Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	75.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.365	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	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)
38	0.052	4.00	61.886	1200	440240.792	402422.690	1.350
39	0.160	4.00	62.051	1200	440248.525	402412.011	1.755
40	0.042	4.00	60.711	1500	440290.595	402442.477	1.994
41	0.083	4.00	61.771	1500	440224.208	402445.851	1.425
42	0.117	4.00	61.984	1200	440214.305	402459.228	1.736
43	0.081	4.00	59.333	1500	440277.530	402504.512	1.425
44	0.067	4.00	60.547	1500	440256.433	402489.229	2.868
45	0.161	4.00	60.870	1500	440273.997	402465.367	3.586
46	0.040	4.00	56.876	1500	440330.080	402505.994	2.478
47			55.121	1500	440351.436	402521.459	2.032
48	0.036	4.00	54.377	1500	440363.113	402522.108	2.022
49	0.149	4.00	52.730	1500	440383.441	402506.149	2.398
50	0.045	4.00	53.772	1200	440350.270	402472.642	1.425
51	0.148	4.00	53.980	1200	440360.007	402459.197	1.841
52	0.115	4.00	52.919	1200	440386.846	402478.634	2.069
53	0.038	4.00	52.513	1800	440398.784	402489.919	2.293
54	0.075	4.00	52.817	1500	440413.020	402475.893	2.997
55	0.037	4.00	52.556	1200	440430.480	402450.532	1.425
56			52.810	1800	440427.844	402457.008	3.545
57	0.018	4.00	52.644	1500	440438.301	402461.265	3.642
58			52.500	1500	440441.005	402454.633	3.700
59			52.500	1500	440443.662	402442.727	3.737
60			52.000	1800	440438.333	402440.620	3.317
61			51.500	1200	440441.760	402432.801	2.924
62			48.050	1200	440503.071	402455.471	2.761
63			45.750	1200	440512.008	402456.728	1.408
64			45.245	1200	440559.218	402474.303	1.796

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

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	38	39	13.185	0.600	60.536	60.371	0.165	79.9	150	4.20	68.2
1.001	39	40	51.943	0.600	60.296	58.792	1.504	34.5	225	4.58	65.9
1.002	40	45	28.274	0.600	58.717	57.359	1.358	20.8	300	4.72	65.2
2.000	41	42	16.644	0.600	60.346	60.248	0.098	169.8	225	4.28	67.7
2.001	42	44	51.719	0.600	60.248	57.754	2.494	20.7	225	4.58	66.0
3.000	43	44	26.051	0.600	57.908	57.754	0.154	169.2	225	4.43	66.8
2.002	44	45	29.629	0.600	57.679	57.359	0.320	92.6	300	4.88	64.3
1.003	45	46	69.252	0.600	57.284	54.398	2.886	24.0	375	5.19	62.7
1.004	46	47	26.367	0.600	54.398	53.089	1.309	20.1	375	5.28	62.3
1.005	47	48	11.695	0.600	53.089	52.355	0.734	15.9	375	5.32	62.0
1.006	48	49	25.844	0.600	52.355	50.557	1.798	14.4	375	5.41	61.6
1.007	49	53	22.334	0.600	50.332	50.220	0.112	199.4	600	5.53	61.1
4.000	50	51	16.601	0.600	52.347	52.139	0.208	79.8	225	4.19	68.3
4.001	51	52	33.138	0.600	52.139	50.925	1.214	27.3	225	4.47	66.6
4.002	52	53	16.428	0.600	50.850	50.520	0.330	49.8	300	4.52	66.3
1.008	53	54	19.985	0.600	50.220	49.820	0.400	50.0	600	5.72	60.2
1.009	54	56	24.008	0.600	49.820	49.340	0.480	50.0	600	5.95	59.1
5.000	55	56	6.992	0.600	51.131	51.044	0.087	80.4	150	4.10	68.8
1.010	56	57	11.290	0.600	49.265	49.152	0.113	99.9	675	6.06	58.6
1.011	57	58	7.162	0.600	49.002	48.800	0.202	35.5	675	6.11	58.4
1.012	58	59	12.199	0.600	48.800	48.763	0.037	329.7	675	6.27	57.7
1.013	59	60	5.731	0.600	48.763	48.733	0.030	191.0	675	6.34	57.5
1.014	60	61	8.537	0.600	48.683	48.576	0.107	79.8	150	6.47	57.0
1.015	61	62	65.368	0.600	48.576	45.289	3.287	19.9	150	6.94	55.1

