute winter	28	2100	4.490	1.274	58.0	1.8492	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	81	42.000	80	14.8	0.972	1.027	0.0761	
15 minute winter	80	42.001	79	24.0	0.630	0.171	1.2544	
15 minute winter	82	43.000	79	14.8	0.972	1.027	0.0761	
15 minute winter	79	42.002	78	68.2	1.001	0.620	2.3387	
15 minute winter	83	44.000	78	14.8	0.972	1.027	0.0761	
15 minute winter	78	42.003	77	121.4	1.724	1.370	2.4819	
2160 minute winter	84	45.000	77	1.4	0.155	0.015	3.5209	
2160 minute winter	77	42.004	76	10.8	0.656	0.058	1.5158	
2160 minute winter	76	Flow through pond	23	10.1	0.031	0.001	1108.0164	
15 minute winter	34	46.000	33	-6.5	-0.193	-0.102	0.6932	
15 minute winter	33	46.001	32	-16.0	-0.248	-0.251	0.7509	
15 minute winter	32	46.002	31	47.2	0.775	0.740	4.1066	
960 minute winter	31	46.003	30	10.9	0.956	0.098	1.5139	
960 minute winter	30	Flow through pond	20	22.0	0.051	0.001	859.3096	
2160 minute winter	27	47.000	26	-0.4	-0.007	-0.004	2.7548	
2160 minute winter	26	47.001	25	2.2	0.365	0.034	1.7037	
2160 minute winter	25	47.002	24	3.1	0.480	0.048	1.7748	
2160 minute winter	24	Flow through pond	6	-12.0	0.019	-0.001	770.0488	
2160 minute winter	6	48.000	5	-21.4	0.636	-0.115	3.8025	
2160 minute winter	5	Flow through pond	4	41.3	0.021	0.001	1790.6870	
2160 minute winter	23	49.000	22	9.1	0.296	0.049	3.3851	
2160 minute winter	22	Flow through pond	6	-12.0	0.019	-0.001	770.0488	
2160 minute winter	29	50.000	28	55.9	0.690	0.301	1.6012	
2160 minute winter	28	Flow through pond	21	49.7	0.069	0.003	698.4926	