

**Design Settings**

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	50	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	3.000
Ratio-R	0.450	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	x
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
101	0.081	5.00	3.660	1500	524101.347	324632.827	1.565
102	0.069	5.00	3.880	1500	524115.568	324648.217	1.780
103			3.650	1500	524107.086	324639.567	1.571
104	0.048	5.00	3.620	1500	524080.233	324664.328	1.604
105	0.096	5.00	3.480	1500	524072.634	324678.029	1.491
106	0.090	5.00	3.520	1500	524079.060	324688.818	1.553
107	0.137	5.00	3.860	1500	524113.573	324725.494	1.980
108	0.097	5.00	3.820	1500	524156.181	324703.939	1.800
109	0.053	5.00	3.820	1500	524134.773	324724.043	1.851
110	0.031	5.00	3.800	1500	524121.818	324736.628	1.944
111	0.058	5.00	3.540	1500	524081.216	324771.068	1.588
112	0.052	5.00	3.580	1500	524093.703	324774.924	1.651
113	0.024	5.00	3.580	1500	524100.696	324758.304	1.682
114	0.022	5.00	3.640	1500	524105.902	324751.648	1.757
115	0.031	5.00	3.740	1500	524117.760	324740.682	1.885
116			3.760	1500	524121.613	324741.119	1.912
117	0.011	5.00	3.830	1500	524130.684	324749.326	2.003
118	0.025	5.00	3.890	1500	524139.569	324753.182	2.080
119	0.106	5.00	4.035	1500	524176.790	324763.635	2.292
120	0.029	5.00	4.120	1500	524200.623	324728.688	2.320
121	0.035	5.00	3.880	1500	524194.154	324745.155	2.111
122	0.051	5.00	3.960	1500	524187.785	324767.595	2.238
123	0.059	5.00	4.020	1500	524184.300	324780.161	2.321
124	0.065	5.00	4.020	1500	524160.647	324805.652	2.349
125	0.037	5.00	3.900	1500	524175.580	324811.238	2.257
HW3			3.000	1200	524197.555	324819.335	1.590

