



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.900
CV	0.750	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
500	0.018	5.00	27.505	4150	359445.998	430706.383	1.033
501	0.018	5.00	25.205	4150	359431.741	430748.717	1.033
502	0.018	5.00	20.289	4150	359423.332	430780.357	1.079
503	0.018	5.00	14.884	4150	359423.325	430829.025	1.079
504			14.800	4150	359425.058	430838.211	1.125
505			14.800	1200	359425.857	430845.267	1.172

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	500	501	44.670	0.032	26.472	24.172	2.300	19.4	500	5.26	47.5
1.001	501	502	32.738	0.032	24.172	19.210	4.962	6.6	500	5.37	47.1
1.002	502	503	48.668	0.032	19.210	13.805	5.405	9.0	500	5.56	46.5
1.003	503	504	9.348	0.032	13.805	13.675	0.130	72.0	500	5.67	46.1
1.004	504	505	7.101	0.032	13.675	13.628	0.047	151.1	225	5.99	45.1

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)
1.000	2.862	2504.3	2.3	0.533	0.533	0.018	0.0	18	0.433
1.001	4.911	4296.8	4.6	0.533	0.579	0.036	0.0	19	0.766
1.002	4.203	3678.0	6.8	0.579	0.579	0.054	0.0	26	0.780
1.003	1.487	1300.7	9.0	0.579	0.625	0.072	0.0	53	0.410
1.004	0.373	14.8	8.8	0.900	0.947	0.072	0.0	124	0.389

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	44.670	19.4	500	1:3 swale	27.505	26.472	0.533	25.205	24.172	0.533
1.001	32.738	6.6	500	1:3 swale	25.205	24.172	0.533	20.289	19.210	0.579
1.002	48.668	9.0	500	1:3 swale	20.289	19.210	0.579	14.884	13.805	0.579
1.003	9.348	72.0	500	1:3 swale	14.884	13.805	0.579	14.800	13.675	0.625

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	500	4150	Manhole	Adoptable	501	4150	Manhole	Adoptable
1.001	501	4150	Manhole	Adoptable	502	4150	Manhole	Adoptable
1.002	502	4150	Manhole	Adoptable	503	4150	Manhole	Adoptable
1.003	503	4150	Manhole	Adoptable	504	4150	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)
1.004	7.101	151.1	225	Circular_Default Sewer Type	14.800	13.675	0.900	14.800	13.628	0.947

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.004	504	4150	Manhole	Adoptable	505	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
500	359445.998	430706.383	27.505	1.033	4150					
						0	1.000	26.472	500	
501	359431.741	430748.717	25.205	1.033	4150		1	1.000	24.172	500
						0	1.001	24.172	500	
502	359423.332	430780.357	20.289	1.079	4150		1	1.001	19.210	500
						0	1.002	19.210	500	
503	359423.325	430829.025	14.884	1.079	4150		1	1.002	13.805	500
						0	1.003	13.805	500	
504	359425.058	430838.211	14.800	1.125	4150		1	1.003	13.675	500
						0	1.004	13.675	225	
505	359425.857	430845.267	14.800	1.172	1200		1	1.004	13.628	225

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	Check Discharge Volume	✓
Summer CV	0.750	Drain Down Time (mins)	240	100 year 360 minute (m³)	
Winter CV	0.840	Additional Storage (m³/ha)	20.0		
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

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 %)
100	50	0	0



Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m ³)	

Node 504 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	13.675	Product Number	CTL-SHE-0059-1500-0900-1500
Design Depth (m)	0.900	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.5	Min Node Diameter (mm)	1200

Node 504 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	13.675
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

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	5.0	0.0	0.900	49.3	0.0	0.905	49.7	0.0



Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 98.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	500	11	26.513	0.041	10.9	0.5653	0.0000	OK
15 minute winter	501	11	24.216	0.044	20.8	0.6081	0.0000	OK
15 minute winter	502	11	19.268	0.058	30.8	0.8029	0.0000	OK
180 minute winter	503	180	14.158	0.353	10.8	4.8994	0.0000	OK
180 minute winter	504	180	14.158	0.483	5.8	14.7108	0.0000	SURCHARGED
15 minute summer	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	500	1.000	501	10.4	0.650	0.004	0.7122	
15 minute winter	501	1.001	502	20.5	1.000	0.005	0.6756	
15 minute winter	502	1.002	503	29.9	0.727	0.008	4.4503	
180 minute winter	503	1.003	504	5.8	0.249	0.004	6.0086	
180 minute winter	504	Hydro-Brake®	505	1.4				32.0



Results for 100 year +50% CC 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	500	11	26.512	0.040	10.4	0.5512	0.0000	OK
15 minute summer	501	11	24.215	0.043	19.8	0.5919	0.0000	OK
15 minute summer	502	11	19.266	0.056	29.3	0.7793	0.0000	OK
15 minute summer	503	24	13.988	0.183	38.0	2.5342	0.0000	OK
15 minute summer	504	23	13.989	0.314	36.4	8.2281	0.0000	SURCHARGED
15 minute summer	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	500	1.000	501	9.9	0.642	0.004	0.6878	
15 minute summer	501	1.001	502	19.5	0.988	0.005	0.6494	
15 minute summer	502	1.002	503	28.1	0.720	0.008	3.6338	
15 minute summer	503	1.003	504	36.4	0.530	0.028	2.4270	
15 minute summer	504	Hydro-Brake®	505	1.4				17.6



Results for 100 year +50% CC 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	500	11	26.513	0.041	10.9	0.5653	0.0000	OK
15 minute winter	501	11	24.216	0.044	20.8	0.6081	0.0000	OK
15 minute winter	502	11	19.268	0.058	30.8	0.8029	0.0000	OK
15 minute winter	503	25	14.012	0.207	40.1	2.8653	0.0000	OK
15 minute winter	504	23	14.012	0.337	36.7	9.0532	0.0000	SURCHARGED
15 minute winter	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	500	1.000	501	10.4	0.650	0.004	0.7122	
15 minute winter	501	1.001	502	20.5	1.000	0.005	0.6756	
15 minute winter	502	1.002	503	29.9	0.727	0.008	4.4503	
15 minute winter	503	1.003	504	36.7	0.529	0.028	2.8300	
15 minute winter	504	Hydro-Brake®	505	1.4				19.6



Results for 100 year +50% CC 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute summer	500	18	26.511	0.039	9.8	0.5377	0.0000	OK
30 minute summer	501	19	24.214	0.042	19.2	0.5782	0.0000	OK
30 minute summer	502	19	19.266	0.056	28.2	0.7718	0.0000	OK
30 minute summer	503	38	14.049	0.244	36.6	3.3867	0.0000	OK
30 minute summer	504	37	14.050	0.375	30.4	10.3910	0.0000	SURCHARGED
30 minute summer	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
30 minute summer	500	1.000	501	9.4	0.634	0.004	0.6640	
30 minute summer	501	1.001	502	18.7	0.973	0.004	0.6360	
30 minute summer	502	1.002	503	27.7	0.709	0.008	5.9269	
30 minute summer	503	1.003	504	30.4	0.374	0.023	3.5273	
30 minute summer	504	Hydro-Brake®	505	1.4				22.0



Results for 100 year +50% CC 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute winter	500	18	26.509	0.037	8.9	0.5145	0.0000	OK
30 minute winter	501	19	24.212	0.040	17.6	0.5550	0.0000	OK
30 minute winter	502	19	19.263	0.054	26.0	0.7431	0.0000	OK
30 minute winter	503	37	14.077	0.272	34.1	3.7746	0.0000	OK
30 minute winter	504	38	14.077	0.402	26.0	11.4413	0.0000	SURCHARGED
30 minute winter	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
30 minute winter	500	1.000	501	8.7	0.617	0.003	0.6286	
30 minute winter	501	1.001	502	17.3	0.948	0.004	0.6029	
30 minute winter	502	1.002	503	25.7	0.679	0.007	7.1561	
30 minute winter	503	1.003	504	26.0	0.399	0.020	4.0994	
30 minute winter	504	Hydro-Brake®	505	1.4				22.2



