Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	0.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	1.000
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	✓

Adoptable Manhole Type

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

>900 Link+900 mm

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

Circular_Default Sewer Type Link Type

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

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.078	5.00	68.330	1800	388206.910	397832.859	2.050
2	0.022	5.00	67.919	1800	388201.237	397768.746	1.800
3	0.000		68.065	1800	388208.232	397755.601	1.983
4	0.165	5.00	68.492	1200	388216.387	397755.171	2.272
5	0.000		68.071	1500	388212.665	397751.846	3.326
6			68.100	1500	388210.694	397729.564	3.452

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	1	2	64.363	0.600	66.280	66.119	0.161	400.0	600	5.89	0.0
1.001	2	3	14.890	0.600	66.119	66.082	0.037	400.0	600	6.09	0.0
1.002	3	5	5.810	0.600	66.082	66.024	0.058	100.0	150	6.19	0.0
2.000	4	5	4.991	0.600	66.220	66.024	0.196	25.5	150	5.04	0.0
1.003	5	6	22.369	0.600	64.745	64.648	0.097	230.0	300	6.55	0.0

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)
1.000	1.211	342.4	0.0	1.450	1.200	0.078	0.0	0	0.000
1.001	1.211	342.4	0.0	1.200	1.383	0.100	0.0	0	0.000
1.002	1.005	17.8	0.0	1.833	1.897	0.100	0.0	0	0.000
2.000	2.003	35.4	0.0	2.122	1.897	0.165	0.0	0	0.000
1.003	1.032	73.0	0.0	3.026	3.152	0.265	0.0	0	0.000

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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	64.363	400.0	600	Circular_Default Sewer Type	68.330	66.280	1.450	67.919	66.119	1.200
1.001	14.890	400.0	600	Circular_Default Sewer Type	67.919	66.119	1.200	68.065	66.082	1.383
1.002	5.810	100.0	150	Circular_Default Sewer Type	68.065	66.082	1.833	68.071	66.024	1.897
2.000	4.991	25.5	150	Circular_Default Sewer Type	68.492	66.220	2.122	68.071	66.024	1.897
1.003	22.369	230.0	300	Circular_Default Sewer Type	68.071	64.745	3.026	68.100	64.648	3.152

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1800	Manhole	Adoptable	2	1800	Manhole	Adoptable
1.001	2	1800	Manhole	Adoptable	3	1800	Manhole	Adoptable
1.002	3	1800	Manhole	Adoptable	5	1500	Manhole	Adoptable
2.000	4	1200	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.003	5	1500	Manhole	Adoptable	6	1500	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	388206.910	397832.859	68.330	2.050	1800	 0	1.000	66.280	600
2	388201.237	397768.746	67.919	1.800	1800	 1 0	1.000 1.001	66.119 66.119	600 600
3	388208.232	397755.601	68.065	1.983	1800	 1 0	1.001 1.002	66.082 66.082	600 150
4	388216.387	397755.171	68.492	2.272	1200	 0	2.000	66.220	150
5	388212.665	397751.846	68.071	3.326	1500	 1 2 0	2.000 1.002 1.003	66.024 66.024 64.745	150 150 300
6	388210.694	397729.564	68.100	3.452	1500	 1	1.003	64.648	300

Node 5 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.000	200	1.000	400	1.000	600	1.000	800	1.000	1000	1.000	1200	1.000	1400	1.000
100	1.000	300	1.000	500	1.000	700	1.000	900	1.000	1100	1.000	1300	1.000	1500	1.000

Node 3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	66.082	Product Number	CTL-SHE-0071-3000-1950-3000
Design Depth (m)	1.950	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

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Node 4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	66.220	Product Number	CTL-SHE-0057-2000-1958-2000
Design Depth (m)	1.958	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	66.220
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	100.0	0.0	1.040	100.0	0.0	1.041	0.0	0.0

