Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
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)	0.200
Ratio-R	0.320	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100	150

2100 culvert Link Type

Shape	Closed Rectangular	Auto Increment (mm)	100
Barrels	1	Follow Ground	x
Height (mm)	2100		

Available Diameters (mm)

100

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
PS1	0.091	5.00	179.659	900	411920.979	419004.344	1.659
S1	0.050	5.00	179.372	1500	411922.478	418993.525	1.972
PS2		5.00	179.700	900	411943.641	419033.876	1.250
S2	0.012	5.00	179.419	1350	411948.915	419032.394	1.419
S3	0.041	5.00	179.025	1350	411944.734	419017.516	1.675
PS3		5.00	178.500	900	411941.763	418990.951	2.700
S4	0.068	5.00	178.372	1500	411942.705	418995.628	3.072
PS4		5.00	177.700	900	411956.809	418999.958	2.950
S5	0.032	5.00	177.681	1200	411956.262	418992.898	3.681
S6			177.460	1200	411960.461	418991.822	3.660
PS5		5.00	177.700	900	411966.989	418999.125	3.700
S7	0.014	5.00	177.173	1200	411966.343	418991.437	3.973
PS6		5.00	176.200	900	412007.457	419013.613	1.960

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S8	0.060	5.00	176.200	1200	412011.553	419020.025	4.200
S9			177.370	1200	411991.640	419022.841	5.420
S10	0.060	5.00	177.492	1500	411982.614	419023.341	5.592
S11	0.103	5.00	176.486	1500	411980.222	418990.293	4.686
PS7		5.00	175.750	900	411993.491	418981.483	3.250
S12			175.737	2400	411994.098	418989.084	4.037
S13			174.580	1200	412015.822	418987.472	4.030
S14			173.537	1200	412025.597	418985.412	3.187

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	PS1	S1	10.922	0.600	178.000	177.550	0.450	24.3	150	5.09	48.6
1.001	S1	S4	20.336	0.600	177.400	175.300	2.100	9.7	300	5.16	48.3
2.000	PS2	S2	5.478	0.600	178.450	178.000	0.450	12.2	150	5.03	48.8
2.001	S2	S3	15.454	0.600	178.000	177.500	0.500	30.9	150	5.17	48.2
2.002	S3	S4	21.982	0.600	177.350	175.300	2.050	10.7	300	5.25	47.9
4.000	PS3	S4	4.771	0.600	175.800	175.450	0.350	13.6	150	5.03	48.8
1.002	S4	S5	13.829	0.600	175.300	174.000	1.300	10.6	300	5.30	47.8
5.000	PS4	S5	7.081	0.600	174.750	174.150	0.600	11.8	150	5.04	48.7
1.003	S5	S6	4.335	0.600	174.000	173.800	0.200	21.7	300	5.32	47.7
1.004	S6	S7	5.895	0.600	173.800	173.200	0.600	9.8	300	5.34	47.6
6.000	PS5	S7	7.715	0.600	174.000	173.350	0.650	11.9	150	5.04	48.7
1.005	S7	S11	13.926	0.600	173.200	171.800	1.400	9.9	300	5.38	47.4
3.000	PS6	S8	7.609	0.600	174.240	173.900	0.340	22.4	150	5.06	48.7
3.001	S8	S9	25.000	0.600	172.000	171.950	0.050	500.0	6500	5.20	48.3
3.002	S9	S10	9.040	0.600	171.950	171.900	0.050	180.8	300	5.33	47.8
3.003	S10	S11	33.134	0.600	171.900	171.800	0.100	331.3	300	5.97	45.5
1.006	S11	S12	13.929	0.600	171.800	171.750	0.050	278.6	300	6.22	44.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.052	36.3	12.0	1.509	1.672	0.091	0.0	59	1.848
1.001	5.080	359.1	18.5	1.672	2.772	0.141	0.0	46	2.718
2.000	2.903	51.3	0.0	1.100	1.269	0.000	0.0	0	0.000
2.001	1.817	32.1	1.6	1.269	1.375	0.012	0.0	23	0.942
2.002	4.827	341.2	6.9	1.375	2.772	0.053	0.0	29	1.940
4.000	2.743	48.5	0.0	2.550	2.772	0.000	0.0	0	0.000
1.002	4.846	342.6	33.9	2.772	3.381	0.262	0.0	63	3.121
5.000	2.949	52.1	0.0	2.800	3.381	0.000	0.0	0	0.000
1.003	3.391	239.7	38.0	3.381	3.360	0.294	0.0	80	2.496
1.004	5.043	356.5	37.9	3.360	3.673	0.294	0.0	65	3.317
6.000	2.940	52.0	0.0	3.550	3.673	0.000	0.0	0	0.000
1.005	5.012	354.3	39.6	3.673	4.386	0.308	0.0	67	3.347
3.000	2.138	37.8	0.0	1.810	2.150	0.000	0.0	0	0.000
3.001	3.016	41164.0	7.9	2.100	3.320	0.060	0.0	8	0.150
3.002	1.166	82.4	7.8	5.120	5.292	0.060	0.0	62	0.739
3.003	0.858	60.6	14.8	5.292	4.386	0.120	0.0	100	0.711
1.006	0.937	66.2	64.3	4.386	3.687	0.531	0.0	240	1.062