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)
2.000	101	103	8.852	0.600	2.095	2.079	0.016	553.3	600	5.14	50.0
1.000	102	103	12.115	0.600	2.100	2.079	0.021	576.9	600	5.20	50.0
1.001	103	104	36.527	0.600	2.079	2.016	0.063	579.8	600	5.81	50.0
1.002	104	105	15.667	0.600	2.016	1.989	0.027	580.3	600	6.07	50.0
1.003	105	106	12.558	0.600	1.989	1.967	0.022	570.8	600	6.27	50.0
1.004	106	107	50.361	0.600	1.967	1.880	0.087	578.9	600	7.11	50.0
3.000	108	109	29.368	0.600	2.020	1.969	0.051	575.8	600	5.49	50.0
3.001	109	110	18.061	0.600	1.969	1.856	0.113	159.8	600	5.64	50.0
1.005	107	110	13.854	0.600	1.880	1.856	0.024	577.3	600	7.34	50.0
4.000	111	112	13.069	0.600	1.952	1.929	0.023	568.2	600	5.21	50.0
4.001	112	113	18.031	0.600	1.929	1.898	0.031	581.7	600	5.51	50.0
4.002	113	114	8.450	0.600	1.898	1.883	0.015	563.3	600	5.65	50.0
4.003	114	115	16.151	0.600	1.883	1.855	0.028	576.8	600	5.92	50.0
4.004	115	116	3.878	0.600	1.855	1.848	0.007	554.0	600	5.98	50.0
1.006	110	116	4.496	0.600	1.856	1.848	0.008	562.0	600	7.41	50.0
1.007	116	117	12.233	0.600	1.848	1.827	0.021	582.5	600	7.62	50.0
1.008	117	118	9.686	0.600	1.827	1.810	0.017	569.7	600	7.78	50.0
1.009	118	119	38.661	0.600	1.810	1.743	0.067	577.0	600	8.42	50.0
5.000	120	121	17.692	0.600	1.800	1.769	0.031	570.7	600	5.29	50.0
5.001	121	122	23.326	0.600	1.769	1.722	0.047	496.3	600	5.65	50.0
1.010	119	122	11.686	0.600	1.743	1.722	0.021	556.5	600	8.61	50.0
1.011	122	123	13.040	0.600	1.722	1.699	0.023	567.0	600	8.82	50.0
6.000	124	125	15.944	0.600	1.671	1.643	0.028	569.4	600	5.26	50.0
1.012	123	125	32.277	0.600	1.699	1.643	0.056	576.4	600	9.35	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	1.028	290.6	22.0	0.965	0.971	0.081	0.0	110	0.616
1.000	1.006	284.6	18.7	1.180	0.971	0.069	0.0	103	0.578
1.001	1.004	283.8	40.7	0.971	1.004	0.150	0.0	152	0.721
1.002	1.003	283.7	53.7	1.004	0.891	0.198	0.0	175	0.778
1.003	1.012	286.1	79.7	0.891	0.953	0.294	0.0	215	0.871
1.004	1.005	284.1	104.1	0.953	1.380	0.384	0.0	250	0.930
3.000	1.007	284.8	26.3	1.200	1.251	0.097	0.0	122	0.638
3.001	1.923	543.8	40.7	1.251	1.344	0.150	0.0	109	1.149
1.005	1.006	284.5	141.2	1.380	1.344	0.521	0.0	299	1.004
4.000	1.014	286.8	15.7	0.988	1.051	0.058	0.0	94	0.552
4.001	1.002	283.4	29.8	1.051	1.082	0.110	0.0	130	0.660
4.002	1.019	288.0	36.3	1.082	1.157	0.134	0.0	143	0.706
4.003	1.006	284.6	42.3	1.157	1.285	0.156	0.0	155	0.730
4.004	1.027	290.5	50.7	1.285	1.312	0.187	0.0	168	0.780
1.006	1.020	288.4	190.3	1.344	1.312	0.702	0.0	357	1.086
1.007	1.002	283.2	241.0	1.312	1.403	0.889	0.0	427	1.118
1.008	1.013	286.4	243.9	1.403	1.480	0.900	0.0	428	1.131
1.009	1.006	284.5	250.7	1.480	1.692	0.925	0.0	440	1.129
5.000	1.012	286.1	7.9	1.720	1.511	0.029	0.0	68	0.451
5.001	1.086	307.1	17.3	1.511	1.638	0.064	0.0	96	0.599
1.010	1.025	289.8	279.5	1.692	1.638	1.031	0.0	477	1.159
1.011	1.015	287.1	310.6	1.638	1.721	1.146	0.0	600	1.024
6.000	1.013	286.5	17.6	1.749	1.657	0.065	0.0	100	0.572
1.012	1.007	284.7	326.6	1.721	1.657	1.205	0.0	600	1.016

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)
1.013	125	HW3	23.419	0.600	1.643	1.410	0.233	100.5	150	9.74	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.013	1.002	17.7	354.3	2.107	1.440	1.307	0.0	150	1.021

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)
2.000	8.852	553.3	600	Circular	3.660	2.095	0.965	3.650	2.079	0.971
1.000	12.115	576.9	600	Circular	3.880	2.100	1.180	3.650	2.079	0.971
1.001	36.527	579.8	600	Circular	3.650	2.079	0.971	3.620	2.016	1.004
1.002	15.667	580.3	600	Circular	3.620	2.016	1.004	3.480	1.989	0.891
1.003	12.558	570.8	600	Circular	3.480	1.989	0.891	3.520	1.967	0.953
1.004	50.361	578.9	600	Circular	3.520	1.967	0.953	3.860	1.880	1.380
3.000	29.368	575.8	600	Circular	3.820	2.020	1.200	3.820	1.969	1.251
3.001	18.061	159.8	600	Circular	3.820	1.969	1.251	3.800	1.856	1.344
1.005	13.854	577.3	600	Circular	3.860	1.880	1.380	3.800	1.856	1.344
4.000	13.069	568.2	600	Circular	3.540	1.952	0.988	3.580	1.929	1.051
4.001	18.031	581.7	600	Circular	3.580	1.929	1.051	3.580	1.898	1.082
4.002	8.450	563.3	600	Circular	3.580	1.898	1.082	3.640	1.883	1.157
4.003	16.151	576.8	600	Circular	3.640	1.883	1.157	3.740	1.855	1.285
4.004	3.878	554.0	600	Circular	3.740	1.855	1.285	3.760	1.848	1.312
1.006	4.496	562.0	600	Circular	3.800	1.856	1.344	3.760	1.848	1.312
1.007	12.233	582.5	600	Circular	3.760	1.848	1.312	3.830	1.827	1.403
1.008	9.686	569.7	600	Circular	3.830	1.827	1.403	3.890	1.810	1.480
1.009	38.661	577.0	600	Circular	3.890	1.810	1.480	4.035	1.743	1.692
5.000	17.692	570.7	600	Circular	4.120	1.800	1.720	3.880	1.769	1.511