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

Approval Settings

Node Size	✓	Backdrops	✓	Maximum Surcharged Depth (m)	0.100
Node Losses	✓	Minimum Backdrop Height (m)	1.000	Flooding	✓
Link Size	✓	Maximum Backdrop Height (m)	1.500	Return Period (years)	30
Minimum Diameter (mm)	150	Full Bore Velocity	✓	Time to Half Empty	✓
Link Length	✓	Minimum Full Bore Velocity (m/s)	1.000	Return Period (years)	2
Maximum Length (m)	100.000	Maximum Full Bore Velocity (m/s)	3.000	Discharge Rates	✓
Coordinates	✓	Proportional Velocity	✓	1 year (l/s)	5.0
Accuracy (m)	1.000	Return Period (years)	2	2 year (l/s)	5.0
Crossings	✓	Minimum Proportional Velocity (m/s)	0.750	30 year (l/s)	5.0
Cover Depth	✓	Maximum Proportional Velocity (m/s)	3.000	100 year (l/s)	5.0
Minimum Cover Depth (m)	1.200	Surcharged Depth	✓	Discharge Volume	x
Maximum Cover Depth (m)	3.000	Return Period (years)	2		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 15 minute summer	226.195	64.005	30 year 360 minute summer	26.939	6.932
30 year 15 minute winter	158.733	64.005	30 year 360 minute winter	17.511	6.932
30 year 30 minute summer	147.452	41.724	30 year 480 minute summer	20.981	5.545
30 year 30 minute winter	103.475	41.724	30 year 480 minute winter	13.940	5.545
30 year 60 minute summer	98.615	26.061	30 year 600 minute summer	17.039	4.661
30 year 60 minute winter	65.517	26.061	30 year 600 minute winter	11.642	4.661
30 year 120 minute summer	59.946	15.842	30 year 720 minute summer	15.093	4.045
30 year 120 minute winter	39.827	15.842	30 year 720 minute winter	10.143	4.045
30 year 180 minute summer	45.598	11.734	30 year 960 minute summer	12.278	3.233
30 year 180 minute winter	29.640	11.734	30 year 960 minute winter	8.133	3.233
30 year 240 minute summer	35.759	9.450	30 year 1440 minute summer	8.788	2.355
30 year 240 minute winter	23.758	9.450	30 year 1440 minute winter	5.906	2.355

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	58	66.514	0.234	11.6	0.7747	0.0000	OK
60 minute winter	2	59	66.514	0.395	13.5	1.1009	0.0000	OK
60 minute winter	3	59	66.514	0.432	4.7	1.0993	0.0000	SURCHARGED
240 minute winter	4	228	66.594	0.374	9.1	38.3744	0.0000	SURCHARGED
240 minute summer	5	136	64.791	0.046	3.6	0.0807	0.0000	OK
240 minute summer	6	136	64.692	0.044	3.6	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)
60 minute winter	1	1.000	2	10.4	0.338	0.030	9.5170	
60 minute winter	2	1.001	3	4.7	0.338	0.014	3.0805	
60 minute winter	3	Hydro-Brake®	5	2.2				
240 minute winter	4	Hydro-Brake®	5	1.3				
240 minute summer	5	1.003	6	3.6	0.541	0.049	0.1472	60.9

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Results for 30 year 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	18	66.427	0.147	21.6	0.4863	0.0000	OK
15 minute summer	2	19	66.423	0.304	26.7	0.8472	0.0000	OK
15 minute summer	3	16	66.429	0.347	11.8	0.8833	0.0000	SURCHARGED
15 minute summer	4	19	66.404	0.184	45.7	18.8454	0.0000	SURCHARGED
15 minute summer	5	21	64.791	0.046	3.5	0.0804	0.0000	OK
15 minute summer	6	21	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	20.9	0.548	0.061	6.1240	
15 minute summer	2	1.001	3	11.8	0.408	0.035	2.3221	
15 minute summer	3	Hydro-Brake®	5	2.2				
15 minute summer	4	Hydro-Brake®	5	1.3				
15 minute summer	5	1.003	6	3.5	0.540	0.049	0.1466	27.8