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	1.125	19.9	9.6	1.200	1.530	0.052	0.0
1.001	2.233	88.8	37.9	1.530	1.694	0.212	0.0
1.002	3.460	244.6	44.9	1.694	3.211	0.254	0.0
2.000	1.000	39.8	15.2	1.200	1.511	0.083	0.0
2.001	2.886	114.7	35.8	1.511	2.568	0.200	0.0
3.000	1.002	39.8	14.7	1.200	2.568	0.081	0.0
2.002	1.634	115.5	60.7	2.568	3.211	0.348	0.0
1.003	3.712	409.9	129.7	3.211	2.103	0.763	0.0
1.004	4.052	447.6	135.6	2.103	1.657	0.803	0.0
1.005	4.558	503.4	134.9	1.657	1.647	0.803	0.0
1.006	4.799	530.1	140.1	1.647	1.798	0.839	0.0
1.007	1.721	486.5	163.6	1.798	1.693	0.988	0.0
4.000	1.465	58.2	8.3	1.200	1.616	0.045	0.0
4.001	2.514	99.9	34.8	1.616	1.769	0.193	0.0
4.002	2.233	157.9	55.3	1.769	1.693	0.308	0.0
1.008	3.450	975.5	217.7	1.693	2.397	1.334	0.0
1.009	3.448	975.0	225.7	2.397	2.870	1.409	0.0
5.000	1.122	19.8	6.9	1.275	1.616	0.037	0.0
1.010	2.622	938.2	229.7	2.870	2.817	1.446	0.0
1.011	4.410	1578.1	231.7	2.967	3.025	1.464	0.0
1.012	1.438	514.4	229.0	3.025	3.062	1.464	0.0
1.013	1.892	677.2	228.2	3.062	2.592	1.464	0.0
1.014	1.126	19.9	226.2	3.167	2.774	1.464	0.0
1.015	2.268	40.1	218.6	2.774	2.611	1.464	0.0

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

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)
1.016	62	63	9.025	0.600	45.289	44.342	0.947	9.5	150	6.99	55.0
1.017	63	64	50.376	0.600	44.342	43.449	0.893	56.4	150	7.62	52.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.016	3.283	58.0	218.2	2.611	1.258	1.464	0.0
1.017	1.342	23.7	209.5	1.258	1.646	1.464	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	13.185	79.9	150	1 Circular	61.886	60.536	1.200	62.051	60.371	1.530
1.001	51.943	34.5	225	1 Circular	62.051	60.296	1.530	60.711	58.792	1.694
1.002	28.274	20.8	300	1 Circular	60.711	58.717	1.694	60.870	57.359	3.211
2.000	16.644	169.8	225	1 Circular	61.771	60.346	1.200	61.984	60.248	1.511
2.001	51.719	20.7	225	1 Circular	61.984	60.248	1.511	60.547	57.754	2.568
3.000	26.051	169.2	225	1 Circular	59.333	57.908	1.200	60.547	57.754	2.568
2.002	29.629	92.6	300	1 Circular	60.547	57.679	2.568	60.870	57.359	3.211
1.003	69.252	24.0	375	1 Circular	60.870	57.284	3.211	56.876	54.398	2.103
1.004	26.367	20.1	375	1 Circular	56.876	54.398	2.103	55.121	53.089	1.657
1.005	11.695	15.9	375	1 Circular	55.121	53.089	1.657	54.377	52.355	1.647
1.006	25.844	14.4	375	1 Circular	54.377	52.355	1.647	52.730	50.557	1.798
1.007	22.334	199.4	600	1 Circular	52.730	50.332	1.798	52.513	50.220	1.693
4.000	16.601	79.8	225	1 Circular	53.772	52.347	1.200	53.980	52.139	1.616
4.001	33.138	27.3	225	1 Circular	53.980	52.139	1.616	52.919	50.925	1.769
4.002	16.428	49.8	300	1 Circular	52.919	50.850	1.769	52.513	50.520	1.693
1.008	19.985	50.0	600	1 Circular	52.513	50.220	1.693	52.817	49.820	2.397
1.009	24.008	50.0	600	1 Circular	52.817	49.820	2.397	52.810	49.340	2.870
5.000	6.992	80.4	150	1 Circular	52.556	51.131	1.275	52.810	51.044	1.616