Results for 100 year +50% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute summer	500	33	26.506	0.034	7.7	0.4751	0.0000	OK
60 minute summer	501	34	24.209	0.037	15.2	0.5136	0.0000	OK
60 minute summer	502	34	19.260	0.050	22.5	0.6885	0.0000	OK
60 minute summer	503	66	14.103	0.298	29.5	4.1331	0.0000	OK
60 minute summer	504	66	14.103	0.428	15.2	12.4463	0.0000	SURCHARGED
60 minute summer	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
60 minute summer	500	1.000	501	7.5	0.591	0.003	0.5677	
60 minute summer	501	1.001	502	14.9	0.909	0.003	0.5433	
60 minute summer	502	1.002	503	22.2	0.582	0.006	8.3838	
60 minute summer	503	1.003	504	15.2	0.307	0.012	4.6674	
60 minute summer	504	Hydro-Brake®	505	1.4				24.1



Results for 100 year +50% CC 60 minute winter. 300 minute analysis at 1 minute timestep. Mass balance: 98.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	500	34	26.503	0.031	6.2	0.4260	0.0000	OK
60 minute winter	501	34	24.205	0.033	12.3	0.4616	0.0000	OK
60 minute winter	502	34	19.255	0.045	18.4	0.6222	0.0000	OK
60 minute winter	503	66	14.135	0.330	24.4	4.5793	0.0000	OK
60 minute winter	504	66	14.135	0.460	13.0	13.7467	0.0000	SURCHARGED
60 minute winter	505	1	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
60 minute winter	500	1.000	501	6.1	0.555	0.002	0.4945	
60 minute winter	501	1.001	502	12.3	0.855	0.003	0.4732	
60 minute winter	502	1.002	503	18.3	0.549	0.005	10.0569	
60 minute winter	503	1.003	504	13.0	0.325	0.010	5.4276	
60 minute winter	504	Hydro-Brake®	505	1.4				23.9



Results for 100 year +50% CC 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.22%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	500	64	26.499	0.027	4.8	0.3699	0.0000	OK
120 minute summer	501	64	24.201	0.029	9.6	0.4004	0.0000	OK
120 minute summer	502	64	19.249	0.039	14.3	0.5398	0.0000	OK
120 minute summer	503	124	14.120	0.315	18.8	4.3666	0.0000	OK
120 minute summer	504	124	14.120	0.445	9.7	13.1203	0.0000	SURCHARGED
120 minute summer	505	2	13.628	0.000	1.4	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)
120 minute summer	500	1.000	501	4.8	0.514	0.002	0.4135	
120 minute summer	501	1.001	502	9.5	0.793	0.002	0.3929	
120 minute summer	502	1.002	503	14.0	0.439	0.004	9.2289	
120 minute summer	503	1.003	504	9.7	0.260	0.007	5.0579	
120 minute summer	504	Hydro-Brake®	505	1.4				28.2



Results for 100 year +50% CC 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 98.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute winter	500	66	26.495	0.023	3.7	0.3216	0.0000	OK
120 minute winter	501	66	24.197	0.025	7.4	0.3493	0.0000	OK
120 minute winter	502	66	19.244	0.034	11.1	0.4756	0.0000	OK
120 minute winter	503	122	14.157	0.352	14.8	4.8845	0.0000	OK
120 minute winter	504	122	14.157	0.482	7.7	14.6656	0.0000	SURCHARGED
120 minute winter	505	2	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
120 minute winter	500	1.000	501	3.7	0.474	0.001	0.3485	
120 minute winter	501	1.001	502	7.4	0.733	0.002	0.3324	
120 minute winter	502	1.002	503	11.1	0.442	0.003	11.2813	
120 minute winter	503	1.003	504	7.7	0.271	0.006	5.9810	
120 minute winter	504	Hydro-Brake®	505	1.4				27.8