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Results for 30 year 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	17	66.455	0.175	22.7	0.5799	0.0000	OK
15 minute winter	2	18	66.448	0.329	27.8	0.9177	0.0000	OK
15 minute winter	3	18	66.449	0.367	7.5	0.9332	0.0000	SURCHARGED
15 minute winter	4	19	66.427	0.207	48.1	21.1991	0.0000	SURCHARGED
15 minute winter	5	29	64.791	0.046	3.5	0.0805	0.0000	OK
15 minute winter	6	30	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	21.8	0.539	0.064	7.0157	
15 minute winter	2	1.001	3	7.5	0.418	0.022	2.5204	
15 minute winter	3	Hydro-Brake®	5	2.2				
15 minute winter	4	Hydro-Brake®	5	1.3				
15 minute winter	5	1.003	6	3.5	0.541	0.049	0.1469	30.6

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Results for 30 year 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	30	66.464	0.184	19.3	0.6088	0.0000	OK
30 minute summer	2	31	66.460	0.341	24.4	0.9500	0.0000	OK
30 minute summer	3	31	66.460	0.378	6.7	0.9620	0.0000	SURCHARGED
30 minute summer	4	34	66.455	0.235	40.9	24.0782	0.0000	SURCHARGED
30 minute summer	5	55	64.791	0.046	3.6	0.0806	0.0000	OK
30 minute summer	6	55	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	18.9	0.375	0.055	7.4741	
30 minute summer	2	1.001	3	6.7	0.368	0.020	2.6212	
30 minute summer	3	Hydro-Brake®	5	2.2				
30 minute summer	4	Hydro-Brake®	5	1.3				
30 minute summer	5	1.003	6	3.6	0.541	0.049	0.1471	34.8

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Results for 30 year 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	31	66.494	0.214	17.5	0.7078	0.0000	OK
30 minute winter	2	30	66.494	0.375	21.4	1.0459	0.0000	OK
30 minute winter	3	30	66.494	0.412	7.9	1.0481	0.0000	SURCHARGED
30 minute winter	4	33	66.485	0.265	37.0	27.1474	0.0000	SURCHARGED
30 minute winter	5	70	64.791	0.046	3.6	0.0807	0.0000	OK
30 minute winter	6	70	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	2	16.5	0.403	0.048	8.7224	
30 minute winter	2	1.001	3	7.9	0.376	0.023	2.9144	
30 minute winter	3	Hydro-Brake®	5	2.2				
30 minute winter	4	Hydro-Brake®	5	1.3				
30 minute winter	5	1.003	6	3.6	0.541	0.049	0.1472	37.5

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Results for 30 year 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1	50	66.474	0.194	14.4	0.6416	0.0000	OK
60 minute summer	2	54	66.473	0.354	17.6	0.9878	0.0000	OK
60 minute summer	3	54	66.474	0.391	5.6	0.9964	0.0000	SURCHARGED
60 minute summer	4	63	66.501	0.281	30.4	28.8505	0.0000	SURCHARGED
60 minute summer	5	97	64.791	0.046	3.6	0.0807	0.0000	OK
60 minute summer	6	97	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1	1.000	2	13.5	0.313	0.040	7.9794	
60 minute summer	2	1.001	3	5.6	0.338	0.016	2.7385	
60 minute summer	3	Hydro-Brake®	5	2.2				
60 minute summer	4	Hydro-Brake®	5	1.3				
60 minute summer	5	1.003	6	3.6	0.541	0.049	0.1472	41.4

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Results for 30 year 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	58	66.514	0.234	11.6	0.7747	0.0000	OK
60 minute winter	2	59	66.514	0.395	13.5	1.1009	0.0000	OK
60 minute winter	3	59	66.514	0.432	4.7	1.0993	0.0000	SURCHARGED
60 minute winter	4	62	66.538	0.318	24.6	32.6420	0.0000	SURCHARGED
60 minute winter	5	115	64.791	0.046	3.6	0.0807	0.0000	OK
60 minute winter	6	115	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	10.4	0.338	0.030	9.5170	
60 minute winter	2	1.001	3	4.7	0.338	0.014	3.0805	
60 minute winter	3	Hydro-Brake®	5	2.2				
60 minute winter	4	Hydro-Brake®	5	1.3				
60 minute winter	5	1.003	6	3.6	0.541	0.049	0.1472	44.2