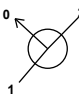
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	101	1500	Manhole	Adoptable	103	1500	Manhole	Adoptable
1.000	102	1500	Manhole	Adoptable	103	1500	Manhole	Adoptable
1.001	103	1500	Manhole	Adoptable	104	1500	Manhole	Adoptable
1.002	104	1500	Manhole	Adoptable	105	1500	Manhole	Adoptable
1.003	105	1500	Manhole	Adoptable	106	1500	Manhole	Adoptable
1.004	106	1500	Manhole	Adoptable	107	1500	Manhole	Adoptable
3.000	108	1500	Manhole	Adoptable	109	1500	Manhole	Adoptable
3.001	109	1500	Manhole	Adoptable	110	1500	Manhole	Adoptable
1.005	107	1500	Manhole	Adoptable	110	1500	Manhole	Adoptable
4.000	111	1500	Manhole	Adoptable	112	1500	Manhole	Adoptable
4.001	112	1500	Manhole	Adoptable	113	1500	Manhole	Adoptable
4.002	113	1500	Manhole	Adoptable	114	1500	Manhole	Adoptable
4.003	114	1500	Manhole	Adoptable	115	1500	Manhole	Adoptable
4.004	115	1500	Manhole	Adoptable	116	1500	Manhole	Adoptable
1.006	110	1500	Manhole	Adoptable	116	1500	Manhole	Adoptable
1.007	116	1500	Manhole	Adoptable	117	1500	Manhole	Adoptable
1.008	117	1500	Manhole	Adoptable	118	1500	Manhole	Adoptable
1.009	118	1500	Manhole	Adoptable	119	1500	Manhole	Adoptable
5.000	120	1500	Manhole	Adoptable	121	1500	Manhole	Adoptable

**Pipeline Schedule**

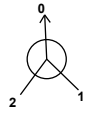
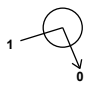
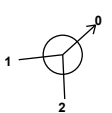
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
5.001	23.326	496.3	600	Circular	3.880	1.769	1.511	3.960	1.722	1.638
1.010	11.686	556.5	600	Circular	4.035	1.743	1.692	3.960	1.722	1.638
1.011	13.040	567.0	600	Circular	3.960	1.722	1.638	4.020	1.699	1.721
6.000	15.944	569.4	600	Circular	4.020	1.671	1.749	3.900	1.643	1.657
1.012	32.277	576.4	600	Circular	4.020	1.699	1.721	3.900	1.643	1.657
1.013	23.419	100.5	150	Circular	3.900	1.643	2.107	3.000	1.410	1.440

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.001	121	1500	Manhole	Adoptable	122	1500	Manhole	Adoptable
1.010	119	1500	Manhole	Adoptable	122	1500	Manhole	Adoptable
1.011	122	1500	Manhole	Adoptable	123	1500	Manhole	Adoptable
6.000	124	1500	Manhole	Adoptable	125	1500	Manhole	Adoptable
1.012	123	1500	Manhole	Adoptable	125	1500	Manhole	Adoptable
1.013	125	1500	Manhole	Adoptable	HW3	1200	Manhole	Adoptable

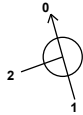
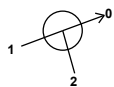
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
101	524101.347	324632.827	3.660	1.565	1500		0	2.000	2.095	600
102	524115.568	324648.217	3.880	1.780	1500		0	1.000	2.100	600
103	524107.086	324639.567	3.650	1.571	1500		1 2 0	2.000 1.000 1.001	2.079 2.079 2.079	600 600 600
104	524080.233	324664.328	3.620	1.604	1500		1 0	1.001 1.002	2.016 2.016	600 600
105	524072.634	324678.029	3.480	1.491	1500		1 0	1.002 1.003	1.989 1.989	600 600
106	524079.060	324688.818	3.520	1.553	1500		1 0	1.003 1.004	1.967 1.967	600 600
107	524113.573	324725.494	3.860	1.980	1500		1 0	1.004 1.005	1.880 1.880	600 600
108	524156.181	324703.939	3.820	1.800	1500		0	3.000	2.020	600