**Results for 100 year +50% CC 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.30%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
180 minute summer	500	96	26.495	0.023	3.6	0.3163	0.0000	OK
180 minute summer	501	96	24.197	0.025	7.2	0.3433	0.0000	OK
180 minute summer	502	96	19.244	0.034	10.8	0.4667	0.0000	OK
180 minute summer	503	176	14.120	0.315	14.3	4.3700	0.0000	OK
180 minute summer	504	176	14.120	0.445	7.5	13.1301	0.0000	SURCHARGED
180 minute summer	505	4	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
180 minute summer	500	1.000	501	3.6	0.470	0.001	0.3413	
180 minute summer	501	1.001	502	7.2	0.727	0.002	0.3249	
180 minute summer	502	1.002	503	10.7	0.404	0.003	9.2364	
180 minute summer	503	1.003	504	7.5	0.220	0.006	5.0636	
180 minute summer	504	Hydro-Brake®	505	1.4				32.3



Results for 100 year +50% CC 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 98.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
180 minute winter	500	96	26.491	0.019	2.7	0.2691	0.0000	OK
180 minute winter	501	96	24.193	0.021	5.4	0.2926	0.0000	OK
180 minute winter	502	96	19.239	0.029	8.1	0.4000	0.0000	OK
180 minute winter	503	180	14.158	0.353	10.8	4.8994	0.0000	OK
180 minute winter	504	180	14.158	0.483	5.8	14.7108	0.0000	SURCHARGED
180 minute winter	505	4	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
180 minute winter	500	1.000	501	2.7	0.429	0.001	0.2811	
180 minute winter	501	1.001	502	5.4	0.665	0.001	0.2671	
180 minute winter	502	1.002	503	8.1	0.383	0.002	11.3335	
180 minute winter	503	1.003	504	5.8	0.249	0.004	6.0086	
180 minute winter	504	Hydro-Brake®	505	1.4				32.0



Results for 100 year +50% CC 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
240 minute summer	500	124	26.492	0.020	3.0	0.2817	0.0000	OK
240 minute summer	501	124	24.194	0.022	5.9	0.3053	0.0000	OK
240 minute summer	502	128	19.240	0.030	8.8	0.4156	0.0000	OK
240 minute summer	503	204	14.114	0.309	11.6	4.2849	0.0000	OK
240 minute summer	504	204	14.114	0.439	6.3	12.8828	0.0000	SURCHARGED
240 minute summer	505	4	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
240 minute summer	500	1.000	501	2.9	0.441	0.001	0.2963	
240 minute summer	501	1.001	502	5.8	0.683	0.001	0.2801	
240 minute summer	502	1.002	503	8.7	0.383	0.002	8.9201	
240 minute summer	503	1.003	504	6.3	0.211	0.005	4.9195	
240 minute summer	504	Hydro-Brake®	505	1.4				36.7



Results for 100 year +50% CC 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 98.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
240 minute winter	500	128	26.489	0.017	2.2	0.2396	0.0000	OK
240 minute winter	501	128	24.191	0.019	4.4	0.2607	0.0000	OK
240 minute winter	502	128	19.236	0.026	6.6	0.3576	0.0000	OK
240 minute winter	503	232	14.154	0.349	8.8	4.8433	0.0000	OK
240 minute winter	504	232	14.154	0.479	4.9	14.5399	0.0000	SURCHARGED
240 minute winter	505	4	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
240 minute winter	500	1.000	501	2.2	0.401	0.001	0.2450	
240 minute winter	501	1.001	502	4.4	0.623	0.001	0.2325	
240 minute winter	502	1.002	503	6.6	0.369	0.002	11.1017	
240 minute winter	503	1.003	504	4.9	0.227	0.004	5.9046	
240 minute winter	504	Hydro-Brake®	505	1.4				36.3