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Results for 30 year 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	86	66.464	0.184	9.3	0.6091	0.0000	OK
120 minute summer	2	90	66.462	0.343	11.5	0.9571	0.0000	OK
120 minute summer	3	90	66.462	0.380	4.3	0.9679	0.0000	SURCHARGED
120 minute summer	4	122	66.532	0.312	19.7	32.0459	0.0000	SURCHARGED
120 minute summer	5	70	64.791	0.046	3.6	0.0806	0.0000	OK
120 minute summer	6	70	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	8.9	0.270	0.026	7.6618	
120 minute summer	2	1.001	3	4.3	0.297	0.012	2.6423	
120 minute summer	3	Hydro-Brake®	5	2.2				
120 minute summer	4	Hydro-Brake®	5	1.3				
120 minute summer	5	1.003	6	3.6	0.541	0.049	0.1471	49.7

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Results for 30 year 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	96	66.499	0.219	7.2	0.7234	0.0000	OK
120 minute winter	2	92	66.498	0.379	8.4	1.0583	0.0000	OK
120 minute winter	3	92	66.499	0.417	3.6	1.0601	0.0000	SURCHARGED
120 minute winter	4	120	66.580	0.360	15.2	36.9051	0.0000	SURCHARGED
120 minute winter	5	68	64.791	0.046	3.6	0.0807	0.0000	OK
120 minute winter	6	68	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	1.000	2	6.5	0.283	0.019	9.0007	
120 minute winter	2	1.001	3	3.6	0.270	0.010	2.9530	
120 minute winter	3	Hydro-Brake®	5	2.2				
120 minute winter	4	Hydro-Brake®	5	1.3				
120 minute winter	5	1.003	6	3.6	0.541	0.049	0.1472	52.6

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Results for 30 year 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	124	66.444	0.164	6.9	0.5436	0.0000	OK
180 minute summer	2	120	66.444	0.325	8.5	0.9053	0.0000	OK
180 minute summer	3	120	66.444	0.362	3.6	0.9206	0.0000	SURCHARGED
180 minute summer	4	180	66.542	0.322	14.6	32.9888	0.0000	SURCHARGED
180 minute summer	5	104	64.791	0.046	3.6	0.0807	0.0000	OK
180 minute summer	6	104	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute summer	1	1.000	2	6.6	0.257	0.019	6.9790	
180 minute summer	2	1.001	3	3.6	0.235	0.010	2.4798	
180 minute summer	3	Hydro-Brake®	5	2.2				
180 minute summer	4	Hydro-Brake®	5	1.3				
180 minute summer	5	1.003	6	3.6	0.541	0.049	0.1472	55.5

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Results for 30 year 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	132	66.470	0.190	5.3	0.6294	0.0000	OK
180 minute winter	2	136	66.470	0.351	6.4	0.9791	0.0000	OK
180 minute winter	3	136	66.470	0.388	3.1	0.9877	0.0000	SURCHARGED
180 minute winter	4	176	66.590	0.370	11.3	37.9970	0.0000	SURCHARGED
180 minute winter	5	100	64.791	0.046	3.6	0.0807	0.0000	OK
180 minute winter	6	100	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	5.0	0.252	0.015	7.9756	
180 minute winter	2	1.001	3	3.1	0.285	0.009	2.7102	
180 minute winter	3	Hydro-Brake®	5	2.2				
180 minute winter	4	Hydro-Brake®	5	1.3				
180 minute winter	5	1.003	6	3.6	0.541	0.049	0.1472	59.4