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
109	524134.773	324724.043	3.820	1.851	1500	 1	3.000	1.969	600
						0	3.001	1.969	600
110	524121.818	324736.628	3.800	1.944	1500	 1	3.001	1.856	600
						2	1.005	1.856	600
						0	1.006	1.856	600
111	524081.216	324771.068	3.540	1.588	1500	 0	4.000	1.952	600
						0	4.000	1.952	600
112	524093.703	324774.924	3.580	1.651	1500	 1	4.000	1.929	600
						0	4.001	1.929	600
113	524100.696	324758.304	3.580	1.682	1500	 1	4.001	1.898	600
						0	4.002	1.898	600
114	524105.902	324751.648	3.640	1.757	1500	 1	4.002	1.883	600
						0	4.003	1.883	600
115	524117.760	324740.682	3.740	1.885	1500	 1	4.003	1.855	600
						0	4.004	1.855	600
116	524121.613	324741.119	3.760	1.912	1500	 1	4.004	1.848	600
						2	1.006	1.848	600
						0	1.007	1.848	600
117	524130.684	324749.326	3.830	2.003	1500	 1	1.007	1.827	600
						0	1.008	1.827	600
118	524139.569	324753.182	3.890	2.080	1500	 1	1.008	1.810	600
						0	1.009	1.810	600
119	524176.790	324763.635	4.035	2.292	1500	 1	1.009	1.743	600
						0	1.010	1.743	600
120	524200.623	324728.688	4.120	2.320	1500	 0	5.000	1.800	600
						0	5.000	1.800	600
121	524194.154	324745.155	3.880	2.111	1500	 0	5.000	1.769	600
						1	5.001	1.769	600
						0	5.001	1.769	600

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
122	524187.785	324767.595	3.960	2.238	1500		1	5.001	1.722	600
							2	1.010	1.722	600
							0	1.011	1.722	600
123	524184.300	324780.161	4.020	2.321	1500		1	1.011	1.699	600
							0	1.012	1.699	600
124	524160.647	324805.652	4.020	2.349	1500		0	6.000	1.671	600
							1	6.000	1.643	600
125	524175.580	324811.238	3.900	2.257	1500		2	1.012	1.643	600
							0	1.013	1.643	150
HW3	524197.555	324819.335	3.000	1.590	1200		1	1.013	1.410	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	40	10	0

Node 125 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	1.643	Product Number	CTL-SHE-0099-5000-1450-5000
Design Depth (m)	1.450	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 102 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	



Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	235.0	0.0	0.800	235.0	0.0	0.801	0.0	0.0

Node 106 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.967
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	200.0	0.0	0.800	200.0	0.0	0.801	0.0	0.0

Node 108 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.020
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	120.0	0.0	1.200	120.0	0.0	1.201	0.0	0.0

Node 111 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.952
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	125.0	0.0	0.800	125.0	0.0	0.801	0.0	0.0

Node 112 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.929
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	174.0	0.0	0.800	174.0	0.0	0.801	0.0	0.0

Node 124 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.671
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	115.0	0.0	1.200	115.0	0.0	1.201	0.0	0.0

Node 120 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	



Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	100.0	0.0	1.200	100.0	0.0	1.201	0.0	0.0

Node 118 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.810
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	59.0	0.0	1.200	59.0	0.0	1.201	0.0	0.0

Node 105 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.989
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	196.0	0.0	0.800	196.0	0.0	0.801	0.0	0.0