Results for 100 year +50% CC 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
360 minute summer	500	184	26.489	0.017	2.2	0.2358	0.0000	OK
360 minute summer	501	184	24.190	0.018	4.3	0.2558	0.0000	OK
360 minute summer	502	184	19.235	0.025	6.5	0.3488	0.0000	OK
360 minute summer	503	264	14.093	0.288	8.5	3.9888	0.0000	OK
360 minute summer	504	264	14.093	0.418	4.8	12.0361	0.0000	SURCHARGED
360 minute summer	505	8	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
360 minute summer	500	1.000	501	2.1	0.398	0.001	0.2400	
360 minute summer	501	1.001	502	4.3	0.618	0.001	0.2262	
360 minute summer	502	1.002	503	6.3	0.364	0.002	7.8610	
360 minute summer	503	1.003	504	4.8	0.174	0.004	4.4338	
360 minute summer	504	Hydro-Brake®	505	1.4				44.6



Results for 100 year +50% CC 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
360 minute winter	500	192	26.486	0.014	1.6	0.1996	0.0000	OK
360 minute winter	501	192	24.188	0.016	3.2	0.2173	0.0000	OK
360 minute winter	502	192	19.231	0.022	4.8	0.2992	0.0000	OK
360 minute winter	503	288	14.138	0.333	6.4	4.6174	0.0000	OK
360 minute winter	504	288	14.138	0.463	3.8	13.8598	0.0000	SURCHARGED
360 minute winter	505	8	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
360 minute winter	500	1.000	501	1.6	0.361	0.001	0.1981	
360 minute winter	501	1.001	502	3.2	0.562	0.001	0.1874	
360 minute winter	502	1.002	503	4.8	0.331	0.001	10.1937	
360 minute winter	503	1.003	504	3.8	0.192	0.003	5.4951	
360 minute winter	504	Hydro-Brake [®]	505	1.4				45.1



Results for 100 year +50% CC 480 minute summer. 720 minute analysis at 8 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
480 minute summer	500	248	26.487	0.015	1.7	0.2066	0.0000	OK
480 minute summer	501	248	24.188	0.016	3.4	0.2250	0.0000	OK
480 minute summer	502	248	19.232	0.022	5.1	0.3094	0.0000	OK
480 minute summer	503	336	14.084	0.279	6.8	3.8730	0.0000	OK
480 minute summer	504	336	14.084	0.409	4.0	11.7113	0.0000	SURCHARGED
480 minute summer	505	8	13.628	0.000	1.4	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)
480 minute summer	500	1.000	501	1.7	0.368	0.001	0.2062	
480 minute summer	501	1.001	502	3.4	0.573	0.001	0.1951	
480 minute summer	502	1.002	503	5.1	0.331	0.001	7.4640	
480 minute summer	503	1.003	504	4.0	0.179	0.003	4.2509	
480 minute summer	504	Hydro-Brake®	505	1.4				52.4



Results for 100 year +50% CC 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
480 minute winter	500	256	26.485	0.013	1.3	0.1770	0.0000	OK
480 minute winter	501	256	24.186	0.014	2.6	0.1928	0.0000	OK
480 minute winter	502	256	19.229	0.019	3.9	0.2661	0.0000	OK
480 minute winter	503	360	14.113	0.308	5.2	4.2754	0.0000	OK
480 minute winter	504	360	14.113	0.438	3.2	12.8553	0.0000	SURCHARGED
480 minute winter	505	8	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
480 minute winter	500	1.000	501	1.3	0.336	0.001	0.1727	
480 minute winter	501	1.001	502	2.6	0.524	0.001	0.1630	
480 minute winter	502	1.002	503	3.9	0.331	0.001	8.8874	
480 minute winter	503	1.003	504	3.2	0.173	0.002	4.9035	
480 minute winter	504	Hydro-Brake®	505	1.4				53.1