Flow+ v10.7 Copyright © 1988-2024 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)
7.000	PS7	S12	7.625	0.600	172.500	171.900	0.600	12.7	150	5.04	48.7
1.007	S12	S13	21.784	0.600	171.700	170.550	1.150	18.9	225	6.34	44.3
1.008	S13	S14	9.990	0.600	170.550	170.350	0.200	50.0	225	6.43	44.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
7.000	2.841	50.2	0.0	3.100	3.687	0.000	0.0	0	0.000
1.007	3.020	120.1	63.8	3.812	3.805	0.531	0.0	116	3.062
1.008	1.855	73.7	63.5	3.805	2.962	0.531	0.0	161	2.077

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	10.922	24.3	150	Circular	179.659	178.000	1.509	179.372	177.550	1.672
1.001	20.336	9.7	300	Circular	179.372	177.400	1.672	178.372	175.300	2.772
2.000	5.478	12.2	150	Circular	179.700	178.450	1.100	179.419	178.000	1.269
2.001	15.454	30.9	150	Circular	179.419	178.000	1.269	179.025	177.500	1.375
2.002	21.982	10.7	300	Circular	179.025	177.350	1.375	178.372	175.300	2.772
4.000	4.771	13.6	150	Circular	178.500	175.800	2.550	178.372	175.450	2.772
1.002	13.829	10.6	300	Circular	178.372	175.300	2.772	177.681	174.000	3.381
5.000	7.081	11.8	150	Circular	177.700	174.750	2.800	177.681	174.150	3.381
1.003	4.335	21.7	300	Circular	177.681	174.000	3.381	177.460	173.800	3.360
1.004	5.895	9.8	300	Circular	177.460	173.800	3.360	177.173	173.200	3.673
6.000	7.715	11.9	150	Circular	177.700	174.000	3.550	177.173	173.350	3.673
1.005	13.926	9.9	300	Circular	177.173	173.200	3.673	176.486	171.800	4.386
3.000	7.609	22.4	150	Circular	176.200	174.240	1.810	176.200	173.900	2.150
3.001	25.000	500.0	6500	2100 culvert	176.200	172.000	2.100	177.370	171.950	3.320
3.002	9.040	180.8	300	Circular	177.370	171.950	5.120	177.492	171.900	5.292
3.003	33.134	331.3	300	Circular	177.492	171.900	5.292	176.486	171.800	4.386
1.006	13.929	278.6	300	Circular	176.486	171.800	4.386	175.737	171.750	3.687