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m ³)	
Full Bore Velocity	✓		

**Results for 2 year Critical Storm Duration. Lowest mass balance: 90.09%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	101	10	2.198	0.103	18.7	0.1819	0.0000	OK
120 minute summer	102	76	2.148	0.048	8.5	10.7259	0.0000	OK
15 minute summer	103	11	2.166	0.087	18.5	0.1545	0.0000	OK
15 minute summer	104	10	2.124	0.108	24.7	0.1912	0.0000	OK
360 minute winter	105	352	2.111	0.122	8.2	22.9472	0.0000	OK
360 minute winter	106	352	2.111	0.144	10.2	27.6223	0.0000	OK
360 minute winter	107	352	2.111	0.231	13.0	0.4081	0.0000	OK
360 minute winter	108	344	2.111	0.091	3.0	10.5276	0.0000	OK
360 minute winter	109	352	2.111	0.142	4.6	0.2508	0.0000	OK
360 minute winter	110	352	2.111	0.255	17.2	0.4505	0.0000	OK
360 minute winter	111	352	2.111	0.159	6.1	19.1677	0.0000	OK
360 minute winter	112	352	2.111	0.182	11.7	30.4098	0.0000	OK
360 minute winter	113	352	2.111	0.213	10.5	0.3763	0.0000	OK
360 minute winter	114	352	2.111	0.228	10.2	0.4028	0.0000	OK
360 minute winter	115	352	2.111	0.256	9.7	0.4522	0.0000	OK
360 minute winter	116	352	2.111	0.263	16.9	0.4646	0.0000	OK
360 minute winter	117	352	2.111	0.284	17.0	0.5016	0.0000	OK
360 minute winter	118	352	2.111	0.301	17.4	17.3949	0.0000	OK
360 minute winter	119	352	2.111	0.368	16.4	0.6499	0.0000	OK
360 minute winter	120	352	2.111	0.311	8.4	30.0744	0.0000	OK
360 minute winter	121	352	2.111	0.342	8.2	0.6039	0.0000	OK
360 minute winter	122	352	2.111	0.389	16.9	0.6870	0.0000	OK
360 minute winter	123	352	2.111	0.412	11.7	0.7276	0.0000	OK
360 minute winter	124	352	2.111	0.440	7.8	48.8181	0.0000	OK
360 minute winter	125	352	2.111	0.468	11.8	0.8265	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 summer	101	2.000	103	18.5	0.650	0.064	0.2540	
120 minute summer	102	1.000	103	3.2	0.282	0.011	0.1585	
15 minute summer	103	1.001	104	13.6	0.459	0.048	1.0919	
15 minute summer	104	1.002	105	24.6	1.197	0.087	0.3887	
360 minute winter	105	1.003	106	7.6	0.402	0.027	0.5834	
360 minute winter	106	1.004	107	8.9	0.297	0.031	3.8227	
360 minute winter	107	1.005	110	12.2	0.309	0.043	1.4819	
360 minute winter	108	3.000	109	3.0	0.335	0.011	1.1395	
360 minute winter	109	3.001	110	4.2	0.195	0.008	1.4885	
360 minute winter	110	1.006	116	16.7	0.396	0.058	0.5232	
360 minute winter	111	4.000	112	-4.6	0.233	-0.016	0.8613	
360 minute winter	112	4.001	113	-10.3	-0.269	-0.036	1.4572	
360 minute winter	113	4.002	114	-9.9	-0.183	-0.034	0.7931	
360 minute winter	114	4.003	115	-9.6	-0.142	-0.034	1.7182	
360 minute winter	115	4.004	116	-8.9	-0.113	-0.031	0.4524	
360 minute winter	116	1.007	117	16.7	0.481	0.059	1.5288	
360 minute winter	117	1.008	118	16.7	0.512	0.058	1.3201	
360 minute winter	118	1.009	119	13.4	0.369	0.047	6.2333	
360 minute winter	119	1.010	122	15.4	0.367	0.053	2.1869	
360 minute winter	120	5.000	121	-7.6	-0.287	-0.026	2.7696	
360 minute winter	121	5.001	122	-7.3	-0.133	-0.024	4.1866	
360 minute winter	122	1.011	123	10.0	0.376	0.035	2.6038	
360 minute winter	123	1.012	125	10.7	0.256	0.038	7.1315	
360 minute winter	124	6.000	125	-5.9	-0.167	-0.020	3.6437	
360 minute winter	125	Hydro-Brake®	HW3	5.0				155.2