Results for 100 year +50% CC 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute summer	500	315	26.485	0.013	1.4	0.1848	0.0000	OK
600 minute summer	501	315	24.187	0.015	2.8	0.2013	0.0000	OK
600 minute summer	502	315	19.230	0.020	4.2	0.2775	0.0000	OK
600 minute summer	503	405	14.058	0.253	5.6	3.5091	0.0000	OK
600 minute summer	504	405	14.058	0.383	3.4	10.7129	0.0000	SURCHARGED
600 minute summer	505	15	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
600 minute summer	500	1.000	501	1.4	0.345	0.001	0.1813	
600 minute summer	501	1.001	502	2.8	0.537	0.001	0.1713	
600 minute summer	502	1.002	503	4.2	0.320	0.001	6.2809	
600 minute summer	503	1.003	504	3.4	0.139	0.003	3.7017	
600 minute summer	504	Hydro-Brake®	505	1.4				53.5



Results for 100 year +50% CC 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.84%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute winter	500	315	26.484	0.012	1.1	0.1606	0.0000	OK
600 minute winter	501	315	24.185	0.013	2.2	0.1751	0.0000	OK
600 minute winter	502	315	19.227	0.017	3.3	0.2419	0.0000	OK
600 minute winter	503	450	14.081	0.277	4.4	3.8326	0.0000	OK
600 minute winter	504	450	14.082	0.407	2.9	11.5989	0.0000	SURCHARGED
600 minute winter	505	15	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
600 minute winter	500	1.000	501	1.1	0.318	0.000	0.1548	
600 minute winter	501	1.001	502	2.2	0.496	0.001	0.1458	
600 minute winter	502	1.002	503	3.3	0.317	0.001	7.3257	
600 minute winter	503	1.003	504	2.9	0.164	0.002	4.1881	
600 minute winter	504	Hydro-Brake®	505	1.4				59.7

**Results for 100 year +50% CC 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.83%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
720 minute summer	500	375	26.485	0.013	1.3	0.1770	0.0000	OK
720 minute summer	501	375	24.186	0.014	2.6	0.1928	0.0000	OK
720 minute summer	502	375	19.229	0.019	3.9	0.2660	0.0000	OK
720 minute summer	503	480	14.061	0.256	5.2	3.5549	0.0000	OK
720 minute summer	504	480	14.061	0.386	3.2	10.8366	0.0000	SURCHARGED
720 minute summer	505	15	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
720 minute summer	500	1.000	501	1.3	0.336	0.001	0.1727	
720 minute summer	501	1.001	502	2.6	0.524	0.001	0.1630	
720 minute summer	502	1.002	503	3.9	0.317	0.001	6.4240	
720 minute summer	503	1.003	504	3.2	0.139	0.002	3.7686	
720 minute summer	504	Hydro-Brake®	505	1.4				57.9



Results for 100 year +50% CC 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
720 minute winter	500	360	26.482	0.010	0.9	0.1429	0.0000	OK
720 minute winter	501	375	24.183	0.011	1.8	0.1558	0.0000	OK
720 minute winter	502	375	19.225	0.016	2.7	0.2156	0.0000	OK
720 minute winter	503	525	14.078	0.274	3.6	3.7909	0.0000	OK
720 minute winter	504	525	14.079	0.404	2.5	11.4830	0.0000	SURCHARGED
720 minute winter	505	15	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
720 minute winter	500	1.000	501	0.9	0.296	0.000	0.1358	
720 minute winter	501	1.001	502	1.8	0.463	0.000	0.1277	
720 minute winter	502	1.002	503	2.7	0.301	0.001	7.1864	
720 minute winter	503	1.003	504	2.5	0.136	0.002	4.1236	
720 minute winter	504	Hydro-Brake [®]	505	1.4				66.4