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	PS1	900	Manhole	Adoptable	S1	1500	Manhole	Adoptable
1.001	S1	1500	Manhole	Adoptable	S4	1500	Manhole	Adoptable
2.000	PS2	900	Manhole	Adoptable	S2	1350	Manhole	Adoptable
2.001	S2	1350	Manhole	Adoptable	S3	1350	Manhole	Adoptable
2.002	S3	1350	Manhole	Adoptable	S4	1500	Manhole	Adoptable
4.000	PS3	900	Manhole	Adoptable	S4	1500	Manhole	Adoptable
1.002	S4	1500	Manhole	Adoptable	S5	1200	Manhole	Adoptable
5.000	PS4	900	Manhole	Adoptable	S5	1200	Manhole	Adoptable
1.003	S5	1200	Manhole	Adoptable	S6	1200	Manhole	Adoptable
1.004	S6	1200	Manhole	Adoptable	S7	1200	Manhole	Adoptable
6.000	PS5	900	Manhole	Adoptable	S7	1200	Manhole	Adoptable
1.005	S7	1200	Manhole	Adoptable	S11	1500	Manhole	Adoptable
3.000	PS6	900	Manhole	Adoptable	S8	1200	Manhole	Adoptable
3.001	S8	1200	Manhole	Adoptable	S9	1200	Manhole	Adoptable
3.002	S9	1200	Manhole	Adoptable	S10	1500	Manhole	Adoptable
3.003	S10	1500	Manhole	Adoptable	S11	1500	Manhole	Adoptable
1.006	S11	1500	Manhole	Adoptable	S12	2400	Manhole	Adoptable

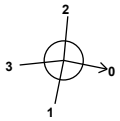
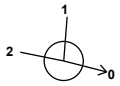
Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

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)
7.000	7.625	12.7	150	Circular	175.750	172.500	3.100	175.737	171.900	3.687
1.007	21.784	18.9	225	Circular	175.737	171.700	3.812	174.580	170.550	3.805
1.008	9.990	50.0	225	Circular	174.580	170.550	3.805	173.537	170.350	2.962

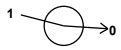
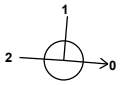
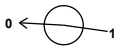
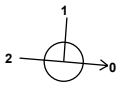
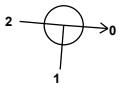
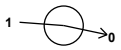
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
7.000	PS7	900	Manhole	Adoptable	S12	2400	Manhole	Adoptable
1.007	S12	2400	Manhole	Adoptable	S13	1200	Manhole	Adoptable
1.008	S13	1200	Manhole	Adoptable	S14	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
PS1	411920.979	419004.344	179.659	1.659	900		0	1.000	178.000	150
S1	411922.478	418993.525	179.372	1.972	1500		1	1.000	177.550	150
							0	1.001	177.400	300
PS2	411943.641	419033.876	179.700	1.250	900		0	2.000	178.450	150
S2	411948.915	419032.394	179.419	1.419	1350		1	2.000	178.000	150
							0	2.001	178.000	150
S3	411944.734	419017.516	179.025	1.675	1350		1	2.001	177.500	150
							0	2.002	177.350	300
PS3	411941.763	418990.951	178.500	2.700	900		0	4.000	175.800	150
S4	411942.705	418995.628	178.372	3.072	1500		1	4.000	175.450	150
							2	2.002	175.300	300
							3	1.001	175.300	300
							0	1.002	175.300	300
PS4	411956.809	418999.958	177.700	2.950	900		0	5.000	174.750	150
S5	411956.262	418992.898	177.681	3.681	1200		1	5.000	174.150	150
							2	1.002	174.000	300
							0	1.003	174.000	300