Results for 2 year Critical Storm Duration. Lowest mass balance: 90.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	HW3	1	1.410	0.000	4.9	0.0000	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)
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**Results for 30 year Critical Storm Duration. Lowest mass balance: 90.09%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	101	705	2.302	0.207	2.6	0.3665	0.0000	OK
720 minute winter	102	705	2.302	0.202	5.9	45.5511	0.0000	OK
720 minute winter	103	705	2.302	0.223	4.4	0.3948	0.0000	OK
720 minute winter	104	705	2.302	0.286	6.0	0.5061	0.0000	OK
720 minute winter	105	705	2.302	0.313	8.8	58.9156	0.0000	OK
720 minute winter	106	705	2.302	0.335	8.6	64.3251	0.0000	OK
720 minute winter	107	705	2.302	0.422	10.2	0.7464	0.0000	OK
720 minute winter	108	705	2.302	0.282	3.7	32.6955	0.0000	OK
720 minute winter	109	705	2.302	0.333	3.8	0.5892	0.0000	OK
720 minute winter	110	705	2.302	0.446	13.6	0.7888	0.0000	OK
720 minute winter	111	705	2.302	0.350	5.4	42.2333	0.0000	OK
720 minute winter	112	705	2.302	0.373	10.2	62.3881	0.0000	OK
720 minute winter	113	705	2.302	0.404	9.0	0.7146	0.0000	OK
720 minute winter	114	705	2.302	0.419	8.6	0.7411	0.0000	OK
720 minute winter	115	705	2.302	0.447	8.1	0.7906	0.0000	OK
720 minute winter	116	705	2.302	0.454	13.3	0.8030	0.0000	OK
720 minute winter	117	705	2.302	0.475	12.1	0.8400	0.0000	OK
720 minute winter	118	705	2.302	0.492	12.4	28.4689	0.0000	OK
720 minute winter	119	705	2.302	0.559	11.6	0.9884	0.0000	OK
720 minute winter	120	705	2.302	0.502	4.2	48.6121	0.0000	OK
720 minute winter	121	705	2.302	0.533	4.1	0.9424	0.0000	OK
720 minute winter	122	705	2.302	0.580	11.9	1.0255	0.0000	OK
720 minute winter	123	705	2.302	0.603	9.0	1.0661	0.0000	SURCHARGED
720 minute winter	124	705	2.302	0.631	4.8	70.0884	0.0000	SURCHARGED
720 minute winter	125	705	2.302	0.659	9.0	1.1650	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)
720 minute winter	101	2.000	103	2.6	0.259	0.009	0.8051	
720 minute winter	102	1.000	103	-3.9	0.202	-0.014	1.0847	
720 minute winter	103	1.001	104	4.4	0.310	0.016	4.1692	
720 minute winter	104	1.002	105	5.7	0.380	0.020	2.2062	
720 minute winter	105	1.003	106	6.2	0.375	0.022	1.9521	
720 minute winter	106	1.004	107	6.8	0.281	0.024	9.4190	
720 minute winter	107	1.005	110	9.7	0.292	0.034	3.0266	
720 minute winter	108	3.000	109	2.4	0.295	0.008	4.2752	
720 minute winter	109	3.001	110	3.5	0.166	0.006	3.4829	
720 minute winter	110	1.006	116	13.3	0.355	0.046	1.0203	
720 minute winter	111	4.000	112	-3.8	0.198	-0.013	2.3213	
720 minute winter	112	4.001	113	-8.8	-0.235	-0.031	3.4837	
720 minute winter	113	4.002	114	-8.3	0.187	-0.029	1.7426	
720 minute winter	114	4.003	115	-8.0	-0.121	-0.028	3.5193	
720 minute winter	115	4.004	116	-7.3	-0.097	-0.025	0.8811	
720 minute winter	116	1.007	117	11.9	0.429	0.042	2.8656	
720 minute winter	117	1.008	118	11.9	0.482	0.041	2.3585	
720 minute winter	118	1.009	119	9.6	0.346	0.034	10.0714	
720 minute winter	119	1.010	122	10.9	0.340	0.038	3.2285	
720 minute winter	120	5.000	121	-3.6	-0.171	-0.013	4.5706	
720 minute winter	121	5.001	122	-3.4	-0.078	-0.011	6.3411	
720 minute winter	122	1.011	123	7.9	0.350	0.027	3.6550	
720 minute winter	123	1.012	125	8.3	0.254	0.029	9.0899	
720 minute winter	124	6.000	125	-3.5	-0.159	-0.012	4.4911	
720 minute winter	125	Hydro-Brake®	HW3	5.0				249.2