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	38	1200	Manhole	1 Adoptable	39	1200	Manhole	1 Adoptable
1.001	39	1200	Manhole	1 Adoptable	40	1500	Manhole	1 Adoptable
1.002	40	1500	Manhole	1 Adoptable	45	1500	Manhole	1 Adoptable
2.000	41	1500	Manhole	1 Adoptable	42	1200	Manhole	1 Adoptable
2.001	42	1200	Manhole	1 Adoptable	44	1500	Manhole	1 Adoptable
3.000	43	1500	Manhole	1 Adoptable	44	1500	Manhole	1 Adoptable
2.002	44	1500	Manhole	1 Adoptable	45	1500	Manhole	1 Adoptable
1.003	45	1500	Manhole	1 Adoptable	46	1500	Manhole	1 Adoptable
1.004	46	1500	Manhole	1 Adoptable	47	1500	Manhole	1 Adoptable
1.005	47	1500	Manhole	1 Adoptable	48	1500	Manhole	1 Adoptable
1.006	48	1500	Manhole	1 Adoptable	49	1500	Manhole	1 Adoptable
1.007	49	1500	Manhole	1 Adoptable	53	1800	Manhole	1 Adoptable
4.000	50	1200	Manhole	1 Adoptable	51	1200	Manhole	1 Adoptable
4.001	51	1200	Manhole	1 Adoptable	52	1200	Manhole	1 Adoptable
4.002	52	1200	Manhole	1 Adoptable	53	1800	Manhole	1 Adoptable
1.008	53	1800	Manhole	1 Adoptable	54	1500	Manhole	1 Adoptable
1.009	54	1500	Manhole	1 Adoptable	56	1800	Manhole	1 Adoptable
5.000	55	1200	Manhole	1 Adoptable	56	1800	Manhole	1 Adoptable

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

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)
1.010	11.290	99.9	675	1 Circular	52.810	49.265	2.870	52.644	49.152	2.817
1.011	7.162	35.5	675	1 Circular	52.644	49.002	2.967	52.500	48.800	3.025
1.012	12.199	329.7	675	1 Circular	52.500	48.800	3.025	52.500	48.763	3.062
1.013	5.731	191.0	675	1 Circular	52.500	48.763	3.062	52.000	48.733	2.592
1.014	8.537	79.8	150	1 Circular	52.000	48.683	3.167	51.500	48.576	2.774
1.015	65.368	19.9	150	1 Circular	51.500	48.576	2.774	48.050	45.289	2.611
1.016	9.025	9.5	150	1 Circular	48.050	45.289	2.611	45.750	44.342	1.258
1.017	50.376	56.4	150	1 Circular	45.750	44.342	1.258	45.245	43.449	1.646

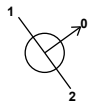
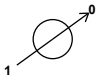
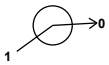
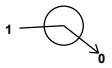
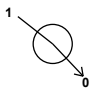
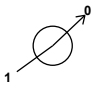
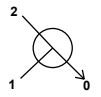
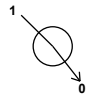
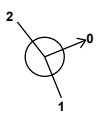
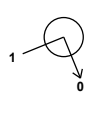
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.010	56	1800	Manhole	1 Adoptable	57	1500	Manhole	1 Adoptable
1.011	57	1500	Manhole	1 Adoptable	58	1500	Manhole	1 Adoptable
1.012	58	1500	Manhole	1 Adoptable	59	1500	Manhole	1 Adoptable
1.013	59	1500	Manhole	1 Adoptable	60	1800	Manhole	1 Adoptable
1.014	60	1800	Manhole	1 Adoptable	61	1200	Manhole	1 Adoptable
1.015	61	1200	Manhole	1 Adoptable	62	1200	Manhole	1 Adoptable
1.016	62	1200	Manhole	1 Adoptable	63	1200	Manhole	1 Adoptable
1.017	63	1200	Manhole	1 Adoptable	64	1200	Manhole	1 Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
38	440240.792	402422.690	61.886	1.350	1200	0	1.000	60.536	150
39	440248.525	402412.011	62.051	1.755	1200	1	1.000	60.371	150
						0	1.001	60.296	225
40	440290.595	402442.477	60.711	1.994	1500	1	1.001	58.792	225
						0	1.002	58.717	300
41	440224.208	402445.851	61.771	1.425	1500	0	2.000	60.346	225
42	440214.305	402459.228	61.984	1.736	1200	1	2.000	60.248	225
						0	2.001	60.248	225
43	440277.530	402504.512	59.333	1.425	1500	0	3.000	57.908	225
44	440256.433	402489.229	60.547	2.868	1500	1	3.000	57.754	225
						2	2.001	57.754	225
						0	2.002	57.679	300