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
S6	411960.461	418991.822	177.460	3.660	1200		1	1.003	173.800	300
							0	1.004	173.800	300
PS5	411966.989	418999.125	177.700	3.700	900		0	6.000	174.000	150
S7	411966.343	418991.437	177.173	3.973	1200		1	6.000	173.350	150
							2	1.004	173.200	300
							0	1.005	173.200	300
PS6	412007.457	419013.613	176.200	1.960	900		0	3.000	174.240	150
S8	412011.553	419020.025	176.200	4.200	1200		1	3.000	173.900	150
							0	3.001	172.000	6500
S9	411991.640	419022.841	177.370	5.420	1200		1	3.001	171.950	6500
							0	3.002	171.950	300
S10	411982.614	419023.341	177.492	5.592	1500		1	3.002	171.900	300
							0	3.003	171.900	300
S11	411980.222	418990.293	176.486	4.686	1500		1	3.003	171.800	300
							2	1.005	171.800	300
							0	1.006	171.800	300
PS7	411993.491	418981.483	175.750	3.250	900		0	7.000	172.500	150
S12	411994.098	418989.084	175.737	4.037	2400		1	7.000	171.900	150
							2	1.006	171.750	300
							0	1.007	171.700	225
S13	412015.822	418987.472	174.580	4.030	1200		1	1.007	170.550	225
							0	1.008	170.550	225
S14	412025.597	418985.412	173.537	3.187	1200		1	1.008	170.350	225

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)	1440
Ratio-R	0.320	Additional Storage (m³/ha)	0.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node S12 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	171.700	Product Number	CTL-SHE-0075-4400-3500-4400
Design Depth (m)	3.500	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	4.4	Min Node Diameter (mm)	1200

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	101.711	28.781	1 year 960 minute summer	8.093	2.131
1 year 15 minute winter	71.376	28.781	1 year 960 minute winter	5.361	2.131
1 year 30 minute summer	68.580	19.406	1 year 1440 minute summer	6.078	1.629
1 year 30 minute winter	48.126	19.406	1 year 1440 minute winter	4.085	1.629
1 year 60 minute summer	48.435	12.800	30 year 15 minute summer	249.196	70.514
1 year 60 minute winter	32.179	12.800	30 year 15 minute winter	174.874	70.514
1 year 120 minute summer	31.422	8.304	30 year 30 minute summer	168.269	47.614
1 year 120 minute winter	20.876	8.304	30 year 30 minute winter	118.084	47.614
1 year 180 minute summer	24.970	6.426	30 year 60 minute summer	116.589	30.811
1 year 180 minute winter	16.231	6.426	30 year 60 minute winter	77.459	30.811
1 year 240 minute summer	20.186	5.335	30 year 120 minute summer	73.116	19.322
1 year 240 minute winter	13.411	5.335	30 year 120 minute winter	48.577	19.322
1 year 360 minute summer	15.845	4.078	30 year 180 minute summer	56.402	14.514
1 year 360 minute winter	10.300	4.078	30 year 180 minute winter	36.663	14.514
1 year 480 minute summer	12.751	3.370	30 year 240 minute summer	44.662	11.803
1 year 480 minute winter	8.471	3.370	30 year 240 minute winter	29.673	11.803
1 year 600 minute summer	10.627	2.907	30 year 360 minute summer	34.253	8.815
1 year 600 minute winter	7.261	2.907	30 year 360 minute winter	22.265	8.815
1 year 720 minute summer	9.614	2.577	30 year 480 minute summer	27.074	7.155
1 year 720 minute winter	6.461	2.577	30 year 480 minute winter	17.988	7.155