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Results for 30 year 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	156	66.426	0.146	5.8	0.4835	0.0000	OK
240 minute summer	2	152	66.424	0.305	6.7	0.8519	0.0000	OK
240 minute summer	3	152	66.424	0.342	3.2	0.8716	0.0000	SURCHARGED
240 minute summer	4	208	66.544	0.324	12.3	33.1874	0.0000	SURCHARGED
240 minute summer	5	136	64.791	0.046	3.6	0.0807	0.0000	OK
240 minute summer	6	136	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.000	2	5.2	0.257	0.015	6.3421	
240 minute summer	2	1.001	3	3.2	0.235	0.009	2.3103	
240 minute summer	3	Hydro-Brake®	5	2.2				
240 minute summer	4	Hydro-Brake®	5	1.3				
240 minute summer	5	1.003	6	3.6	0.541	0.049	0.1472	60.9

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Results for 30 year 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	168	66.444	0.164	4.3	0.5421	0.0000	OK
240 minute winter	2	172	66.444	0.325	5.2	0.9063	0.0000	OK
240 minute winter	3	172	66.444	0.362	2.9	0.9213	0.0000	SURCHARGED
240 minute winter	4	228	66.594	0.374	9.1	38.3744	0.0000	SURCHARGED
240 minute winter	5	136	64.791	0.046	3.6	0.0807	0.0000	OK
240 minute winter	6	136	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	4.0	0.258	0.012	7.0172	
240 minute winter	2	1.001	3	2.9	0.218	0.008	2.4826	
240 minute winter	3	Hydro-Brake®	5	2.2				
240 minute winter	4	Hydro-Brake®	5	1.3				
240 minute winter	5	1.003	6	3.6	0.541	0.049	0.1472	65.0

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Results for 30 year 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	1	224	66.390	0.110	4.4	0.3651	0.0000	OK
360 minute summer	2	224	66.390	0.271	5.5	0.7562	0.0000	OK
360 minute summer	3	224	66.390	0.308	2.9	0.7842	0.0000	SURCHARGED
360 minute summer	4	272	66.539	0.319	9.3	32.7674	0.0000	SURCHARGED
360 minute summer	5	208	64.791	0.046	3.6	0.0807	0.0000	OK
360 minute summer	6	208	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	4.3	0.254	0.013	5.1212	
360 minute summer	2	1.001	3	2.9	0.219	0.009	2.0052	
360 minute summer	3	Hydro-Brake®	5	2.2				
360 minute summer	4	Hydro-Brake®	5	1.3				
360 minute summer	5	1.003	6	3.6	0.541	0.049	0.1472	70.5

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Results for 30 year 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	232	66.388	0.107	3.2	0.3554	0.0000	OK
360 minute winter	2	240	66.388	0.269	4.1	0.7491	0.0000	OK
360 minute winter	3	240	66.388	0.306	2.6	0.7777	0.0000	SURCHARGED
360 minute winter	4	288	66.583	0.363	6.7	37.2532	0.0000	SURCHARGED
360 minute winter	5	208	64.791	0.046	3.6	0.0806	0.0000	OK
360 minute winter	6	208	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	3.2	0.257	0.009	5.0281	
360 minute winter	2	1.001	3	2.6	0.164	0.008	1.9827	
360 minute winter	3	Hydro-Brake®	5	2.2				
360 minute winter	4	Hydro-Brake®	5	1.3				
360 minute winter	5	1.003	6	3.6	0.541	0.049	0.1471	75.6

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Results for 30 year 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	1	288	66.357	0.077	3.4	0.2561	0.0000	OK
480 minute summer	2	288	66.358	0.239	4.4	0.6659	0.0000	OK
480 minute summer	3	288	66.358	0.276	2.7	0.7018	0.0000	SURCHARGED
480 minute summer	4	336	66.529	0.309	7.2	31.6664	0.0000	SURCHARGED
480 minute summer	5	272	64.791	0.046	3.6	0.0806	0.0000	OK
480 minute summer	6	272	64.692	0.044	3.6	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	1	1.000	2	3.4	0.257	0.010	4.0444	
480 minute summer	2	1.001	3	2.7	0.216	0.008	1.7185	
480 minute summer	3	Hydro-Brake®	5	2.2				
480 minute summer	4	Hydro-Brake®	5	1.3				
480 minute summer	5	1.003	6	3.6	0.541	0.049	0.1470	79.0