Results for 100 year +50% CC 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	500	495	26.483	0.011	1.0	0.1520	0.0000	OK
960 minute summer	501	495	24.184	0.012	2.0	0.1656	0.0000	OK
960 minute summer	502	495	19.226	0.017	3.0	0.2291	0.0000	OK
960 minute summer	503	615	14.030	0.225	4.0	3.1179	0.0000	OK
960 minute summer	504	615	14.030	0.355	2.7	9.6771	0.0000	SURCHARGED
960 minute summer	505	15	13.628	0.000	1.4	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	500	1.000	501	1.0	0.307	0.000	0.1454	
960 minute summer	501	1.001	502	2.0	0.480	0.000	0.1369	
960 minute summer	502	1.002	503	3.0	0.307	0.001	5.1233	
960 minute summer	503	1.003	504	2.7	0.139	0.002	3.1542	
960 minute summer	504	Hydro-Brake®	505	1.4				61.5



Results for 100 year +50% CC 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute winter	500	495	26.482	0.010	0.8	0.1334	0.0000	OK
960 minute winter	501	495	24.182	0.010	1.6	0.1454	0.0000	OK
960 minute winter	502	495	19.224	0.015	2.4	0.2015	0.0000	OK
960 minute winter	503	660	14.033	0.228	3.2	3.1591	0.0000	OK
960 minute winter	504	660	14.033	0.358	2.3	9.7845	0.0000	SURCHARGED
960 minute winter	505	15	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
960 minute winter	500	1.000	501	0.8	0.284	0.000	0.1258	
960 minute winter	501	1.001	502	1.6	0.445	0.000	0.1182	
960 minute winter	502	1.002	503	2.4	0.286	0.001	5.2399	
960 minute winter	503	1.003	504	2.3	0.136	0.002	3.2098	
960 minute winter	504	Hydro-Brake®	505	1.4				68.2



Results for 100 year +50% CC 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 99.77%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
1440 minute summer	500	750	26.481	0.009	0.7	0.1233	0.0000	OK
1440 minute summer	501	750	24.182	0.010	1.4	0.1345	0.0000	OK
1440 minute summer	502	750	19.223	0.013	2.1	0.1866	0.0000	OK
1440 minute summer	503	870	13.959	0.154	2.8	2.1359	0.0000	OK
1440 minute summer	504	870	13.959	0.284	2.1	7.2501	0.0000	SURCHARGED
1440 minute summer	505	30	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
1440 minute summer	500	1.000	501	0.7	0.271	0.000	0.1154	
1440 minute summer	501	1.001	502	1.4	0.425	0.000	0.1083	
1440 minute summer	502	1.002	503	2.1	0.284	0.001	2.7374	
1440 minute summer	503	1.003	504	2.1	0.139	0.002	1.9771	
1440 minute summer	504	Hydro-Brake®	505	1.4				70.0



Results for 100 year +50% CC 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 99.77%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
1440 minute winter	500	750	26.480	0.008	0.6	0.1127	0.0000	OK
1440 minute winter	501	750	24.181	0.009	1.2	0.1229	0.0000	OK
1440 minute winter	502	750	19.222	0.012	1.8	0.1706	0.0000	OK
1440 minute winter	503	900	13.958	0.153	2.4	2.1227	0.0000	OK
1440 minute winter	504	900	13.958	0.283	1.9	7.2189	0.0000	SURCHARGED
1440 minute winter	505	30	13.628	0.000	1.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
1440 minute winter	500	1.000	501	0.6	0.257	0.000	0.1045	
1440 minute winter	501	1.001	502	1.2	0.402	0.000	0.0979	
1440 minute winter	502	1.002	503	1.8	0.284	0.000	2.7103	
1440 minute winter	503	1.003	504	1.9	0.093	0.001	1.9631	
1440 minute winter	504	Hydro-Brake®	505	1.4				76.1