Results for 30 year Critical Storm Duration. Lowest mass balance: 90.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	HW3	1	1.410	0.000	5.0	0.0000	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)
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**Results for 100 year Critical Storm Duration. Lowest mass balance: 90.09%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	101	705	2.445	0.350	3.4	0.6182	0.0000	OK
720 minute winter	102	705	2.445	0.345	8.4	77.5943	0.0000	OK
720 minute winter	103	705	2.445	0.366	6.0	0.6464	0.0000	OK
720 minute winter	104	705	2.445	0.429	6.8	0.7577	0.0000	OK
720 minute winter	105	705	2.445	0.456	10.0	85.6813	0.0000	OK
720 minute winter	106	705	2.445	0.478	10.3	91.6320	0.0000	OK
720 minute winter	107	705	2.445	0.565	9.9	0.9980	0.0000	OK
720 minute winter	108	705	2.445	0.425	4.3	49.1794	0.0000	OK
720 minute winter	109	705	2.445	0.476	3.9	0.8408	0.0000	OK
720 minute winter	110	705	2.445	0.589	13.3	1.0404	0.0000	OK
720 minute winter	111	705	2.445	0.493	5.5	59.3928	0.0000	OK
720 minute winter	112	705	2.445	0.516	10.4	86.1761	0.0000	OK
720 minute winter	113	705	2.445	0.547	9.2	0.9662	0.0000	OK
720 minute winter	114	705	2.445	0.562	8.7	0.9927	0.0000	OK
720 minute winter	115	705	2.445	0.590	8.3	1.0422	0.0000	OK
720 minute winter	116	705	2.445	0.597	12.9	1.0546	0.0000	OK
720 minute winter	117	705	2.445	0.618	11.6	1.0917	0.0000	SURCHARGED
720 minute winter	118	705	2.445	0.635	11.9	36.7020	0.0000	SURCHARGED
720 minute winter	119	705	2.445	0.702	11.2	1.2400	0.0000	SURCHARGED
720 minute winter	120	705	2.445	0.645	3.9	62.3931	0.0000	SURCHARGED
720 minute winter	121	705	2.445	0.676	3.9	1.1941	0.0000	SURCHARGED
720 minute winter	122	705	2.445	0.723	11.5	1.2771	0.0000	SURCHARGED
720 minute winter	123	705	2.445	0.746	8.6	1.3177	0.0000	SURCHARGED
720 minute winter	124	705	2.445	0.774	4.5	85.8997	0.0000	SURCHARGED
720 minute winter	125	705	2.445	0.802	8.8	1.4167	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)
720 minute winter	101	2.000	103	3.3	0.275	0.011	1.5511	
720 minute winter	102	1.000	103	-5.5	-0.213	-0.019	2.1050	
720 minute winter	103	1.001	104	5.0	0.315	0.018	7.2222	
720 minute winter	104	1.002	105	6.4	0.400	0.022	3.4878	
720 minute winter	105	1.003	106	6.3	0.373	0.022	2.9535	
720 minute winter	106	1.004	107	6.5	0.280	0.023	12.9876	
720 minute winter	107	1.005	110	9.2	0.290	0.032	3.8484	
720 minute winter	108	3.000	109	2.4	0.291	0.009	6.6524	
720 minute winter	109	3.001	110	3.6	0.158	0.007	4.6970	
720 minute winter	110	1.006	116	12.9	0.346	0.045	1.2630	
720 minute winter	111	4.000	112	-3.9	0.196	-0.014	3.3028	
720 minute winter	112	4.001	113	-8.9	-0.230	-0.031	4.7535	
720 minute winter	113	4.002	114	-8.5	0.179	-0.029	2.2973	
720 minute winter	114	4.003	115	-8.1	-0.125	-0.028	4.4807	
720 minute winter	115	4.004	116	-7.4	-0.099	-0.025	1.0897	
720 minute winter	116	1.007	117	11.4	0.421	0.040	3.4439	
720 minute winter	117	1.008	118	11.4	0.503	0.040	2.7283	
720 minute winter	118	1.009	119	9.3	0.343	0.033	10.8899	
720 minute winter	119	1.010	122	10.6	0.341	0.036	3.2917	
720 minute winter	120	5.000	121	-3.4	-0.169	-0.012	4.9834	
720 minute winter	121	5.001	122	-3.3	-0.068	-0.011	6.5704	
720 minute winter	122	1.011	123	7.5	0.367	0.026	3.6731	
720 minute winter	123	1.012	125	8.1	0.277	0.028	9.0917	
720 minute winter	124	6.000	125	-3.3	-0.185	-0.011	4.4911	
720 minute winter	125	Hydro-Brake®	HW3	5.0				244.6