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
45	440273.997	402465.367	60.870	3.586	1500		1	2.002	57.359	300
							2	1.002	57.359	300
							0	1.003	57.284	375
46	440330.080	402505.994	56.876	2.478	1500		1	1.003	54.398	375
							0	1.004	54.398	375
47	440351.436	402521.459	55.121	2.032	1500		1	1.004	53.089	375
							0	1.005	53.089	375
48	440363.113	402522.108	54.377	2.022	1500		1	1.005	52.355	375
							0	1.006	52.355	375
49	440383.441	402506.149	52.730	2.398	1500		1	1.006	50.557	375
							0	1.007	50.332	600
50	440350.270	402472.642	53.772	1.425	1200		0	4.000	52.347	225
51	440360.007	402459.197	53.980	1.841	1200		1	4.000	52.139	225
							0	4.001	52.139	225
52	440386.846	402478.634	52.919	2.069	1200		1	4.001	50.925	225
							0	4.002	50.850	300
53	440398.784	402489.919	52.513	2.293	1800		1	4.002	50.520	300
							2	1.007	50.220	600
							0	1.008	50.220	600
54	440413.020	402475.893	52.817	2.997	1500		1	1.008	49.820	600
							0	1.009	49.820	600
55	440430.480	402450.532	52.556	1.425	1200		0	5.000	51.131	150
56	440427.844	402457.008	52.810	3.545	1800		1	5.000	51.044	150
							2	1.009	49.340	600
							0	1.010	49.265	675
57	440438.301	402461.265	52.644	3.642	1500		1	1.010	49.152	675
							0	1.011	49.002	675

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
58	440441.005	402454.633	52.500	3.700	1500	1	1.011	48.800	675
						0	1.012	48.800	675
59	440443.662	402442.727	52.500	3.737	1500	1	1.012	48.763	675
						0	1.013	48.763	675
60	440438.333	402440.620	52.000	3.317	1800	1	1.013	48.733	675
						0	1.014	48.683	150
61	440441.760	402432.801	51.500	2.924	1200	1	1.014	48.576	150
						0	1.015	48.576	150
62	440503.071	402455.471	48.050	2.761	1200	1	1.015	45.289	150
						0	1.016	45.289	150
63	440512.008	402456.728	45.750	1.408	1200	1	1.016	44.342	150
						0	1.017	44.342	150
64	440559.218	402474.303	45.245	1.796	1200	1	1.017	43.449	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	19.000	Drain Down Time (mins)	240
Ratio-R	0.365	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	30	0	0

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Node 60 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	48.683	Product Number	CTL-SHE-0075-3000-1500-3000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Node 58 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	48.800	Product Number	CTL-SHE-0075-3800-2500-3800
Design Depth (m)	2.500	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.8	Min Node Diameter (mm)	1200

Node 58 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	48.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	450.0	0.0	2.500	450.0	0.0	2.501	0.0	0.0