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 600 minute summer	22.234	6.082	100 year 960 minute summer	20.682	5.446
30 year 600 minute winter	15.192	6.082	100 year 960 minute winter	13.700	5.446
30 year 720 minute summer	19.861	5.323	100 year 1440 minute summer	14.924	4.000
30 year 720 minute winter	13.348	5.323	100 year 1440 minute winter	10.030	4.000
30 year 960 minute summer	16.368	4.310	100 year +40% CC 15 minute summer	451.575	127.780
30 year 960 minute winter	10.843	4.310	100 year +40% CC 15 minute winter	316.895	127.780
30 year 1440 minute summer	11.926	3.196	100 year +40% CC 30 minute summer	308.006	87.155
30 year 1440 minute winter	8.015	3.196	100 year +40% CC 30 minute winter	216.144	87.155
100 year 15 minute summer	322.553	91.271	100 year +40% CC 60 minute summer	214.603	56.713
100 year 15 minute winter	226.353	91.271	100 year +40% CC 60 minute winter	142.577	56.713
100 year 30 minute summer	220.004	62.254	100 year +40% CC 120 minute summer	134.390	35.515
100 year 30 minute winter	154.389	62.254	100 year +40% CC 120 minute winter	89.286	35.515
100 year 60 minute summer	153.288	40.510	100 year +40% CC 180 minute summer	103.076	26.525
100 year 60 minute winter	101.841	40.510	100 year +40% CC 180 minute winter	67.002	26.525
100 year 120 minute summer	95.993	25.368	100 year +40% CC 240 minute summer	81.176	21.453
100 year 120 minute winter	63.776	25.368	100 year +40% CC 240 minute winter	53.932	21.453
100 year 180 minute summer	73.626	18.946	100 year +40% CC 360 minute summer	61.820	15.908
100 year 180 minute winter	47.859	18.946	100 year +40% CC 360 minute winter	40.184	15.908
100 year 240 minute summer	57.983	15.323	100 year +40% CC 480 minute summer	48.599	12.843
100 year 240 minute winter	38.523	15.323	100 year +40% CC 480 minute winter	32.288	12.843
100 year 360 minute summer	44.157	11.363	100 year +40% CC 600 minute summer	39.734	10.868
100 year 360 minute winter	28.703	11.363	100 year +40% CC 600 minute winter	27.148	10.868
100 year 480 minute summer	34.714	9.174	100 year +40% CC 720 minute summer	35.357	9.476
100 year 480 minute winter	23.063	9.174	100 year +40% CC 720 minute winter	23.762	9.476
100 year 600 minute summer	28.381	7.763	100 year +40% CC 960 minute summer	28.955	7.625
100 year 600 minute winter	19.392	7.763	100 year +40% CC 960 minute winter	19.180	7.625
100 year 720 minute summer	25.255	6.769	100 year +40% CC 1440 minute summer	20.894	5.600
100 year 720 minute winter	16.973	6.769	100 year +40% CC 1440 minute winter	14.042	5.600

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PS1	10	178.063	0.063	11.9	0.0398	0.0000	OK
15 minute winter	S1	10	177.446	0.046	18.3	0.0808	0.0000	OK
15 minute summer	PS2	1	178.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S2	10	178.023	0.023	1.6	0.0327	0.0000	OK
15 minute winter	S3	10	177.380	0.029	7.0	0.0422	0.0000	OK
15 minute summer	PS3	1	175.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S4	10	175.363	0.063	34.0	0.1117	0.0000	OK
15 minute summer	PS4	1	174.750	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S5	10	174.098	0.098	38.0	0.1106	0.0000	OK
15 minute winter	S6	10	173.874	0.074	37.8	0.0838	0.0000	OK
15 minute summer	PS5	1	174.000	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S7	10	173.267	0.067	39.5	0.0758	0.0000	OK
15 minute summer	PS6	1	174.240	0.000	0.0	0.0000	0.0000	OK
360 minute winter	S8	328	172.304	0.304	4.7	0.3434	0.0000	OK
360 minute winter	S9	328	172.304	0.354	7.9	0.3999	0.0000	SURCHARGED
360 minute winter	S10	328	172.304	0.404	8.3	0.7132	0.0000	SURCHARGED
360 minute winter	S11	328	172.304	0.504	9.9	0.8899	0.0000	SURCHARGED
15 minute summer	PS7	1	172.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S12	10	172.305	0.605	16.0	2.7350	0.0000	SURCHARGED
15 minute summer	S13	100	170.580	0.030	2.6	0.0334	0.0000	OK
15 minute summer	S14	100	170.379	0.029	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)
15 minute winter	PS1	1.000	S1	11.8	1.766	0.326	0.0730	
15 minute winter	S1	1.001	S4	18.2	2.095	0.051	0.1782	
15 minute summer	PS2	2.000	S2	0.0	0.000	0.000	0.0044	
15 minute winter	S2	2.001	S3	1.6	0.932	0.048	0.0258	
15 minute winter	S3	2.002	S4	6.9	1.003	0.020	0.1575	
15 minute summer	PS3	4.000	S4	0.0	0.000	0.000	0.0000	
15 minute winter	S4	1.002	S5	33.8	2.224	0.099	0.2122	
15 minute summer	PS4	5.000	S5	0.0	0.000	0.000	0.0000	
15 minute winter	S5	1.003	S6	37.8	2.269	0.158	0.0725	
15 minute winter	S6	1.004	S7	37.7	2.987	0.106	0.0744	
15 minute summer	PS5	6.000	S7	0.0	0.000	0.000	0.0000	
15 minute winter	S7	1.005	S11	39.3	0.981	0.111	0.5719	
15 minute summer	PS6	3.000	S8	0.0	0.000	0.000	0.0000	
360 minute winter	S8	3.001	S9	-3.3	0.013	0.000	53.4065	
360 minute winter	S9	3.002	S10	-7.9	0.288	-0.096	0.6366	
360 minute winter	S10	3.003	S11	-6.9	0.216	-0.113	2.3333	
360 minute winter	S11	1.006	S12	3.0	0.429	0.045	0.9809	
15 minute summer	PS7	7.000	S12	0.0	0.000	0.000	0.0671	
15 minute winter	S12	Hydro-Brake®	S13	2.6				
15 minute summer	S13	1.008	S14	2.6	0.860	0.035	0.0299	28.5