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Results for 30 year 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	296	66.337	0.057	2.5	0.1871	0.0000	OK
480 minute winter	2	296	66.337	0.218	3.2	0.6070	0.0000	OK
480 minute winter	3	296	66.337	0.255	2.4	0.6480	0.0000	SURCHARGED
480 minute winter	4	368	66.569	0.349	5.4	35.7621	0.0000	SURCHARGED
480 minute winter	5	280	64.791	0.046	3.5	0.0805	0.0000	OK
480 minute winter	6	280	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	2.5	0.254	0.007	3.3972	
480 minute winter	2	1.001	3	2.4	0.164	0.007	1.5339	
480 minute winter	3	Hydro-Brake®	5	2.2				
480 minute winter	4	Hydro-Brake®	5	1.3				
480 minute winter	5	1.003	6	3.5	0.540	0.049	0.1466	84.6

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Results for 30 year 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	345	66.325	0.045	2.8	0.1501	0.0000	OK
600 minute summer	2	345	66.326	0.207	3.6	0.5762	0.0000	OK
600 minute summer	3	345	66.326	0.244	2.5	0.6199	0.0000	SURCHARGED
600 minute summer	4	405	66.516	0.296	5.9	30.3441	0.0000	SURCHARGED
600 minute summer	5	345	64.791	0.046	3.5	0.0804	0.0000	OK
600 minute summer	6	345	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	1	1.000	2	2.8	0.259	0.008	3.0743	
600 minute summer	2	1.001	3	2.5	0.138	0.007	1.4383	
600 minute summer	3	Hydro-Brake®	5	2.2				
600 minute summer	4	Hydro-Brake®	5	1.3				
600 minute summer	5	1.003	6	3.5	0.540	0.048	0.1466	86.4

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Results for 30 year 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	315	66.313	0.033	2.1	0.1101	0.0000	OK
600 minute winter	2	360	66.286	0.167	2.7	0.4660	0.0000	OK
600 minute winter	3	360	66.286	0.204	2.2	0.5193	0.0000	SURCHARGED
600 minute winter	4	450	66.552	0.332	4.5	34.0635	0.0000	SURCHARGED
600 minute winter	5	360	64.790	0.045	3.5	0.0799	0.0000	OK
600 minute winter	6	360	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	2.1	0.250	0.006	2.2290	
600 minute winter	2	1.001	3	2.2	0.184	0.007	1.1051	
600 minute winter	3	Hydro-Brake®	5	2.1				
600 minute winter	4	Hydro-Brake®	5	1.3				
600 minute winter	5	1.003	6	3.5	0.538	0.048	0.1452	93.1

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Results for 30 year 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	1	375	66.316	0.036	2.5	0.1196	0.0000	OK
720 minute summer	2	405	66.298	0.179	3.2	0.5002	0.0000	OK
720 minute summer	3	405	66.298	0.216	2.4	0.5506	0.0000	SURCHARGED
720 minute summer	4	480	66.503	0.283	5.2	29.0386	0.0000	SURCHARGED
720 minute summer	5	405	64.790	0.045	3.5	0.0801	0.0000	OK
720 minute summer	6	405	64.692	0.044	3.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	1	1.000	2	2.5	0.246	0.007	2.4447	
720 minute summer	2	1.001	3	2.4	0.137	0.007	1.2068	
720 minute summer	3	Hydro-Brake®	5	2.2				
720 minute summer	4	Hydro-Brake®	5	1.3				
720 minute summer	5	1.003	6	3.5	0.539	0.048	0.1458	92.4

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Results for 30 year 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	375	66.311	0.031	1.8	0.1025	0.0000	OK
720 minute winter	2	420	66.240	0.121	2.3	0.3368	0.0000	OK
720 minute winter	3	420	66.240	0.158	2.1	0.4014	0.0000	SURCHARGED
720 minute winter	4	525	66.532	0.312	3.9	31.9995	0.0000	SURCHARGED
720 minute winter	5	420	64.790	0.045	3.4	0.0789	0.0000	OK
720 minute winter	6	420	64.691	0.043	3.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	1.8	0.245	0.005	1.4593	
720 minute winter	2	1.001	3	2.1	0.184	0.006	0.7399	
720 minute winter	3	Hydro-Brake®	5	2.1				
720 minute winter	4	Hydro-Brake®	5	1.3				
720 minute winter	5	1.003	6	3.4	0.534	0.047	0.1425	100.8