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	38	10	60.601	0.065	7.1	0.1232	0.0000	OK
15 minute winter	39	10	60.386	0.090	29.0	0.2652	0.0000	OK
15 minute winter	40	10	58.795	0.078	34.6	0.1713	0.0000	OK
15 minute summer	41	10	60.432	0.086	11.4	0.2512	0.0000	OK
15 minute winter	42	10	60.324	0.076	27.4	0.1878	0.0000	OK
15 minute winter	43	10	57.991	0.083	11.1	0.2409	0.0000	OK
15 minute winter	44	10	57.819	0.140	47.4	0.3127	0.0000	OK
15 minute winter	45	10	57.413	0.129	103.6	0.3450	0.0000	OK
15 minute winter	46	10	54.529	0.131	108.6	0.2736	0.0000	OK
15 minute winter	47	10	53.220	0.131	107.3	0.2315	0.0000	OK
15 minute winter	48	11	52.478	0.123	111.5	0.2613	0.0000	OK
15 minute winter	49	10	50.557	0.225	130.6	0.6759	0.0000	OK
15 minute winter	50	10	52.396	0.049	6.2	0.0869	0.0000	OK
15 minute winter	51	10	52.220	0.081	26.5	0.2221	0.0000	OK
15 minute winter	52	10	50.964	0.114	42.2	0.2550	0.0000	OK
15 minute winter	53	10	50.408	0.188	176.5	0.5414	0.0000	OK
15 minute winter	54	11	50.013	0.193	184.7	0.4380	0.0000	OK
15 minute winter	55	10	51.186	0.055	5.1	0.0914	0.0000	OK
15 minute winter	56	11	49.504	0.239	191.6	0.6080	0.0000	OK
15 minute winter	57	7	49.455	0.453	194.9	0.8454	0.0000	OK
1440 minute winter	58	1140	49.347	0.547	54.6	246.9801	0.0000	OK
1440 minute winter	59	1470	49.019	0.256	2.6	0.4531	0.0000	OK
1440 minute winter	60	1470	49.019	0.336	2.6	0.8562	0.0000	SURCHARGED
1440 minute winter	61	1470	48.603	0.027	2.6	0.0304	0.0000	OK
1440 minute winter	62	1470	45.311	0.022	2.6	0.0244	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	38	1.000	39	7.1	1.005	0.357	0.0931	
15 minute winter	39	1.001	40	28.8	1.984	0.325	0.7551	
15 minute winter	40	1.002	45	34.5	2.421	0.141	0.4030	
15 minute summer	41	2.000	42	11.4	0.892	0.287	0.2129	
15 minute winter	42	2.001	44	27.3	2.355	0.238	0.5987	
15 minute winter	43	3.000	44	11.0	0.848	0.276	0.3376	
15 minute winter	44	2.002	45	47.0	1.516	0.407	0.9183	
15 minute winter	45	1.003	46	103.1	3.035	0.251	2.3516	
15 minute winter	46	1.004	47	107.3	3.135	0.240	0.9026	
15 minute winter	47	1.005	48	106.6	3.260	0.212	0.3831	
15 minute winter	48	1.006	49	111.9	3.715	0.211	0.7784	
15 minute winter	49	1.007	53	130.9	1.540	0.269	1.9178	
15 minute winter	50	4.000	51	6.2	0.651	0.106	0.1601	
15 minute winter	51	4.001	52	26.5	2.099	0.265	0.4177	
15 minute winter	52	4.002	53	42.2	1.819	0.267	0.3813	
15 minute winter	53	1.008	54	175.9	2.295	0.180	1.5318	
15 minute winter	54	1.009	56	187.1	2.562	0.192	1.7551	
15 minute winter	55	5.000	56	5.1	0.903	0.257	0.0395	
15 minute winter	56	1.010	57	192.8	1.904	0.205	1.2781	
15 minute winter	57	1.011	58	196.3	3.284	0.124	0.9143	
1440 minute winter	58	Hydro-Brake®	59	2.6				
1440 minute winter	59	1.013	60	2.6	0.428	0.004	0.7691	
1440 minute winter	60	1.014	61	2.6	0.899	0.130	0.0247	
1440 minute winter	61	1.015	62	2.6	1.401	0.064	0.1208	
1440 minute winter	62	1.016	63	2.6	1.161	0.044	0.0203	

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	63	1470	44.376	0.034	2.6	0.0380	0.0000	OK
1440 minute winter	64	1470	43.482	0.033	2.6	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)
1440 minute winter	63	1.017	64	2.6	0.880	0.109	0.1477	199.9