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PS1	10	178.115	0.115	29.2	0.0730	0.0000	OK
15 minute winter	S1	10	177.471	0.071	44.9	0.1256	0.0000	OK
15 minute summer	PS2	1	178.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S2	10	178.036	0.036	3.9	0.0512	0.0000	OK
15 minute winter	S3	10	177.395	0.045	17.0	0.0647	0.0000	OK
15 minute summer	PS3	1	175.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S4	10	175.400	0.100	83.5	0.1763	0.0000	OK
15 minute summer	PS4	1	174.750	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S5	10	174.172	0.172	93.3	0.1949	0.0000	OK
15 minute winter	S6	10	173.923	0.123	92.8	0.1395	0.0000	OK
15 minute summer	PS5	1	174.000	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S7	11	173.334	0.134	97.2	0.1514	0.0000	OK
15 minute summer	PS6	1	174.240	0.000	0.0	0.0000	0.0000	OK
480 minute winter	S8	464	173.004	1.004	9.5	1.1356	0.0000	OK
480 minute winter	S9	464	173.004	1.054	16.4	1.1921	0.0000	SURCHARGED
480 minute winter	S10	464	173.004	1.104	16.6	1.9509	0.0000	SURCHARGED
480 minute winter	S11	464	173.004	1.204	17.2	2.1275	0.0000	SURCHARGED
480 minute winter	PS7	464	173.004	0.504	0.2	0.3205	0.0000	SURCHARGED
480 minute winter	S12	464	173.004	1.304	3.0	5.8987	0.0000	SURCHARGED
480 minute winter	S13	464	170.581	0.031	2.8	0.0347	0.0000	OK
480 minute winter	S14	464	170.380	0.030	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)
15 minute winter	PS1	1.000	S1	29.0	2.132	0.798	0.1481	
15 minute winter	S1	1.001	S4	44.8	2.715	0.125	0.3377	
15 minute summer	PS2	2.000	S2	0.0	0.000	0.000	0.0085	
15 minute winter	S2	2.001	S3	3.8	1.205	0.119	0.0488	
15 minute winter	S3	2.002	S4	16.9	1.292	0.050	0.2980	
15 minute summer	PS3	4.000	S4	0.0	0.000	0.000	0.0000	
15 minute winter	S4	1.002	S5	83.0	2.674	0.242	0.4311	
15 minute summer	PS4	5.000	S5	0.0	0.000	0.000	0.0039	
15 minute winter	S5	1.003	S6	92.8	2.693	0.387	0.1499	
15 minute winter	S6	1.004	S7	92.7	3.428	0.260	0.1672	
15 minute summer	PS5	6.000	S7	0.0	0.000	0.000	0.0000	
15 minute winter	S7	1.005	S11	96.1	1.664	0.271	0.7019	
15 minute summer	PS6	3.000	S8	0.0	0.000	0.000	0.0000	
480 minute winter	S8	3.001	S9	-7.0	0.019	0.000	167.2495	
480 minute winter	S9	3.002	S10	-16.4	0.278	-0.199	0.6366	
480 minute winter	S10	3.003	S11	-14.1	0.211	-0.233	2.3333	
480 minute winter	S11	1.006	S12	3.0	0.452	0.045	0.9809	
480 minute winter	PS7	7.000	S12	-0.2	-0.014	-0.003	0.1342	
480 minute winter	S12	Hydro-Brake®	S13	2.8				
480 minute winter	S13	1.008	S14	2.8	0.880	0.038	0.0317	255.4