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Results for 30 year 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	1	495	66.313	0.033	2.0	0.1076	0.0000	OK
960 minute summer	2	525	66.243	0.124	2.6	0.3448	0.0000	OK
960 minute summer	3	525	66.243	0.161	2.2	0.4086	0.0000	SURCHARGED
960 minute summer	4	615	66.481	0.261	4.2	26.7367	0.0000	SURCHARGED
960 minute summer	5	525	64.790	0.045	3.4	0.0789	0.0000	OK
960 minute summer	6	525	64.691	0.043	3.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	1	1.000	2	2.0	0.253	0.006	1.5009	
960 minute summer	2	1.001	3	2.2	0.175	0.006	0.7614	
960 minute summer	3	Hydro-Brake®	5	2.1				
960 minute summer	4	Hydro-Brake®	5	1.3				
960 minute summer	5	1.003	6	3.4	0.534	0.047	0.1427	101.2

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Results for 30 year 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	495	66.309	0.029	1.5	0.0944	0.0000	OK
960 minute winter	2	510	66.183	0.064	1.9	0.1787	0.0000	OK
960 minute winter	3	510	66.183	0.101	1.8	0.2563	0.0000	OK
960 minute winter	4	645	66.500	0.280	3.1	28.7264	0.0000	SURCHARGED
960 minute winter	5	510	64.788	0.043	3.2	0.0761	0.0000	OK
960 minute winter	6	510	64.690	0.042	3.2	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	1	1.000	2	1.5	0.243	0.004	0.6634	
960 minute winter	2	1.001	3	1.8	0.165	0.005	0.3508	
960 minute winter	3	Hydro-Brake®	5	1.8				
960 minute winter	4	Hydro-Brake®	5	1.3				
960 minute winter	5	1.003	6	3.2	0.522	0.043	0.1355	113.1

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Results for 30 year 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	1	750	66.308	0.028	1.4	0.0916	0.0000	OK
1440 minute summer	2	750	66.175	0.056	1.8	0.1564	0.0000	OK
1440 minute summer	3	750	66.175	0.093	1.8	0.2356	0.0000	OK
1440 minute summer	4	870	66.437	0.217	3.0	22.2484	0.0000	SURCHARGED
1440 minute summer	5	750	64.787	0.042	3.1	0.0748	0.0000	OK
1440 minute summer	6	750	64.689	0.041	3.1	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	1	1.000	2	1.4	0.246	0.004	0.5707	
1440 minute summer	2	1.001	3	1.8	0.132	0.005	0.3026	
1440 minute summer	3	Hydro-Brake®	5	1.7				
1440 minute summer	4	Hydro-Brake®	5	1.3				
1440 minute summer	5	1.003	6	3.1	0.517	0.042	0.1321	108.6

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Results for 30 year 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	750	66.305	0.025	1.1	0.0822	0.0000	OK
1440 minute winter	2	750	66.155	0.036	1.4	0.0997	0.0000	OK
1440 minute winter	3	750	66.154	0.071	1.4	0.1820	0.0000	OK
1440 minute winter	4	930	66.434	0.214	2.3	21.9056	0.0000	SURCHARGED
1440 minute winter	5	750	64.785	0.040	2.7	0.0704	0.0000	OK
1440 minute winter	6	750	64.687	0.039	2.7	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	1	1.000	2	1.1	0.243	0.003	0.3407	
1440 minute winter	2	1.001	3	1.4	0.133	0.004	0.1907	
1440 minute winter	3	Hydro-Brake®	5	1.4				
1440 minute winter	4	Hydro-Brake®	5	1.3				
1440 minute winter	5	1.003	6	2.7	0.499	0.037	0.1207	125.0

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