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	38	10	60.655	0.119	17.5	0.2271	0.0000	OK
15 minute winter	39	10	60.454	0.158	71.2	0.4672	0.0000	OK
15 minute winter	40	10	58.842	0.125	85.1	0.2725	0.0000	OK
15 minute winter	41	10	60.492	0.146	27.9	0.4267	0.0000	OK
15 minute winter	42	10	60.371	0.123	67.2	0.3049	0.0000	OK
15 minute summer	43	10	58.047	0.139	27.2	0.4036	0.0000	OK
15 minute winter	44	10	57.956	0.277	117.1	0.6186	0.0000	OK
15 minute summer	45	10	57.502	0.218	252.5	0.5797	0.0000	OK
15 minute winter	46	10	54.624	0.226	265.9	0.4719	0.0000	OK
15 minute winter	47	10	53.324	0.235	264.1	0.4145	0.0000	OK
15 minute winter	48	10	52.567	0.212	275.0	0.4494	0.0000	OK
15 minute winter	49	10	50.721	0.389	323.0	1.1695	0.0000	OK
15 minute winter	50	10	52.425	0.078	15.1	0.1369	0.0000	OK
15 minute winter	51	10	52.278	0.139	64.8	0.3800	0.0000	OK
15 minute winter	52	10	51.051	0.201	103.4	0.4500	0.0000	OK
15 minute winter	53	10	50.552	0.332	437.0	0.9562	0.0000	OK
1440 minute winter	54	1410	50.162	0.342	22.9	0.7752	0.0000	OK
15 minute winter	55	10	51.226	0.095	12.4	0.1574	0.0000	OK
1440 minute winter	56	1410	50.162	0.897	26.4	2.2823	0.0000	SURCHARGED
1440 minute winter	57	1410	50.162	1.160	105.9	2.1642	0.0000	SURCHARGED
1440 minute winter	58	1410	50.162	1.362	151.1	615.2143	0.0000	SURCHARGED
1440 minute winter	59	1470	49.067	0.304	2.6	0.5378	0.0000	OK
1440 minute winter	60	1470	49.067	0.384	2.6	0.9782	0.0000	SURCHARGED
1440 minute winter	61	1320	48.603	0.027	2.6	0.0305	0.0000	OK
1440 minute winter	62	1320	45.311	0.022	2.6	0.0245	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	38	1.000	39	17.5	1.216	0.879	0.1893	
15 minute winter	39	1.001	40	71.0	2.443	0.800	1.5094	
15 minute winter	40	1.002	45	85.0	2.813	0.348	0.8567	
15 minute winter	41	2.000	42	27.9	1.130	0.702	0.4106	
15 minute winter	42	2.001	44	67.2	2.568	0.586	1.5456	
15 minute summer	43	3.000	44	27.4	0.920	0.689	0.8218	
15 minute winter	44	2.002	45	113.3	1.788	0.981	1.9629	
15 minute summer	45	1.003	46	252.1	3.724	0.615	4.6889	
15 minute winter	46	1.004	47	264.1	3.725	0.590	1.8696	
15 minute winter	47	1.005	48	262.9	3.852	0.522	0.7988	
15 minute winter	48	1.006	49	272.9	4.587	0.515	1.5423	
15 minute winter	49	1.007	53	320.9	1.848	0.660	3.9451	
15 minute winter	50	4.000	51	15.1	0.803	0.259	0.3139	
15 minute winter	51	4.001	52	64.8	2.609	0.648	0.8228	
15 minute winter	52	4.002	53	103.4	2.227	0.655	0.7617	
15 minute winter	53	1.008	54	433.5	2.721	0.444	3.2116	
1440 minute winter	54	1.009	56	22.9	1.426	0.023	5.3712	
15 minute winter	55	5.000	56	12.4	1.116	0.625	0.0777	
1440 minute winter	56	1.010	57	50.0	1.010	0.053	4.0303	
1440 minute winter	57	1.011	58	151.1	1.316	0.096	2.5567	
1440 minute winter	58	Hydro-Brake®	59	2.6				
1440 minute winter	59	1.013	60	2.6	0.425	0.004	0.9523	
1440 minute winter	60	1.014	61	2.6	0.899	0.130	0.0248	
1440 minute winter	61	1.015	62	2.6	1.402	0.064	0.1210	
1440 minute winter	62	1.016	63	2.6	1.162	0.045	0.0203	

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	63	1320	44.376	0.034	2.6	0.0381	0.0000	OK
1440 minute winter	64	1320	43.482	0.033	2.6	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)
1440 minute winter	63	1.017	64	2.6	0.881	0.109	0.1479	217.4