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PS1	11	178.281	0.281	37.8	0.1789	0.0000	SURCHARGED
15 minute winter	S1	10	177.480	0.080	56.5	0.1408	0.0000	OK
15 minute summer	PS2	1	178.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S2	10	178.041	0.041	5.0	0.0584	0.0000	OK
15 minute winter	S3	10	177.401	0.051	21.9	0.0732	0.0000	OK
15 minute summer	PS3	1	175.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S4	10	175.413	0.113	106.2	0.2002	0.0000	OK
15 minute summer	PS4	1	174.750	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S5	10	174.205	0.204	118.8	0.2313	0.0000	OK
15 minute winter	S6	10	173.939	0.139	117.9	0.1576	0.0000	OK
15 minute summer	PS5	1	174.000	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S7	12	173.448	0.248	123.4	0.2801	0.0000	OK
15 minute summer	PS6	1	174.240	0.000	0.0	0.0000	0.0000	OK
480 minute winter	S8	464	173.383	1.383	12.3	1.5646	0.0000	OK
480 minute winter	S9	464	173.383	1.433	21.3	1.6211	0.0000	SURCHARGED
480 minute winter	S10	464	173.383	1.483	21.6	2.6211	0.0000	SURCHARGED
480 minute winter	S11	464	173.383	1.583	22.1	2.7976	0.0000	SURCHARGED
480 minute winter	PS7	464	173.383	0.883	0.2	0.5617	0.0000	SURCHARGED
480 minute winter	S12	464	173.383	1.683	3.4	7.6144	0.0000	SURCHARGED
480 minute winter	S13	464	170.583	0.033	3.1	0.0368	0.0000	OK
480 minute winter	S14	464	170.382	0.032	3.1	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)
15 minute winter	PS1	1.000	S1	36.3	2.117	1.001	0.1923	
15 minute winter	S1	1.001	S4	56.2	2.887	0.156	0.3996	
15 minute summer	PS2	2.000	S2	0.0	0.000	0.000	0.0102	
15 minute winter	S2	2.001	S3	4.9	1.294	0.153	0.0587	
15 minute winter	S3	2.002	S4	21.8	1.395	0.064	0.3548	
15 minute summer	PS3	4.000	S4	0.0	0.000	0.000	0.0000	
15 minute winter	S4	1.002	S5	105.5	2.785	0.308	0.5220	
15 minute summer	PS4	5.000	S5	0.0	0.000	0.000	0.0167	
15 minute winter	S5	1.003	S6	117.9	2.840	0.492	0.1803	
15 minute winter	S6	1.004	S7	117.6	3.425	0.330	0.2705	
15 minute summer	PS5	6.000	S7	0.0	0.000	0.000	0.0238	
15 minute winter	S7	1.005	S11	120.2	1.820	0.339	0.9235	
15 minute summer	PS6	3.000	S8	0.0	0.000	0.000	0.0000	
480 minute winter	S8	3.001	S9	-9.1	0.018	0.000	228.8972	
480 minute winter	S9	3.002	S10	-21.3	-0.303	-0.259	0.6366	
480 minute winter	S10	3.003	S11	-18.4	-0.261	-0.303	2.3333	
480 minute winter	S11	1.006	S12	3.4	0.413	0.052	0.9809	
480 minute winter	PS7	7.000	S12	-0.2	-0.019	-0.004	0.1342	
480 minute winter	S12	Hydro-Brake®	S13	3.1				
480 minute winter	S13	1.008	S14	3.1	0.910	0.042	0.0344	296.2