Results for 100 year Critical Storm Duration. Lowest mass balance: 90.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	HW3	1	1.410	0.000	5.0	0.0000	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)
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**Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 90.09%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	101	1440	2.952	0.857	4.5	1.5149	0.0000	SURCHARGED
1440 minute summer	102	1440	2.952	0.852	10.8	180.2177	0.0000	SURCHARGED
1440 minute summer	103	1440	2.952	0.873	7.9	1.5432	0.0000	SURCHARGED
1440 minute summer	104	1440	2.952	0.936	4.5	1.6546	0.0000	SURCHARGED
1440 minute summer	105	1440	2.952	0.963	11.0	150.7555	0.0000	SURCHARGED
1440 minute summer	106	1440	2.952	0.985	15.4	153.8363	0.0000	SURCHARGED
1440 minute summer	107	1440	2.952	1.072	11.1	1.8951	0.0000	SURCHARGED
1440 minute summer	108	1440	2.953	0.933	5.9	107.9625	0.0000	SURCHARGED
1440 minute summer	109	1440	2.953	0.984	2.9	1.7379	0.0000	SURCHARGED
1440 minute summer	110	1440	2.952	1.096	7.0	1.9374	0.0000	SURCHARGED
1440 minute summer	111	1440	2.952	1.000	5.8	96.8270	0.0000	SURCHARGED
1440 minute summer	112	1440	2.952	1.023	10.8	134.1310	0.0000	SURCHARGED
1440 minute summer	113	1440	2.952	1.054	8.3	1.8631	0.0000	SURCHARGED
1440 minute summer	114	1440	2.952	1.069	7.3	1.8897	0.0000	SURCHARGED
1440 minute summer	115	1440	2.952	1.097	6.3	1.9392	0.0000	SURCHARGED
1440 minute summer	116	1440	2.952	1.104	6.9	1.9515	0.0000	SURCHARGED
1440 minute summer	117	1440	2.952	1.125	6.5	1.9885	0.0000	SURCHARGED
1440 minute summer	118	1440	2.952	1.142	7.7	66.0452	0.0000	SURCHARGED
1440 minute summer	119	1440	2.952	1.209	6.5	2.1370	0.0000	SURCHARGED
1440 minute summer	120	1440	2.952	1.152	4.5	111.5221	0.0000	SURCHARGED
1440 minute summer	121	1440	2.952	1.183	3.3	2.0911	0.0000	SURCHARGED
1440 minute summer	122	1440	2.952	1.230	6.8	2.1741	0.0000	SURCHARGED
1440 minute summer	123	1440	2.952	1.253	6.1	2.2147	0.0000	SURCHARGED
1440 minute summer	124	1440	2.952	1.281	5.2	133.4187	0.0000	SURCHARGED
1440 minute summer	125	1440	2.952	1.309	6.3	2.3136	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)
1440 minute summer	101	2.000	103	4.3	0.250	0.015	2.4934	
1440 minute summer	102	1.000	103	-7.0	0.178	-0.025	3.4125	
1440 minute summer	103	1.001	104	-3.6	0.275	-0.013	10.2888	
1440 minute summer	104	1.002	105	4.3	0.334	0.015	4.4130	
1440 minute summer	105	1.003	106	-5.7	0.307	-0.020	3.5373	
1440 minute summer	106	1.004	107	-10.4	0.270	-0.037	14.1855	
1440 minute summer	107	1.005	110	5.0	0.274	0.018	3.9024	
1440 minute summer	108	3.000	109	2.0	0.250	0.007	8.2723	
1440 minute summer	109	3.001	110	2.2	0.149	0.004	5.0874	
1440 minute summer	110	1.006	116	6.9	0.309	0.024	1.2664	
1440 minute summer	111	4.000	112	-2.6	0.153	-0.009	3.6812	
1440 minute summer	112	4.001	113	-7.9	0.203	-0.028	5.0789	
1440 minute summer	113	4.002	114	-7.0	0.207	-0.024	2.3802	
1440 minute summer	114	4.003	115	-6.1	0.123	-0.021	4.5494	
1440 minute summer	115	4.004	116	-4.6	0.090	-0.016	1.0923	
1440 minute summer	116	1.007	117	6.4	0.377	0.022	3.4458	
1440 minute summer	117	1.008	118	6.4	0.388	0.022	2.7283	
1440 minute summer	118	1.009	119	-6.3	0.336	-0.022	10.8899	
1440 minute summer	119	1.010	122	6.3	0.328	0.022	3.2917	
1440 minute summer	120	5.000	121	-2.9	-0.097	-0.010	4.9834	
1440 minute summer	121	5.001	122	1.7	0.055	0.006	6.5704	
1440 minute summer	122	1.011	123	5.6	0.340	0.019	3.6731	
1440 minute summer	123	1.012	125	5.9	0.244	0.021	9.0917	
1440 minute summer	124	6.000	125	-1.6	-0.158	-0.006	4.4911	
1440 minute summer	125	Hydro-Brake®	HW3	5.0				437.4



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 90.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	HW3	1	1.410	0.000	5.0	0.0000	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)
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