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	38	11	61.410	0.874	29.4	1.6606	0.0000	SURCHARGED
15 minute winter	39	11	61.119	0.823	110.8	2.4310	0.0000	SURCHARGED
15 minute winter	40	11	58.866	0.149	121.9	0.3257	0.0000	OK
15 minute winter	41	11	60.743	0.397	46.9	1.1631	0.0000	SURCHARGED
15 minute winter	42	11	60.608	0.360	109.1	0.8928	0.0000	SURCHARGED
15 minute winter	43	11	58.726	0.818	45.8	2.3759	0.0000	SURCHARGED
15 minute winter	44	11	58.521	0.842	175.0	1.8816	0.0000	SURCHARGED
15 minute winter	45	10	57.583	0.299	384.4	0.7956	0.0000	OK
15 minute winter	46	10	54.723	0.325	405.8	0.6785	0.0000	OK
15 minute winter	47	11	53.482	0.393	400.9	0.6950	0.0000	SURCHARGED
15 minute summer	48	11	52.631	0.276	417.5	0.5864	0.0000	OK
2160 minute winter	49	2100	51.266	0.934	19.2	2.8128	0.0000	SURCHARGED
15 minute winter	50	11	52.666	0.319	25.4	0.5627	0.0000	SURCHARGED
15 minute winter	51	11	52.622	0.483	108.5	1.3222	0.0000	SURCHARGED
15 minute winter	52	10	51.270	0.420	159.0	0.9429	0.0000	SURCHARGED
2160 minute winter	53	2100	51.266	1.046	25.9	3.0097	0.0000	SURCHARGED
2160 minute winter	54	2100	51.266	1.446	127.7	3.2806	0.0000	SURCHARGED
15 minute winter	55	10	51.309	0.178	20.9	0.2933	0.0000	SURCHARGED
2160 minute winter	56	2100	51.266	2.001	28.7	5.0938	0.0000	SURCHARGED
2160 minute winter	57	2100	51.266	2.264	61.0	4.2255	0.0000	SURCHARGED
2160 minute winter	58	2100	51.266	2.466	62.2	1114.2680	0.0000	SURCHARGED
2160 minute winter	59	2160	49.994	1.231	2.9	2.1759	0.0000	SURCHARGED
2160 minute winter	60	2160	49.994	1.311	2.8	3.3375	0.0000	SURCHARGED
2160 minute winter	61	2160	48.604	0.028	2.8	0.0316	0.0000	OK
2160 minute winter	62	2160	45.311	0.022	2.8	0.0254	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	38	1.000	39	26.8	1.524	1.349	0.2321	
15 minute winter	39	1.001	40	101.1	2.543	1.139	2.0657	
15 minute winter	40	1.002	45	121.6	2.887	0.497	1.2865	
15 minute winter	41	2.000	42	43.2	1.169	1.086	0.6619	
15 minute winter	42	2.001	44	103.4	2.652	0.901	2.0569	
15 minute winter	43	3.000	44	42.0	1.055	1.053	1.0361	
15 minute winter	44	2.002	45	173.9	2.470	1.506	2.0654	
15 minute winter	45	1.003	46	383.2	3.921	0.935	6.7692	
15 minute winter	46	1.004	47	400.9	3.863	0.896	2.7821	
15 minute winter	47	1.005	48	395.8	4.114	0.786	1.1456	
15 minute summer	48	1.006	49	418.6	4.710	0.790	2.4842	
2160 minute winter	49	1.007	53	19.2	0.950	0.039	6.2910	
15 minute winter	50	4.000	51	29.5	0.846	0.507	0.6602	
15 minute winter	51	4.001	52	97.5	2.617	0.975	1.3179	
15 minute winter	52	4.002	53	157.7	2.282	0.999	1.1447	
2160 minute winter	53	1.008	54	104.5	1.438	0.107	5.6293	
2160 minute winter	54	1.009	56	27.4	1.328	0.028	6.7625	
15 minute winter	55	5.000	56	20.7	1.179	1.044	0.1186	
2160 minute winter	56	1.010	57	46.9	0.942	0.050	4.0303	
2160 minute winter	57	1.011	58	62.2	1.149	0.039	2.5567	
2160 minute winter	58	Hydro-Brake®	59	2.9				
2160 minute winter	59	1.013	60	2.8	0.381	0.004	2.0458	
2160 minute winter	60	1.014	61	2.8	0.918	0.140	0.0261	
2160 minute winter	61	1.015	62	2.8	1.433	0.069	0.1274	
2160 minute winter	62	1.016	63	2.8	1.187	0.048	0.0214	

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.40%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2160 minute winter	63	2160	44.377	0.035	2.8	0.0395	0.0000	OK
2160 minute winter	64	2160	43.484	0.035	2.8	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)
2160 minute winter	63	1.017	64	2.8	0.899	0.117	0.1559	331.7

Flow+ v10.3 Copyright © 1988-2022 Causeway Technologies Ltd