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PS1	11	178.825	0.825	52.9	0.5247	0.0000	SURCHARGED
15 minute winter	S1	10	177.495	0.095	79.1	0.1675	0.0000	OK
15 minute summer	PS2	1	178.450	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S2	10	178.049	0.049	7.0	0.0700	0.0000	OK
15 minute winter	S3	10	177.410	0.060	30.7	0.0863	0.0000	OK
15 minute summer	PS3	1	175.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S4	11	175.453	0.153	149.0	0.2709	0.0000	OK
15 minute winter	PS4	12	174.767	0.017	1.1	0.0105	0.0000	OK
15 minute winter	S5	12	174.766	0.766	163.9	0.8662	0.0000	SURCHARGED
15 minute winter	S6	12	174.588	0.788	152.3	0.8916	0.0000	SURCHARGED
15 minute winter	PS5	12	174.387	0.387	3.0	0.2461	0.0000	SURCHARGED
600 minute winter	S7	585	174.385	1.185	19.6	1.3404	0.0000	SURCHARGED
600 minute winter	PS6	585	174.385	0.145	0.1	0.0921	0.0000	OK
600 minute winter	S8	585	174.381	2.381	14.5	2.6924	0.0000	SURCHARGED
600 minute winter	S9	585	174.392	2.442	25.3	2.7618	0.0000	SURCHARGED
600 minute winter	S10	585	174.383	2.483	25.6	4.3880	0.0000	SURCHARGED
600 minute winter	S11	585	174.385	2.585	26.1	4.5683	0.0000	SURCHARGED
600 minute winter	PS7	585	174.384	1.884	1.4	1.1985	0.0000	SURCHARGED
600 minute winter	S12	585	174.385	2.685	9.0	12.1447	0.0000	SURCHARGED
600 minute winter	S13	585	170.586	0.036	3.9	0.0410	0.0000	OK
600 minute winter	S14	585	170.385	0.035	3.9	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)
15 minute winter	PS1	1.000	S1	50.8	2.887	1.402	0.1923	
15 minute winter	S1	1.001	S4	78.9	3.112	0.220	0.5610	
15 minute summer	PS2	2.000	S2	0.0	0.000	0.000	0.0131	
15 minute winter	S2	2.001	S3	6.9	1.419	0.215	0.0751	
15 minute winter	S3	2.002	S4	30.6	1.500	0.090	0.5051	
15 minute summer	PS3	4.000	S4	0.0	0.000	0.000	0.0000	
15 minute winter	S4	1.002	S5	145.3	2.870	0.424	0.7372	
15 minute winter	PS4	5.000	S5	-1.1	-0.098	-0.021	0.0660	
15 minute winter	S5	1.003	S6	152.3	2.805	0.635	0.3053	
15 minute winter	S6	1.004	S7	147.6	3.415	0.414	0.4151	
15 minute winter	PS5	6.000	S7	6.0	0.362	0.115	0.1358	
600 minute winter	S7	1.005	S11	19.6	0.572	0.055	0.9807	
600 minute winter	PS6	3.000	S8	0.2	0.014	0.006	0.1332	
600 minute winter	S8	3.001	S9	21.2	0.021	0.001	341.4594	
600 minute winter	S9	3.002	S10	-25.3	-0.359	-0.306	0.6366	
600 minute winter	S10	3.003	S11	-21.8	-0.309	-0.359	2.3333	
600 minute winter	S11	1.006	S12	7.6	0.356	0.115	0.9809	
600 minute winter	PS7	7.000	S12	-1.4	-0.079	-0.028	0.1342	
600 minute winter	S12	Hydro-Brake®	S13	3.9				
600 minute winter	S13	1.008	S14	3.9	0.968	0.053	0.0402	367.8

Flow+ v10.7 Copyright © 1988-2024 Causeway Technologies Ltd